Ownership Models and Selection Considerations

Energizing Rural Communities: Training #1

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AMERICAN MADE
U.S. DEPARTMENT OF ENERGY

OCED
Office of Clean Energy Demonstrations

Agenda

1. How to Choose an Ownership Model
2. Overview of Ownership Models
3. Ownership Models and Economic Benefits
4. Overview of Key Regulatory Considerations
5. Policy Contexts
6. Other State and Local Policy Considerations
7. Implications for Projects
8. Q & A

Overview of Ownership Models

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How to Choose an Ownership Model

Elements to Consider

- Community characteristics
- Budget and financial capacity
- Technical expertise
- Risk tolerance
- Timeline and scale
- Flexibility and control
- Funding availability
- Legal and regulatory landscape

Renewable Energy Ownership Models

Community Shared

- Community Trusts
- Cooperatives
- HOAs
- Non-Profits
- **Partnerships**

Direct

- Publicly Owned
- On-Site BTM:
  - Customer-Owned
- Cooperatives
- Tribal Utility Authorities
- **Utility-Owned**

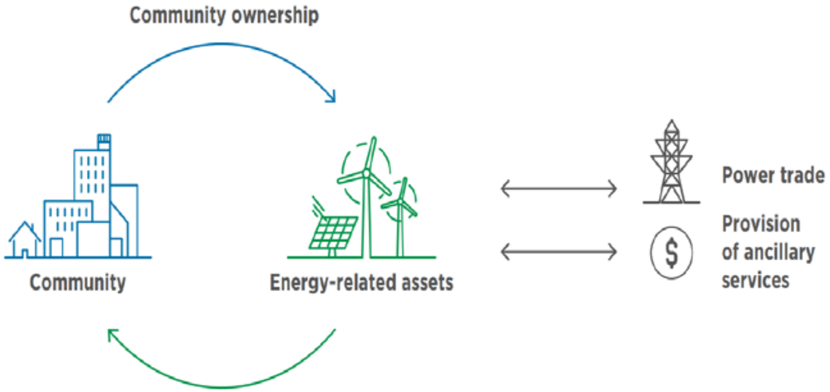
Third-Party

- Flip Structure
- Hybrid:
  - Community-Private
  - Community-Third Party
  - Municipal-Leaseback
  - Municipal-Community
- Leases
- Public Private Partnership
- **Power Purchase Agreements**

Community Shared Ownership Overview

Key Elements

- A distributed renewable energy system
- Collective ownership and management
- Suited towards customers who:
  - Are unable to support a renewable energy system
  - Do not own their homes or buildings
  - Have a limited budget for capital investments
- Cost-sharing
- Local decision-making authority
- Spans the energy value chain



Source: IRENA Community-Ownership Models Innovation Landscape Brief

Community Shared Ownership Benefits and Challenges

Benefits

- Local job creation
- Clean, resilient power supply
- Local distribution of profits
- Community empowerment
- Increased flexibility and resilience of the main grid
- Increased deployment of renewables
- Rate stability

Challenges

- Capital mobilization
- Project development and management processes
- Operations and maintenance
- Long-term commitment
- Implementation

