

Equitable Community Solar

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Center for Transportation Studies
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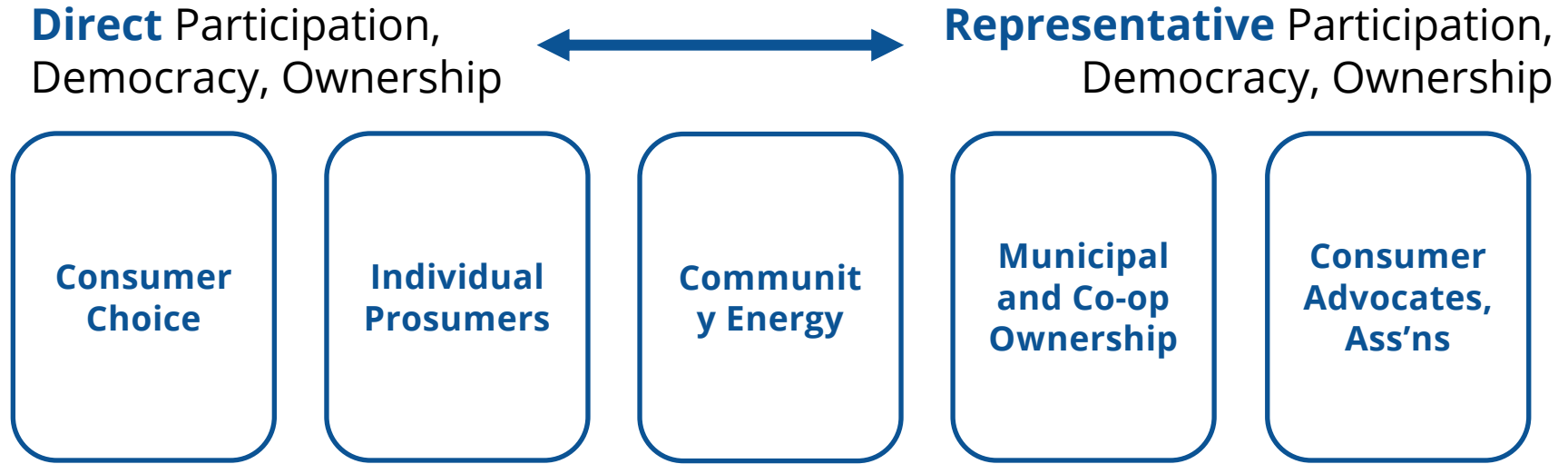
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Why Public Engagement and Participation for an Equitable Energy Transition?

Public engagement and participation can...

- direct energy transition toward **individual or community goals**
- lead to more equitable **outcomes**
- build **legitimacy** and **procedural justice**
- facilitate the **political economy** of broader transition efforts
- meet **statutory requirements** to consult or otherwise engage the public

What are the forms of public engagement and participation in energy?



DERs enable more direct participation, democracy, and ownership in the energy system. But DERs simultaneously create **opportunities for innovation** in how participation, democracy, and ownership of diverse groups can occur.

Adapted from [Wahlund & Palm \(2022\)](#)

Why Community Solar?

Why Community Solar?

- **Access and Equity**
 - Physical constraints (~75% of customers cannot install rooftop solar)
 - Financial constraints (capital/credit constraints are lower than other solar)
- **Environmental benefits** (can help meet carbon or renewable goals)
- **Jobs** (4,000 jobs in MN community solar in 2019)
- **Siting, landowner revenue** (~\$1,000 per acre in MN), **tax revenue**
- **Local control, customer choice, competition**
- **Technical benefits** (grid benefits and economies of scale)

