Sharpening Your 2020 Vision for Community-Based Clean Energy

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Guest Speakers

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3. Sean Gallagher, Vice President for State Affairs, Solar Energy Industries Association
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Emerging Community Solar Market
Innovations in Program Design
What’s Driving Community Solar?

**Customer Benefits**
- Access to solar
- Hedge costs
- Catalyzes green energy
- Transferable
- Economies of scale
- Low O&M concerns
- Stand-alone pricing

**Utility Benefits**
- Engage customers
- Support local industry
- Understand your solar resource
- T&D deferral

**Developer Benefits**
- Secure multiple off-takers
- Diversify portfolio
- Customer acquisition
- Development in new markets

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Community Solar Market To Date

Still Emerging but Growth is Expected

• In 2017 Community Solar was ~4% of installed solar capacity
  • Total installed capacity 734 MW
• Strong growth forecasted
  • Declining solar costs
  • Customer demand
  • New enabling policies

Source: SEPA Community Solar Database and NREL (Q3/Q4 2017 Solar Industry Update)
U.S. Community Solar Map

- 228 Utilities in 36 states
  - 160 cooperative utility programs
  - 31 investor-owned utility programs
  - 37 public power utility programs
- Enabling policies in 17 states

Source: SEPA Survey Data

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Developer v. Utility Implementation

- 14 states with developer led programs
  - 90% of capacity is located in CO, MN and MA
  - 95% of developer led programs are in states with Enabling Policy
- 33 states with utility led programs
  - 54% of utility led programs are in states without Enabling Policy

Details:
- 90% of capacity is located in CO, MN and MA
- 95% of developer led programs are in states with Enabling Policy
- 54% of utility led programs are in states without Enabling Policy

Source: SEPA Database thru 12/31/2017

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## Community Solar Decision Tree

### Program Administration
- **Utility Role**
- **Asset Owner**

### Economics
- **Subscriber Payment Structure**
- **Subscriber Initiation Fee**
- **Subscriber Credit**
- **Generation Guarantee**

### Target Participation
- **Target Customer Classes**
- **Siting & Scale Impacts**
- **Subscription Limit**
- **Participation Limit: Non-Residential**

### Terms and Conditions
- **Minimum Term**
- **Program Length**
- **Unsubscribed Energy**
- **Subscription Transferability**
- **Additional Grid Benefits**
- **REC Treatment**

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Community Solar Resources

• SEPA Research and Reports available online at www.sepapower.org
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Where is Community Solar Going?

Community Solar Vision Study: Looking from 2020 to 2030

U.S. Community Solar Market Potential by 2030

Total Community Solar Capacity Operating: 57 GW to 84 GW

Annual Electricity Generated: 72 TWh to 107 TWh

• Share of National Electricity Consumption: 1.6%-2.6%

Subscribers Served: 6.4 million to 8.8 million

• Low- and Moderate-Income Households Supported: 3.5 million to 4.0 million

Cumulative Capital Invested*: $81 billion to $121 billion

*Cumulative capital invested represents total initial costs to build community solar plants, including all installation materials, labor, upfront supply chain, development and financing costs. Does not include ongoing operating costs.
Community Solar Evolution 2020 to 2030

**PHASE I: Market Emergence**

The business model for community solar is being proven out and tailored to fit local regulations and risk-averse investor sentiment.

Costs have a strong premium for interconnection upgrades, subscription acquisition and subscription management.

LMI adoption is limited to programs that pair carve-out requirements with sufficient incentive funding.

**PHASE II: Market Transition**

Community solar begins to flourish as policymakers and regulators see its economic and societal values. Programs are uncapped and solar is compensated based on negotiated or studied value.

Community solar costs fall rapidly through programmatic, policy and industry innovations, as well as specific improvements to subscription acquisition and management.

LMI adoption improves as regulators implement incentives and other support programs to exceed carve-out requirements.