Community Shared Partnership Example

University Park Community Solar LLC, Maryland

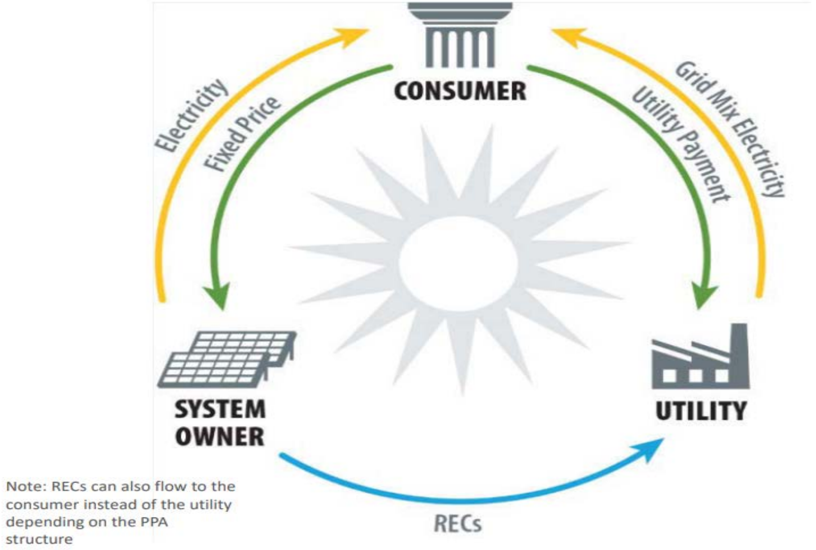
- 22 kW rooftop solar PV system
- Member-managed LLC
- Project finance:
  - Member investments
  - ITC tax credits
  - State grant
- Revenue distribution to members:
  - Electricity sold
  - REC auction
  - Tax incentives

Source: Photo from David Brosch, University Park Community Solar, LLC

Third-Party Ownership Overview

Key Elements

- A solar purchaser (off-taker) buys power from a project developer at a negotiated rate
- Project developer procures, builds, operates, and maintains the system
- Suited towards:
  - Customers located in competitive markets
  - Commercial, industrial, institutional, and government organizations
  - Customers without O&M capacity
  - Zero upfront capital projects



Source: https://www.nrel.gov/docs/fy18osti/71333.pdf

Third-Party Ownership Benefits and Challenges

Benefits

- No/low upfront capital outlay
- Economies of scale
- Tax-exempt entity benefits
- Predetermined electricity price
- No operating or maintenance responsibilities
- Potential path to ownership

Challenges

- Not available in all states
- PPA negotiation
- Potentially complex regulations
- Limited control
- May not have a purchase option
- PPA pricing could be sub-optimal
- Long-term contract

Third-Party PPA Example

Colorado Mountain College Solar + Storage Complex

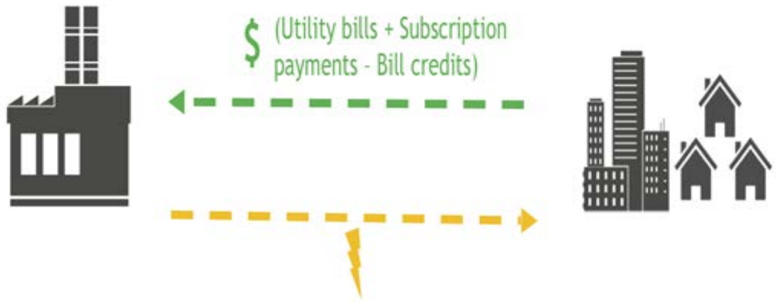
- Utility-scale solar + storage
- Under a PPA with Holy Cross Energy, Ameresco installed the system on land owned by Colorado Mountain College
- Customer benefits:
    - CMC receives RECs and land lease revenue
    - Energy cost savings
    - Battery storage

Source: https://www.ameresco.com/portfolio-item/holy-cross-energy-colorado-mountain-college/

Direct Utility-Owned Overview

Key Elements

- Responsible for energy infrastructure and delivery of electricity
- For-profit corporations owned by shareholders
- Monopolistic utilities
- Highly regulated at the state-level
- In most regions of the US, IOUs interconnect and trade
- Regulatory and market reform



Source: https://cityrenewables.org/community-solar/understand-ownership-models/utility-ownership/

Direct Utility-Owned Benefits and Challenges

Benefits

- Relevant experience
- Strong technical expertise, maintenance capacity, and financial management
- Availability of capital
- Ability to manage complex regulations
- Interconnection capabilities
- Potential for renewable energy project subsidies through tariffs