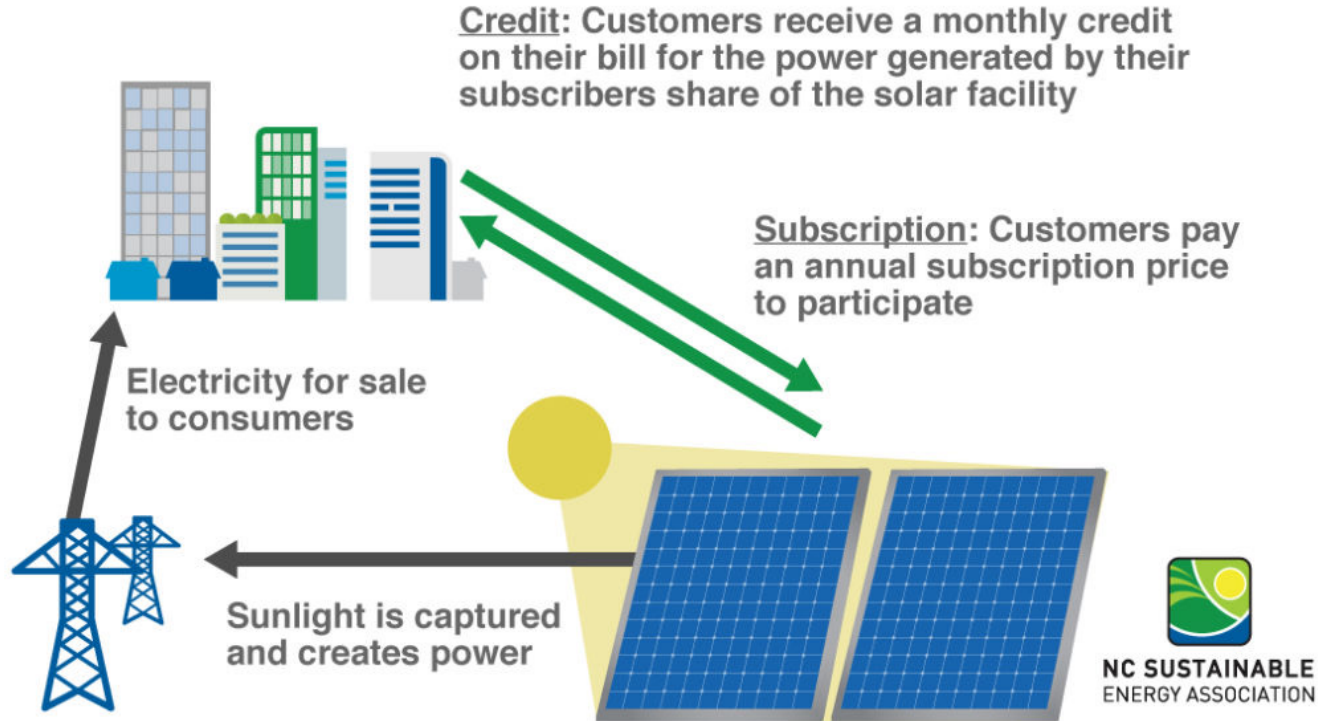
Why community solar?

- Energy transition will require huge amounts of capital deployment
- Efficient and equitable policy must consider the institutional structure of energy systems: rights to decide, market power, political power, regulations, multiple objectives
- Community solar provides an opportunity to deploy distributed energy resources while creating an opportunity to “lean into” how we think about cost and benefit allocation to re-distribute power and wealth intentionally (higher individual benefits vs. more beneficiaries)



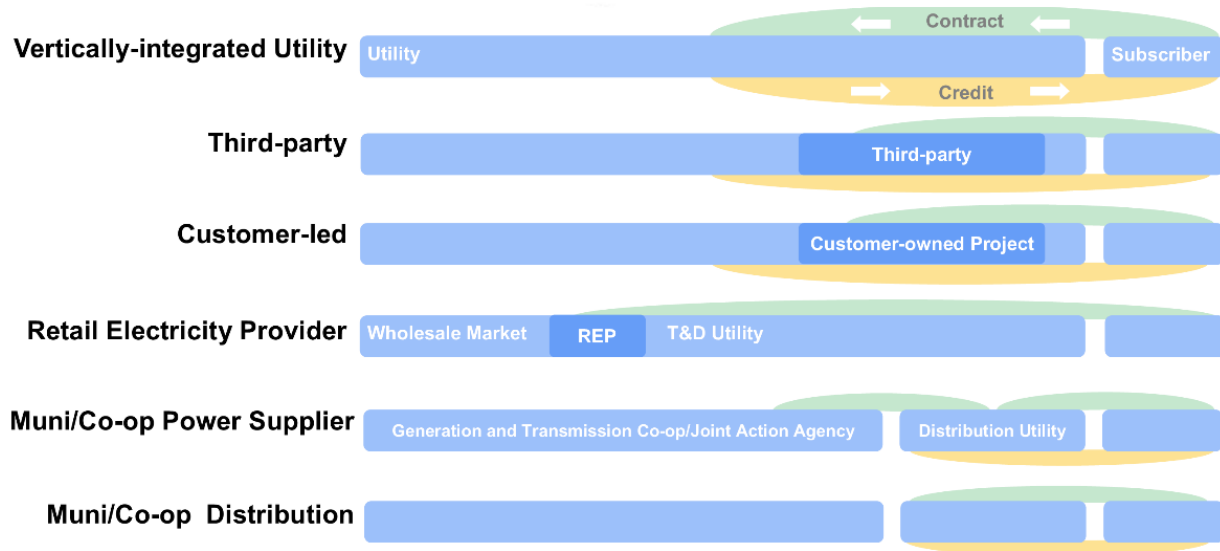
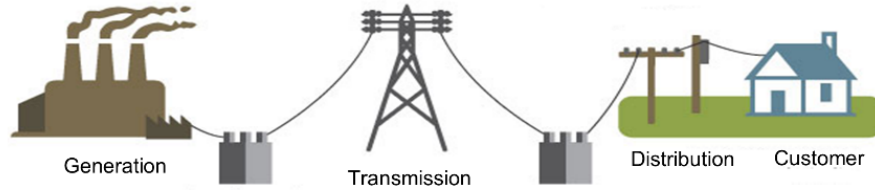
What Is Community Solar?