**PHASE III: Market Maturity**

Community solar is an attractive default option as customers and policymakers recognize the broad grid, environmental and even socioeconomic values of solar.

Community solar costs have leveled but deliver cost-competitive energy with an accounting of environmental, societal and grid benefits.

Strong LMI support programs and improved subscriber retention models result in LMI customers being viewed similarly to medium- and high-income subscribers.
Community Solar Evolution 2020 to 2030

Compensation

Value of Community Solar Compensation Mechanism for Each Market Phase

PHASE I

Limited Scenario

Limited Value of Solar

Retail Rate

PHASE II

Moderate Scenario

Moderate Value of Solar

PHASE III

Moderate Value of Solar
Community Solar Evolution: 2020 to 2030

Low and Moderate Income

Current State of Program Design

Today’s LMI program designs primarily include carve-outs and incentives that at best result in community solar providers meeting, not exceeding, LMI subscription requirements.

Current State of Subscriber Acquisition

Community solar providers often lack internal capabilities and resources to scale up LMI-oriented sales channels, while offering standard subscriptions with rigid contract terms that may not align with LMI customer preferences and savings expectations.

Current State of Project Finance

Most LMI subscribers lack sufficient capital and/or adequate credit scores for community solar providers to raise capital at the same cost of financing as projects backed by residential subscribers with high credit scores and investment-grade C&I subscribers.

Program Design Evolutions

Programs offer sufficient financial support and other resources for community solar providers to exceed program-level LMI carve-outs:

Community solar programs pair carve-outs with sufficient incentive funding that varies by customer type within the LMI segment, integrate with other energy assistance programs, support creative solutions that address LMI customer default risk for community solar providers, and include strong consumer protections for more financially vulnerable LMI subscribers.

Subscriber Acquisition Evolutions

Community solar providers design subscription offerings and invest in sales channels that are specific to LMI customers’ preferences and needs:

Community solar providers tailor subscription offerings to be flexible, short term and eclipse 20% year 1 savings, while leveraging community partnerships to develop scalable LMI-oriented sales channels that lower the costs of subscriber acquisition and retention.

Project Finance Evolutions

Low-cost sources of private bank and institutional investor capital are willing to finance portfolios of projects with 20% to even up to 100% LMI subscribers:

Financing strategies, such as on-bill financing, alternative credit scoring or credit enhancement, loan loss reserves and green banks, enable community solar providers to access financing while proving out business models that erase perceived risk of higher customer default across LMI subscribers.
Appendix: Resources
Resources: Community Solar Policy Decision Matrix

- **Community Solar Policy Decision Matrix**, released November 2016 and updated in December 2017
- Offer policymakers, community leaders, utilities, and stakeholders a guide to navigate key decision points and offer recommendations on how to best develop successful community solar programs state-by-state
- How to use?
  - ✓ Step 1: Establish policy goals
  - ✓ Step 2: Use the Matrix to engage local stakeholders in process to develop programs that best achieve policy goals
  - ✓ Step 3: Past two years – working with a number of states to develop programs with Matrix, and updated the Matrix with input from policymakers, utilities, local stakeholders, etc.
CCSA Matrix components

• **Program Structure**
  ✓ Program size – limits vs. open ended depending on policy goals
  ✓ Project selection and approval – tariff/first come first serve preferred over RFP

• **Compensation**
  ✓ Compensation value – need for predictability, transparency, and consumer benefit
  ✓ Credit mechanism – monetary or volumetric assuming transparency or predictability
  ✓ Unsubscribed energy comp. – utility purchase at avoided cost, holding credits for unsubscribed energy
  ✓ REC treatment

• **Consumer Participation**
  ✓ Minimum subscriber threshold – more than one
  ✓ Subscription sizes – depends on credit methodology
  ✓ Customer class carve outs – yes, but dependent on policy goals and local considerations
  ✓ Standard consumer protections – Yes, including existing state law coverage and standardized consumer checklist

• **Project Characteristics**
  ✓ Project size – Up to 20 mW
  ✓ Collocation – Yes
  ✓ Licenses – Same for other solar projects

• **Low-to-Moderate Income (LMI) Considerations**
  ✓ Provide differential incentives to ensure participation and cost savings
  ✓ Enhanced financing
  ✓ Leverage existing programs
Resources: model legislation

An Act Relating to the Establishment of a Community Solar Program
For Restructured States

Whereas, solar energy is an abundant, domestic, renewable, and non-polluting energy resource.