Challenges

- Monopolistic
- Balancing interests
- Can be an inefficient business model
- Projects are politically vulnerable
- Lack incentive to electrify rural or disadvantaged communities
- Lack of local ownership/engagement
- Cost of meeting regulations

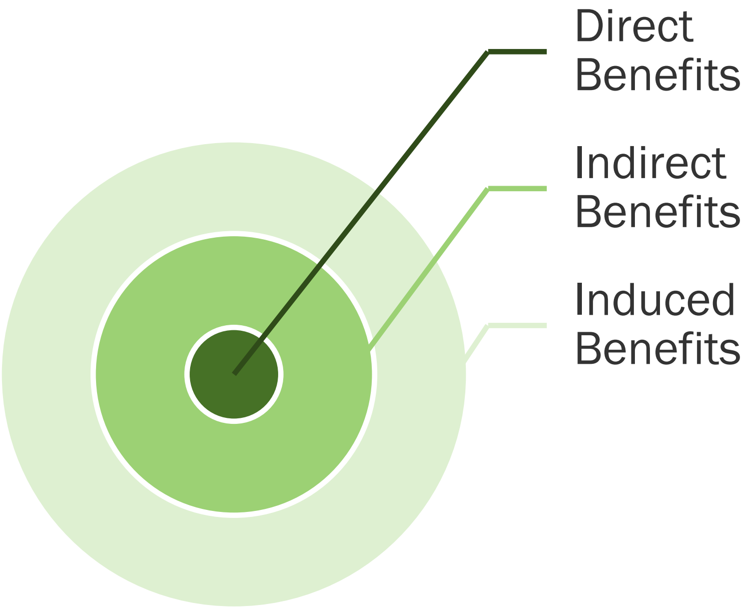
Utility-Owned Example

<u>Beck Hill Rural Microgrid Project, Montana</u>

- Grid-connected project using solar PV + storage
- Land Area: ¼ acre private land
- Total solar capacity: 40.26 kW
- Storage capacity: 183.4 kWh
  - Can provide 80 kW to customer for two hours
  - Batteries push stored energy to grid