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Source: [NC Sustainable Energy Association](#)

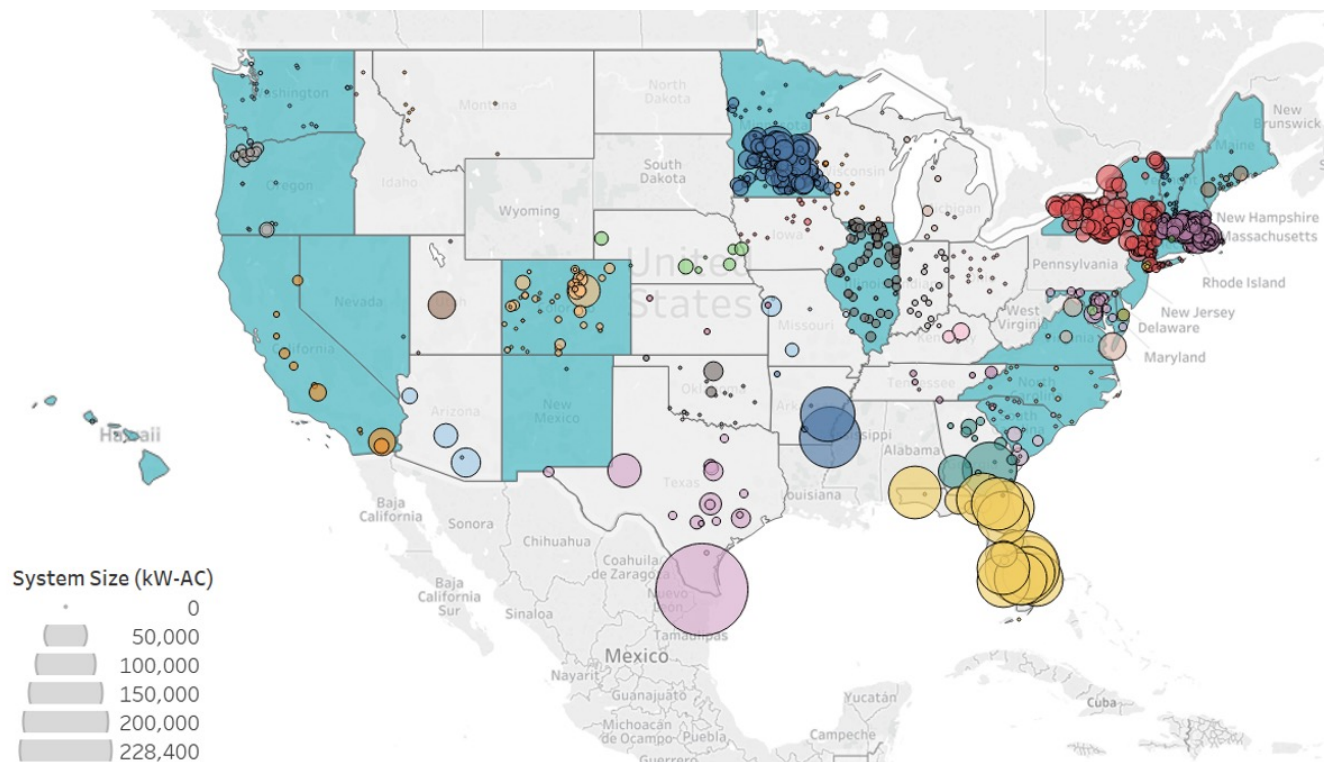
What is Community Solar?



Source: Generation, transmission, and distribution graphic adapted from National Energy Education Development Project (public domain)

