Community Solar in the Lone Star State

Katherine Searcy, P.E.
Cation Consultants, PLLC
Electric customers voluntarily purchase or subscribe to part of a solar array

In return, customers receive credits on their electric bill

What is Community Solar?
What is Community Solar?

- **Residential**: 5 to 10 kW
- **Commercial**: 10 to 100+ kW
- **Community Scale**: 1 to 5+ MW
- **Utility Scale**: 50 to 500+ MW

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Community Solar is Local

Utility Scale
50 to 500+ MW

Transmission

Local Substation

Distribution

Residential
5 to 10 kW

Commercial
10 to 100+ kW

Community Scale
1 to 5+ MW

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Whom Does Community Solar Serve?

RESIDENTIAL:
Renters
Owners with shaded roofs
Low / moderate income (LMI) customers

Less than 25% of US households can access rooftop solar.
Whom Does Community Solar Serve?

COMMERCIAL:
Small and mid-sized businesses
- Too small for Virtual Power Purchase Agreements (VPPAs)
- Insufficient roof space

Less than half (48%) of businesses can access roof space to supply just 20% of their electricity.

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National Market

26 states and counting

~400 megawatts in 2017

>2,000 megawatts cumulative by 2020
National Market: History and Forecasts

Annual Installations, MW

Source: Greentech Media.

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Solar tariff case may slow CS installations by ~8.5% ($0.10/W tariff)
CUSTOMER:

Economies of scale
Minimal upfront costs *(subscription only)*
No maintenance
Stable costs

Cons

CUSTOMER:
Price Premiums *(early programs)*
Pros

- Open to ALL customers
- Avoids transmission costs
- Utility retains control

Cons

- Requires “virtual net metering”
- Complex financial / tax issues
- Immature market
- No single “best-practice” business model

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Business Models

Roles:

- Construction
- Ownership
- Maintenance
- Billing and customer management

Private investors and 501c nonprofits led early efforts
Now, utilities and developers typically lead
Business Models

Key factors that determine business model and ownership structure:

**STATE LEGISLATION:**
- Virtual Net Metering
- Mandates and Production Incentives
- Multiple-owner Limits

**UTILITY TYPE:**
- IOU
- Co-op
- Muni

Nonprofit (requires for-profit partner for tax credits)

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Program Design

OWNERSHIP:
- Pay Upfront
- Loan
- Lease-to-Own
- Contract length
- Max purchase

SUBSCRIPTION:
- Rate
- Blocks (kWh)
- “Price lock” period
- Contract length
- Min / max subscription
- Enrollment / cancellation fees

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Texas Electric Utility Landscape

We’ve got it all:

– Four grids, dominated by ERCOT
– Nonprofit cooperatives (co-ops) – regulated and deregulated
– Nonprofit municipally owned utilities (Munis)
– Investor-owned utilities (IOUs) – regulated and deregulated, generation / transmission & distribution / retail
Texas Electric Utility Landscape

Put simply, it’s complicated.

➔ No statewide legislation
➔ No single business model or program design works everywhere
➔ Utilities and developers must lead the way

THEY ARE.

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Community Solar Programs in Texas

Online by Q1 2018
~47 MW

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Community Solar Sizes

0.9 to 15 MW Portfolios

= 1 MW

Ownership

Rate
Blocks
Lease

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Does Community Solar Cost More?

Purchase programs offer long-term payout. Subscription programs charge premium up to ~3 cents/kWh. Pedernales does not charge a premium for community solar under current rate structure.
Cost Reduction Strategies

Non-hardware “soft costs” comprise majority of project costs
Utilities and developers can collaborate to reduce soft costs

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Savings (c/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregation (i.e., grouping small projects)</td>
<td>1 to 1.5 c/kWh</td>
</tr>
<tr>
<td>Utility-Supported Development (e.g., securing land)</td>
<td>0.3 to 0.5 c/kWh</td>
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</tbody>
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# Projects in the Pipeline

<table>
<thead>
<tr>
<th>Organization</th>
<th>Size (MW)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailhead / Neighborworks Pilot</td>
<td>0.2</td>
<td>LMI earmark</td>
</tr>
<tr>
<td>Kerrville PUB</td>
<td>1</td>
<td>LMI earmark</td>
</tr>
<tr>
<td>Tri-Eagle</td>
<td>2 x TBD</td>
<td></td>
</tr>
<tr>
<td>RMI Aggregate Group 1:</td>
<td>9 to 13</td>
<td>Requests pricing for 20 and 40 MW</td>
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<tr>
<td>CoServ</td>
<td></td>
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<tr>
<td>Bluebonnet</td>
<td></td>
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<tr>
<td>UNT</td>
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</tbody>
</table>

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Reaching LMI Customers

**AFFORDABILITY:**
- Eliminate premiums
- Earmark programs
- Balance with commercial customers

**VERIFICATION:**
- Use existing programs
- Adopt alternative metrics
Trends

Aggregation
Expanding access to LMI and commercial customers
Looking up to rooftops in urban areas
Outlook

Despite complexity, community solar is growing rapidly.
Subscription programs are popular, cost-competitive, and egalitarian.

Community solar expands access to affordable solar energy for ALL customers.

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References

- Slide 8:
  - Greentech Media webcast on November 2, 2017: “U.S. Solar Outlook under Section 201: What Happens Next?”
Photo Credits

- Slide 1: Taos Community Solar Garden (photo by Michael DeYoung)
- Slide 3 (L to R):
  - Residential rooftop solar (birgstockphoto.com);
  - TriEagle Walnut Springs community solar plant (suneaglesolar.com);
  - Solaire Holman Plant in Alpine, Texas, photo courtesy of Gilber Perez via LinkedIn
- Slide 4 (clockwise): Same as Slide 3
- Slide 5 (L to R):
  - Lamar Union in Austin (https://www.lamarunion.com/)
  - Photo by Pam Penick
  - Stock photo
- Slide 6: Corazon in Austin (http://www.corazonatxapartments.com/)
- Slide 7: (L to R):
  - Groundbreaking at first El Paso Electric CS program (photo courtesy of El Paso Electric)
  - CoServ Krugerville Solar Station (photo courtesy of CoServ)
- Slide 23: 1.5 MW Commercial rooftop system in the Bronx (photo by Don Emmert /AFP/Getty Images)
- Slide 24: Photo courtesy of SoCore (http://www.socoreenergy.com/happens-sun-goes/)