Source: https://odppower.com/portfolio-38

Ownership Models and Economic Benefits



Overview of Key Regulatory Considerations

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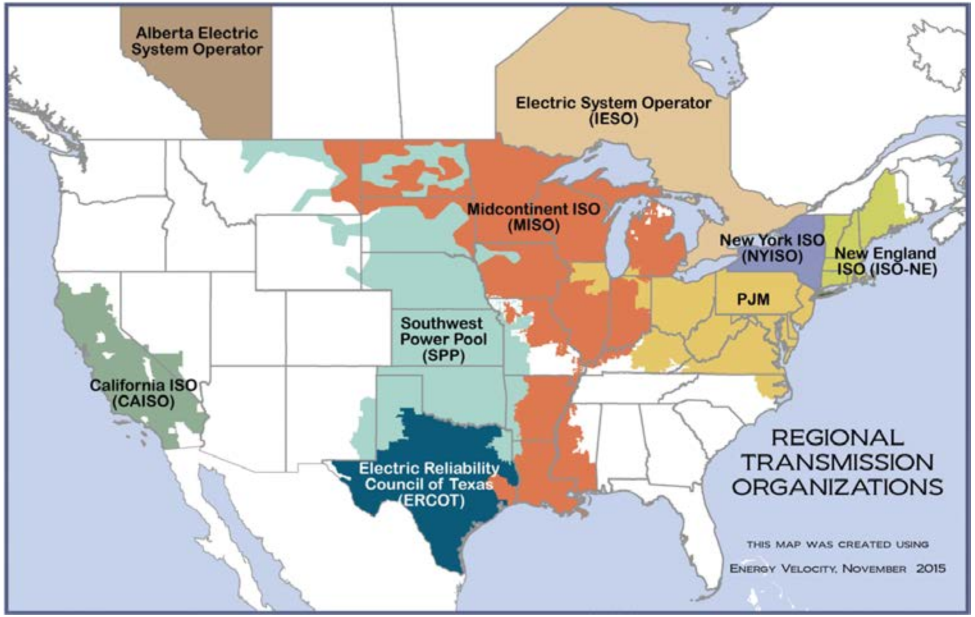
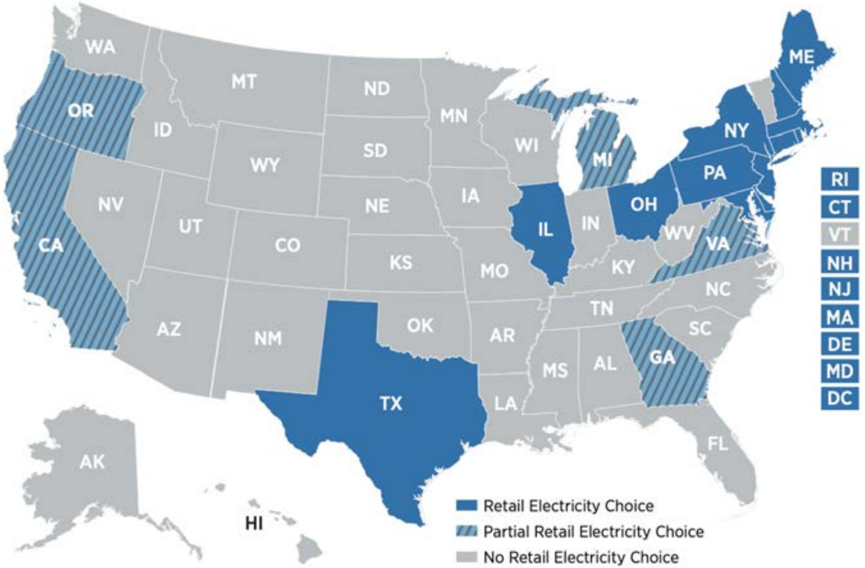
Wholesale Market Opportunities



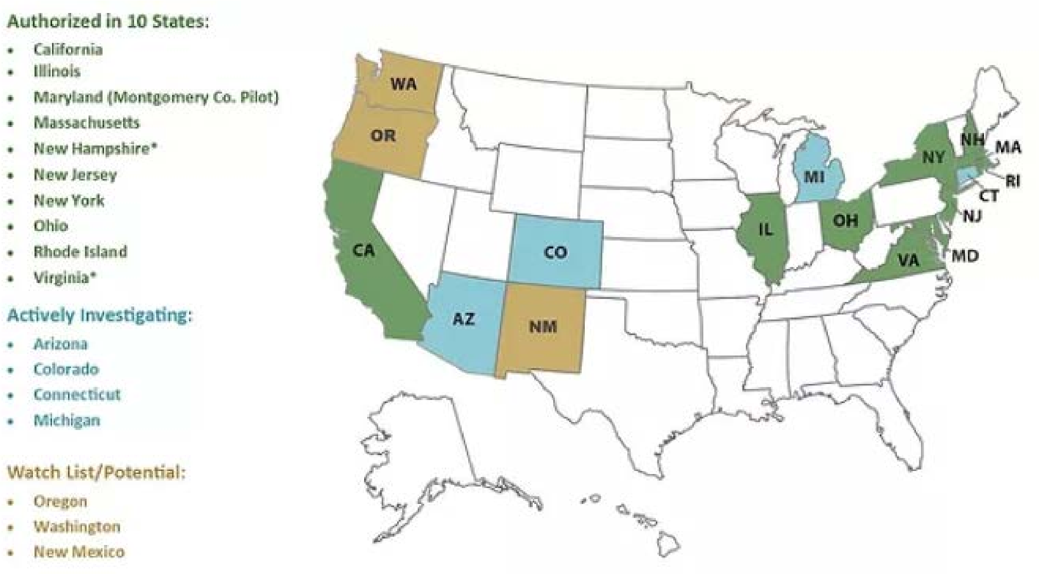
Source: https://www.ferc.gov/sites/default/files/2020-05/elec-ovr-rto-map.pdf