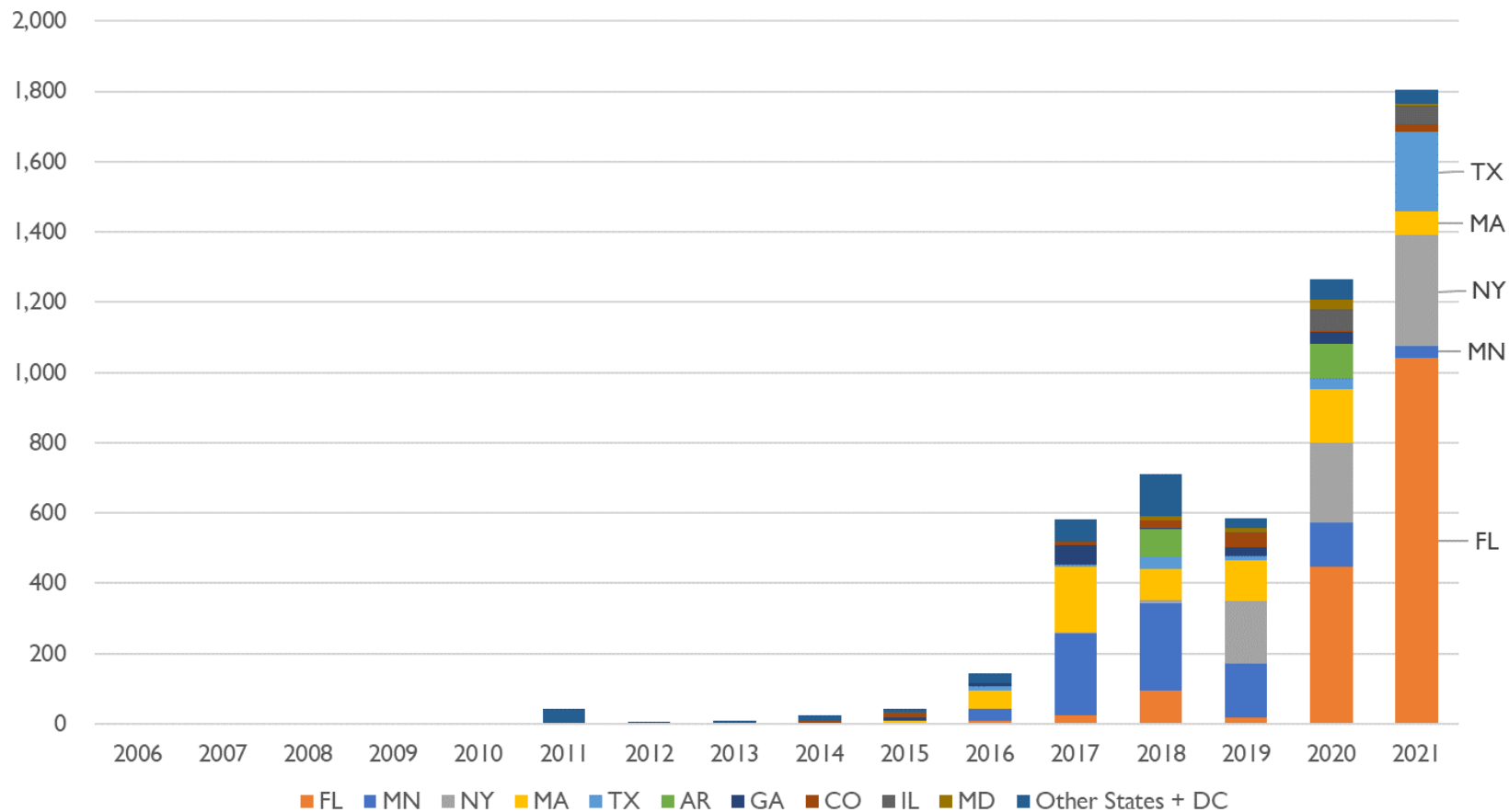
Community Solar Market Status (2021)

- 5.2 GW of community solar projects have been installed, as of Dec. 2021
- There are more than 2,000 projects across the United States
- 65 MW of community solar is serving low- and moderate-income subscribers
- 22 states and D.C. have enabling policies or mandates for community solar



Community Solar Market Status (2021)

Community Solar Installed Capacity by Year of Interconnection (MW-AC)



US DOE: National Community Solar Partnership

National Community Solar Partnership Target: Enable community solar systems to power the equivalent of 5 million households and create \$1 billion in energy savings by 2025