Whereas, local solar energy generation can contribute to a more resilient grid, and defer the need for costly new transmission and distribution system build out.

Whereas, community solar can provide access to local, affordable, and clean energy options to all energy customers.

Whereas, community solar provides consumers including homeowners, renters, and businesses access to the benefits of local solar energy generation, unconstrained by the physical attributes of their home or business, like roof space, shading, or ownership status.

Whereas, community solar programs empower consumers with additional energy choices.

Whereas, community solar programs can also expand access to solar energy to low-income households.

Whereas, community solar can foster economic growth as well as opportunities for competition and innovative business models.

Whereas, the deployment of solar energy facilities including community solar can reduce the cost of energy for consumers, while lowering carbon emissions and reducing fossil fuel consumption in [State].

Whereas, it is the intent of [State] to expand the state’s energy innovation and provide its residents with access to community solar, therefore,”

Be it enacted by the [General Assembly of the State], that the Laws of [State] be amended to read:

Section 1. Definitions
The definitions in this section apply throughout this Act.

1. “Applicable Bill Credit Rate” means the dollar-per-kilowatt-hour rate as determined by the [Public Utilities Commission] used to calculate a Subscriber’s Bill Credit. The

An Act Relating to the Establishment of a Community Solar Program
For Vertically-Integrated States

Whereas, solar energy is an abundant, domestic, renewable, and non-polluting energy resource.

Whereas, local solar energy generation can contribute to a more resilient grid, and defer the need for costly new transmission and distribution system build out.

Whereas, community solar can provide access to local, affordable, and clean energy options to all energy customers.

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Minnesota community solar resources


Additional research/shorter articles on Minnesota CSG, including ones on LMI/equity concerns: https://channellab.umn.edu/community-shared-solar

Minnesota community solar resources

To use eDockets, go to the following link:
https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showeDocketsSearch&showEdocket=true&userType=public

In the search area, put in the year and number (for example, 13-867 is Xcel’s Community solar program) and hit search.
Minnesota community solar resources

Xcel’s CSG Program: 13-867

• Important documents are the Commission’s Orders, April 7, 2014 and September 17, 2014 lay out the initial program, but it has been modified by over a dozen orders since. The August 6, 2016 Order is also important in understanding the program.

• Monthly updates on the size of the program and progress through the queue are filed midmonth under the label “COMPLIANCE FILING—MONTH/YEAR STATUS UPDAT
Minnesota community solar resources

Minnesota Power’s CSG Program: 15-825

Xcel’s Low Income CSG Program (delayed start): 17-527

Minnesota’s Interconnection Standard Update: 16-521
• Phase 1 updating the process is in tariff implementation for investor owned utilities
• Phase 2 updating the technical standards is in progress
Q&A

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Thank you

Please visit the NARUC Center for Partnerships & Innovation website at www.naruc.org/cpi to stay up to date on surge calls and CPI’s other programs for state commissions.
Community solar resources


Coalition for Community Solar Access.

Community Solar Value Project.

Community solar resources

Grid Alternatives, Energy for All: Community Solar


Community solar resources


North Carolina State University, Clean Energy Technology Center, Quarterly Reports Series, including 50 States of Solar, 50 States of Grid-Modernization, and 50 States of Electric Vehicles.

Community solar resources


U.S. DOE, Solar Energy Technologies Office, Community and Shared Solar.
Community solar resources


Vote Solar, Shared Renewable HQ.