Retail Electricity Choice / Competition



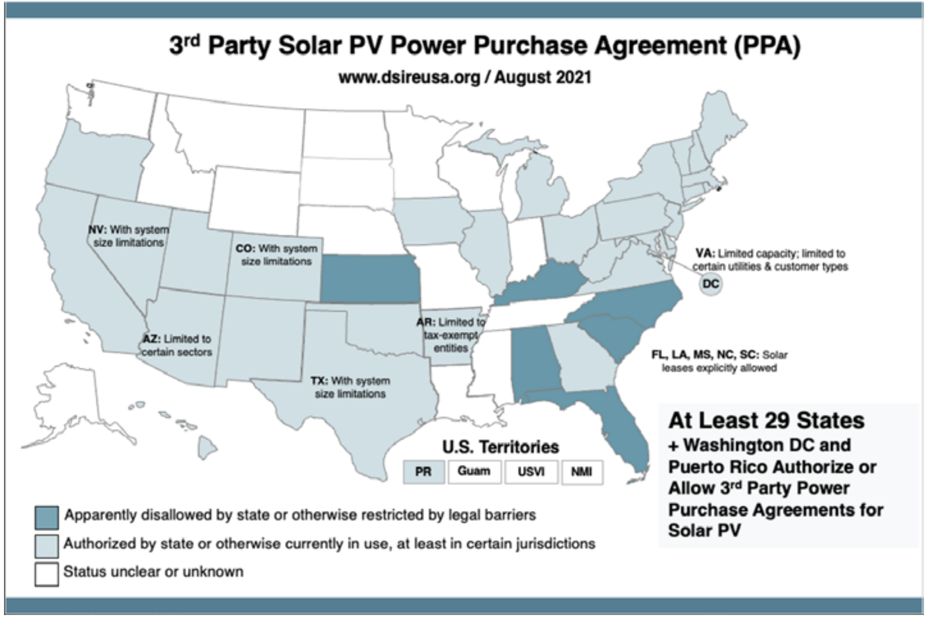
Source: https://www.nrel.gov/docs/fy18osti/68993.pdf

Community Choice Aggregation



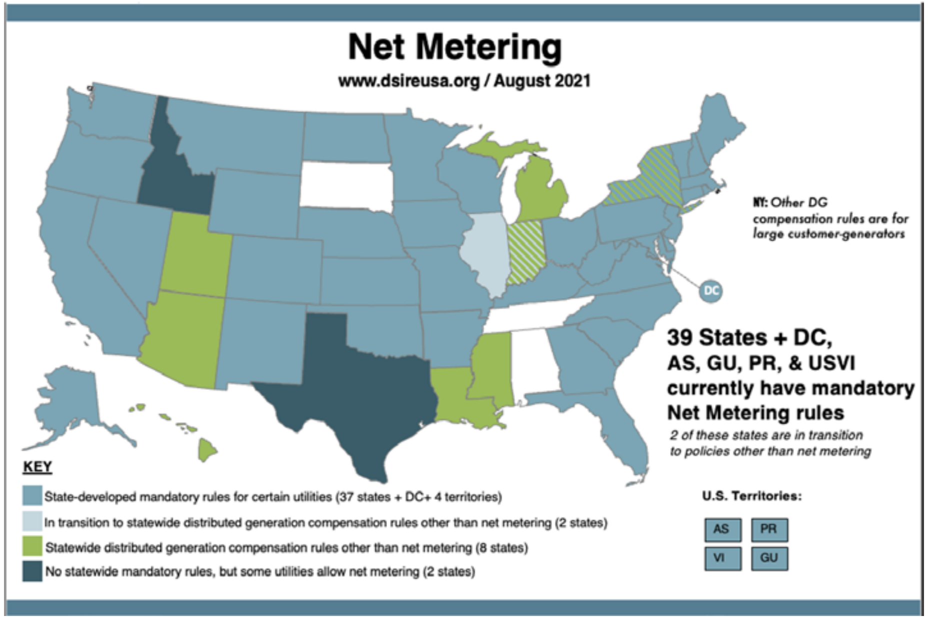
Source: EPA, "Community Choice Aggregation," https://www.epa.gov/green-power-markets/community-choice-aggregation