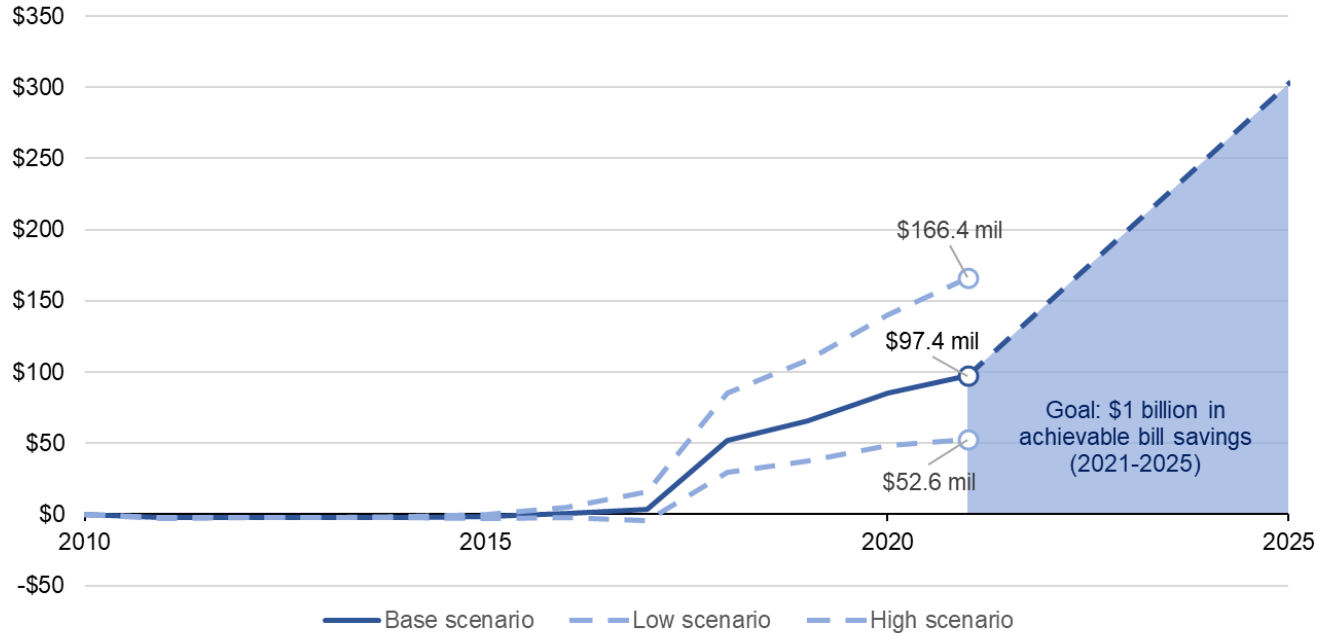
Represents an increase from **3 GW to 20 GW** of community solar capacity



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

Progress Toward the NCSP Goal

Estimated Annual Achievable Savings of Deployed Community Solar Capacity (\$mil per year)



Notes: Achievable bill savings is calculated by finding the net present value (NPV) of residential community solar subscription contracts based on the assumptions and methodology developed in NREL's *Sharing the Sun* project. NPV of subscriptions are averaged for each utility, and where insufficient data is available, the state average NPV is used. Average NPVs are then converted to an annuity equivalent over 20 years (the constant revenue that would produce the same NPV). Annuity equivalents are then multiplied by project capacity (available to all rate classes). The three scenarios shown (base, low, high) assume an annual retail rate escalation factor of 2.5% (base), 1.5% (low), 3.5% (high); real discount rate of 8.4% (base), 6.4% (low), 4.4% (high); and an annual solar PV degradation rate of 0.5% (base), 0.75% (low), 0.30% (high).

Equitable Community Solar

Defining Equitable Community Solar

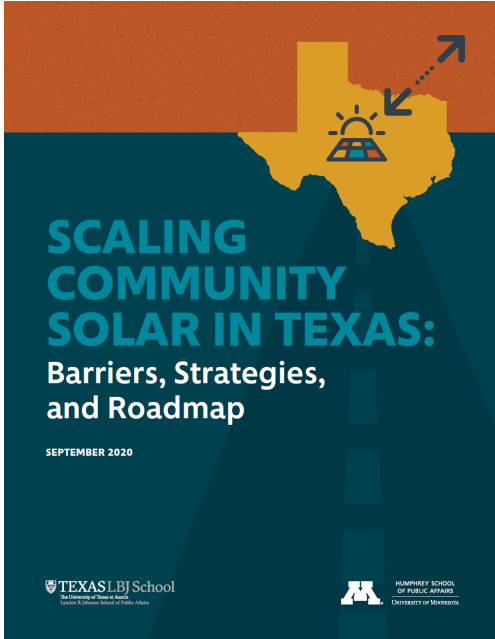
Community solar projects, programs, or policies that intentionally distribute both the benefits and burdens of the energy system more equitably, in recognition of current and historic marginalization created inside and outside the energy system, while adopting practices and procedures that engage and empower all impacted stakeholders in a non-discriminatory, empowering, and accessible fashion, including consideration of capital ownership and energy-sector employment, among other factors.

Low-Moderate Income Stipulations

- 10 states have implemented policy to increase access for LMI participation in community solar
- Example: Massachusetts requires at least 50% of a project's energy output to be allocated to LMI customers to qualify for the Low-Income Community Shared Solar Tariff
- Example: In 2019, the New Jersey Board of Public Utilities awarded nearly 78 MW to 45 projects based on their location, community engagement and local benefits – particularly for low- and moderate-income (LMI) communities. All 45 projects will dedicate at least 51% of their capacity to LMI households.

State	Installed (MW-AC)	Planned (MW-AC)
California	0	32.0
Colorado	9.5	26.9
Connecticut	0.8	1.8
Washington, D.C.	2.3	4.5
Illinois	0	8.0
Massachusetts	5.9	18.8
Maryland	6.3	4.0
New Jersey	0	35.3
New York	6.9	20.0
Oregon	0	16.1

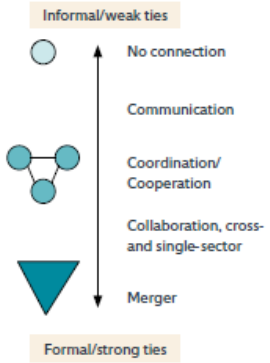
Role of Community Based Organizations



COLLABORATION

Collaboration occurs when different organizations make strong ties with each other. There are many kinds of “working together,” all in a continuum between informal and formal ties.

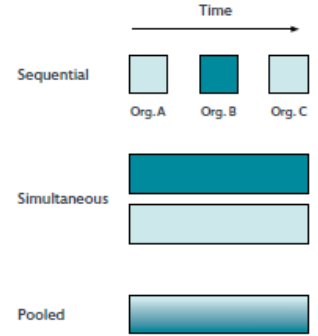
How does your CBO collaborate?



INNOVATION

Innovation occurs whenever an organization does something “new.” Some innovations are short and depend on a sequence of other functions, others are long-lasting and pool multiple roles simultaneously.

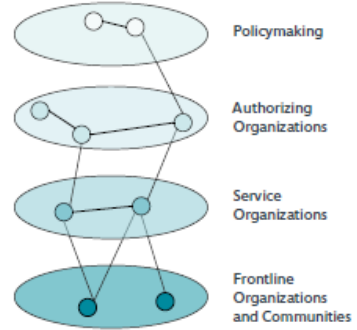
What new functions has your CBO played?



FIELDS OF ORGANIZATIONS

Organizations exist in different fields of understanding. They advocate for new rule changes, administer programs, implement services, and work up-close with communities. They collaborate within and across fields.⁴¹

What fields does your CBO work in?