Third Party Sales / Leasing



Source: DSIRE, "Third-Party Solar Power Purchase Agreement Policies." http://www.dsireusa.org/resources/detailed-summary-maps/

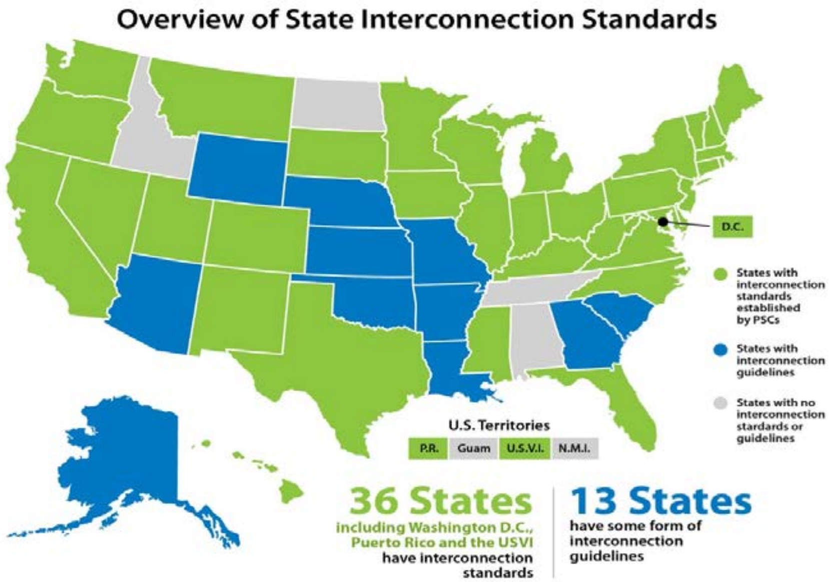
Net Metering / DER Compensation



Source: DSIRE, "Net Metering Policies." http://www.dsireusa.org/resources/detailed-summary-maps/

Other State / Local Policy Implications

- State interconnection standards for DERs
- Local zoning laws
- Which utility or project types do each of these policies apply to?



Source: https://www.nrel.gov/docs/fy22osti/75290.pdf

Ownership Implications for Your Project

Regulatory and policy framework can impact your decision on the ownership model, as it impacts:

- The relative economic benefits of a project
- Where a project can be built
- Project cost and cost-effectiveness of different approaches
- Project scale
- Technology selection

- Thank you / Q&A

Email: ruralenergyprize@nrel.gov

American Made: americanmadechallenges.org/challenges/rural-energy

HeroX Forum: www.herox.com/rural-energy

NREL/PR-7A40-88143

Resources

- Database of State Incentives for Renewables and Efficiency: https://www.dsireusa.org
- Institute for Local Self-Reliance Community Power Map: https://ilsr.org/community-power-map/
- NREL Renewable Energy System Interconnection Standards: https://www.nrel.gov/state-local-tribal/basics-interconnection-standards.html
- National Community Solar Partnership: https://www.energy.gov/communitysolar/about-national-community-solar-partnership
- NREL Energy Compensation Mechanisms for Distributed Generation: https://www.nrel.gov/state-local-tribal/energy-compensation-mechanisms.html
- EPA Customer Power Purchase Agreements (Primer): https://www.epa.gov/statelocalenergy/customer-power-purchase-agreements