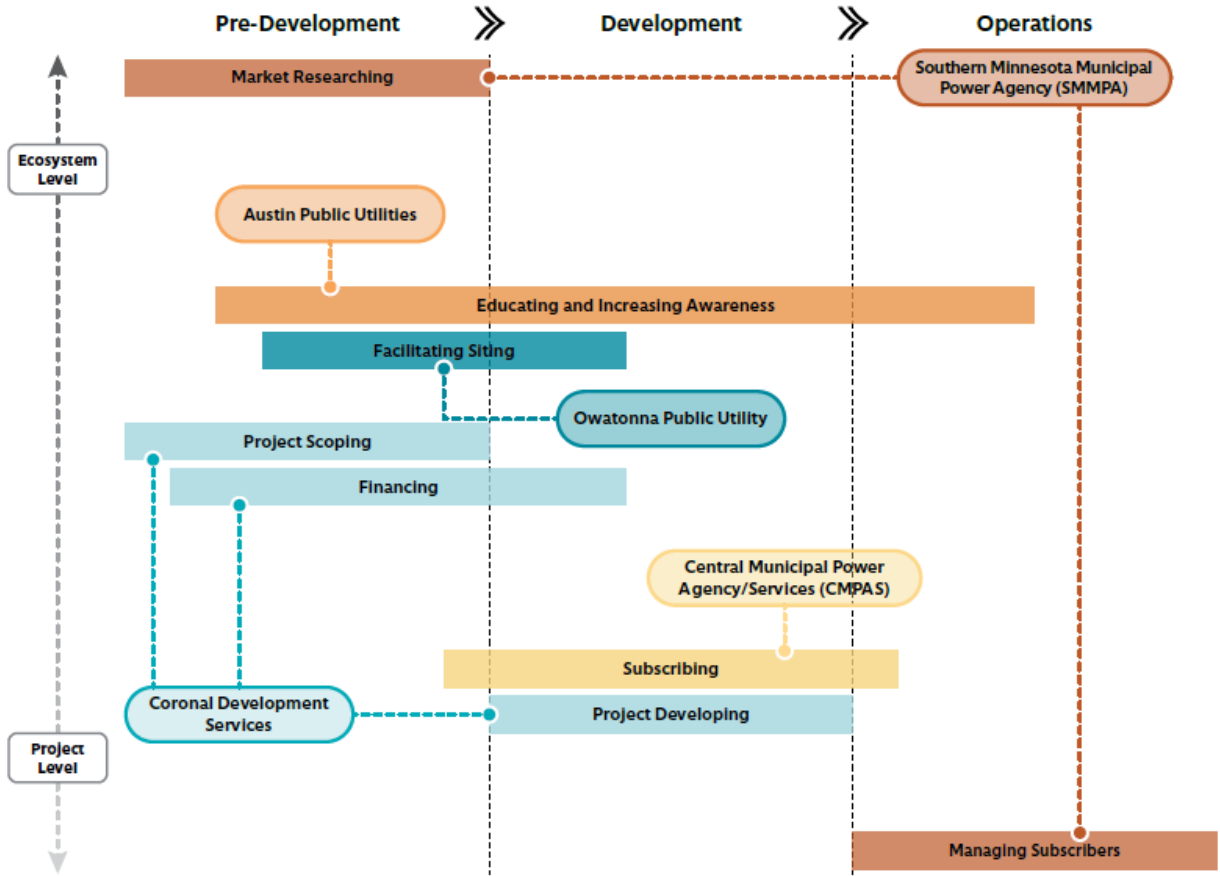


³⁹ Howlett, M. (2019). Moving policy implementation theory forward: A multiple streams/critical juncture approach. *Public Policy and Administration*, 34(4), 405-430.

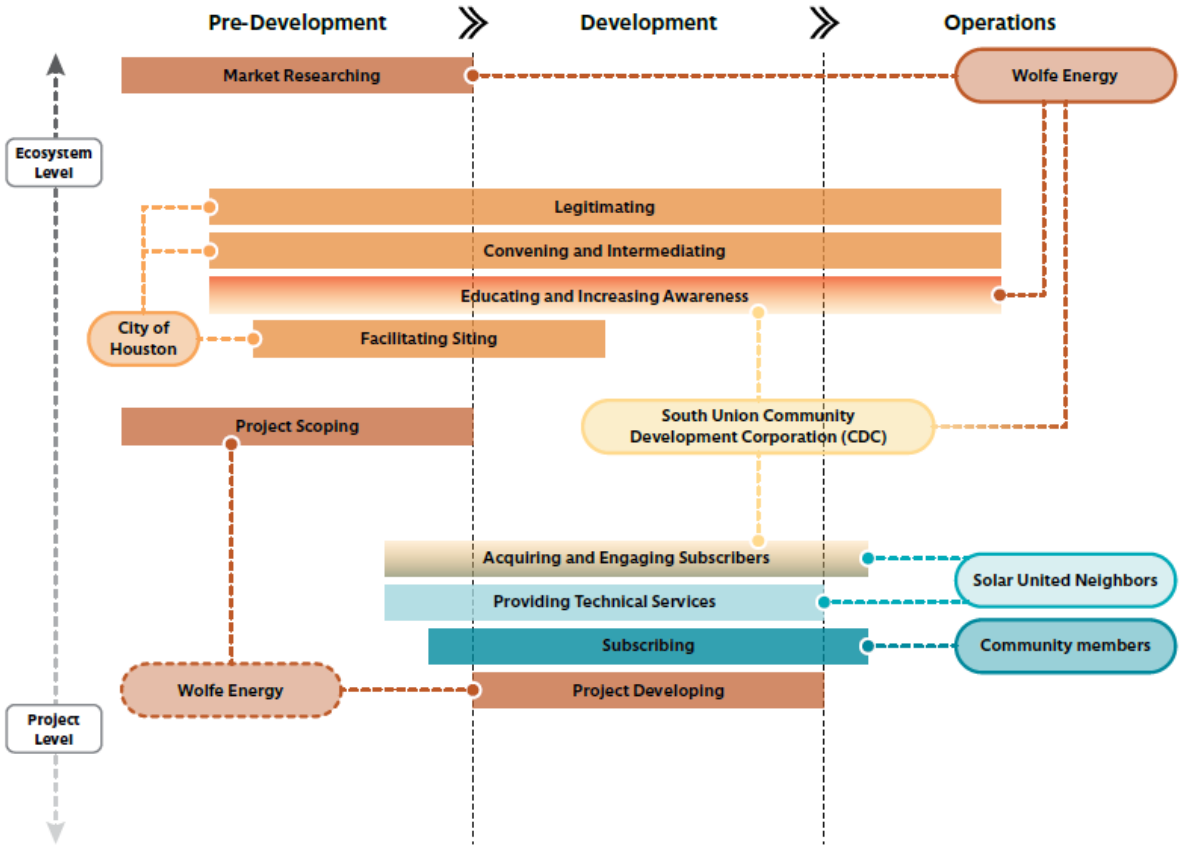
⁴⁰ Cairney, P. (2018). Three habits of successful policy entrepreneurs. *Policy & Politics*, 46(2), 199-215.

⁴¹ Adapted from Sandfort, J., & Moulton, S. (2014). *Effective implementation in practice: Integrating public policy and management*. John Wiley & Sons.

Grounding Community Solar in Communities: MMUA



Grounding Community Solar in Communities: South Union



How Can Community Solar Support Energy Transition in Transportation?

Electrification of Transportation

- Electrification of transportation (and other end uses) will increase electricity demand and require careful planning to avoid significant additional grid expenditures and higher GHG emissions
- Offsite renewables (like community solar) can help reduce the environmental footprint of electrified transportation
- Companies and other organizations are starting to explore how onsite and offsite renewables strategies can be linked to electrification strategies



Solar + EVs: Two Peas in a Pod

Tuesday, Oct 27 2020

By Sara Birmingham



UMN-MNDOT-Red Lake Solar VPPA Project

- **Innovation & Future Needs**

- Opportunity for MnDOT and Red Lake Nation to co-create an innovative solar project model and build a stronger government-to-government relationship

- **Climate Change & Environment**

- MnDOT and the Red Lake Nation have goals to protect the environment for future generations
- Executive Order 19-27 directs MnDOT to reduce greenhouse gas emissions from agency operations by 30% from 2005 levels by 2025
- MnDOT has a goal to use or subscribe to renewable energy that is equivalent to 25% of the agency's total annual energy use
- MnDOT must explore innovative solar opportunities in Greater Minnesota to achieve the agency's greenhouse gas reduction and renewable energy goals

- **Advancing Equity**

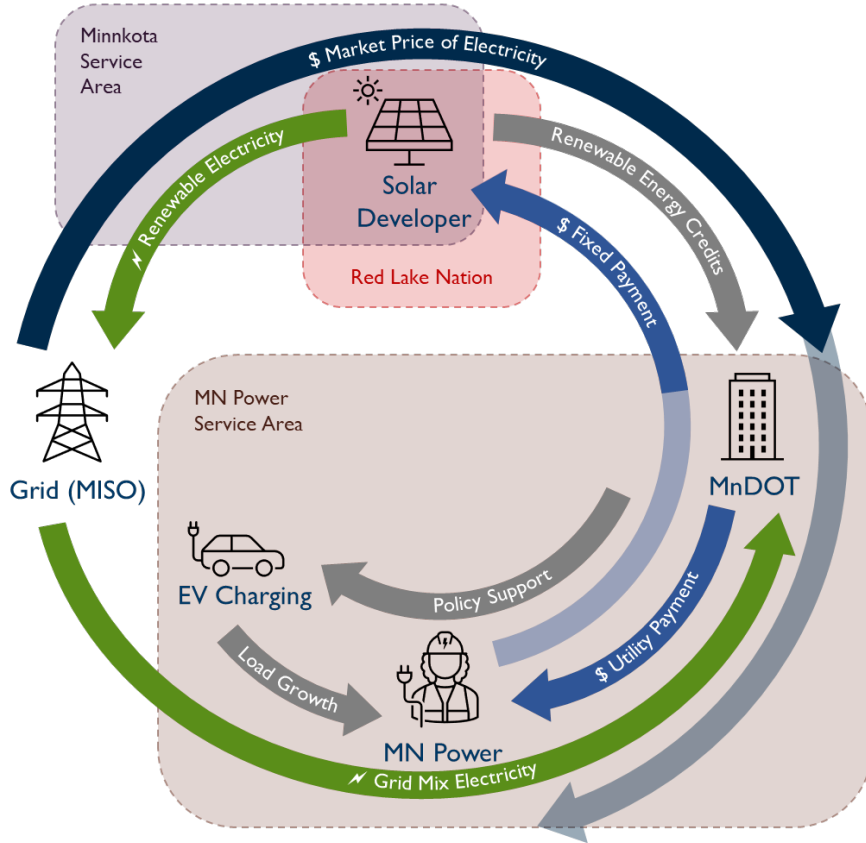
- A solar partnership would advance equity by reducing carbon pollution from MnDOT facilities. The proposed renewable energy project would improve air quality and support public health in Greater Minnesota.

UMN-MNDOT-Red Lake Solar VPPA Project

- Research goal: Assess feasibility of establishing a partnership between MnDOT and the Red Lake Nation to develop a new solar energy project model to meet state and tribal energy needs and greenhouse gas reduction goals
- The proposed solar feasibility study will assess potential project locations and generate economic and performance estimates. MnDOT and the Red Lake Nation could use the research findings to develop a cost-effective VPPA for MnDOT to purchase renewable energy from the tribe.



UMN-MNDOT-Red Lake Solar VPPA Project



Thank You

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