

ABOUT NARUC

- The National Association of Regulatory Utility Commissioners (NARUC) is a non-profit organization founded in 1889.
- Our Members are the state utility regulatory Commissioners in all 50 states & the territories. FERC & FCC Commissioners are also members. NARUC has Associate Members in over 20 other countries.
- NARUC member agencies regulate electricity, natural gas, telecommunications, and water utilities.



THE NARUC CENTER FOR PARTNERSHIPS & INNOVATION

Background & Focus

- NARUC staff dedicated to providing technical assistance to members.
- CPI identifies emerging challenges and connects state commissions with expertise and strategies to inform their decision making.
- CPI builds relationships, develops resources, and delivers trainings.
- All CPI support is federally funded via cooperative agreements with DOE and NIST.



Newly updated CPI fact sheet with recent publications, upcoming events, new member working groups located under Quick Links at: www.naruc.org/cpi

NARUC Center for Partnerships & Innovation
Identifying emerging challenges and connecting state commissions with expertise and strategies to navigate their complex decision-making

The NARUC Center for Partnerships & Innovation (CPI) builds relationships, develops resources, and delivers training to assist state commissions contending with complex current and emerging issues. CPI is funded by cooperative agreements with the U.S. Department of Energy (DOE) and the U.S. Department of Commerce's National Institute of Standards and Technology (NIST). CPI works across five key areas:

Energy Generation	Energy Transmission	Energy Distribution	Energy Customers
<ul style="list-style-type: none"> Coal & Carbon Management* Nuclear Energy* Natural Gas* Hydrogen Off-Shore Wind Utility Scale Renewables 	<ul style="list-style-type: none"> Transmission Infrastructure Transmission-Distribution Coordination* Storage Comprehensive Electricity Planning 	<ul style="list-style-type: none"> Integrated Distribution Planning Grid Modernization Microgrids* Performance-Based Regulation* Virtual Power Plants 	<ul style="list-style-type: none"> DER Integration & Compensation* Demand Flexibility* Electric Vehicles* Stakeholder Engagement Energy Justice

Contact: Kara Zitzman *Contact: Jeffrey Laiter*

Critical Infrastructure Preparedness, Response, and Resilience

- Cybersecurity for Utility Regulators*
- Integrated Systems Resilience*
- Emergency Preparedness
- Defense Community Partnerships

Contact: Kara Zitzman

**Contact us to join a members-only group on this topic for regular learning and peer exchange opportunities.*

Sign up for the CPI Newsletter for monthly updates about new resources and forthcoming events.

The NARUC CPI team looks forward to engaging with NARUC's members throughout the year—your needs drive our priorities and activities. Reach out at any time!

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NARUC CPI is hiring! Please contact us to learn more about exciting new opportunities.

www.naruc.org/cpi | Last updated February 2023

Recent Publications

- Demand Flexibility within a Performance-Based Regulatory Framework** (Feb 2023)
- State Energy Letter Roundtable Series: Customer Affordability and Accessibility** Participation in Decision Making: Energy Justice Metrics (Feb 2023)
- Mini Guide on PUCs and the Investment Community** (Feb 2023)
- Energy Resilience Reference Guide: Chapters 1 & 2** (Jan & Feb 2023)
- Potential State Regulatory Pathways to Facilitate Low-Carbon Fuels** (Dec 2022)
- Dissemination in Electric Power, Systems and Regulation: A Primer** (Dec 2022)
- Inconspicuous for Electric Vehicle Charging: A Case Study** (Dec 2022)
- Electric Vehicle Interoperability: Considerations for Utility Regulations** (Nov 2022)
- Models for Integrating Capacity in Transportation Electrification** (Nov 2022)
- Mini Guide on Transportation Electrification** (Nov 2022)
- Grid Data Sharing: Brief Summary of Current State Practices** (Nov 2022)
- Regulator's Financial Toolbox Brief: Community State for 100 Customers: Electric Vehicle** (Nov 2022)
- Defining Energy Resilience Resources Guide & FAQ for Commissioners** (Oct 2022)
- Workforce Development Toolbox: Recruitment Templates and Social Media Engagement Materials** (Sept 2022)

Upcoming Virtual Learning Opportunities

- Modern DER Capabilities and Deployment: March 8** Next in the virtual interconnection workshop series, NREL will address PUC questions on DER technical capabilities, deployment concerns, and benefits. *Contact: Jeff*
- Resilience for Regulators Webinar Series: March 9** Climate Informed Mitigation Strategies. Find [past presentations](#) on critical infrastructure resilience, climate resilience, defense energy resilience, and more. *Contact: William*
- Monthly Innovation Webinars: March 16** Advances in Resource Adequacy. [Register | past recordings](#). *Contact: Jessica*
- On-Demand: Video-Based Learning Modules**. Dozens of training videos in English and Spanish on [electric system planning](#), [distribution systems and planning](#), [smart grid and EV interoperability](#). *Contact: Danielle*

Upcoming In Person Events Travel stipends available

- Cybersecurity Training, Indianapolis, IN: March 22-24** Experts will provide content on cybersecurity topics through the lens of utility regulators with presentations, engaging activities, and more. (Commissioners and staff) *Contact: Lynn*
- Nuclear Energy Partnership Pacific Northwest National Lab Site Visit: April 25-28** Tour PNL and NREL nuclear sites. Advanced Nuclear State Collaborative kickoff workshop will also take place. (Commissioners and staff) *Contact: Kara*
- Natural Gas Partnership Site Visit, Savannah, GA: May 2023** Tour the Elba Island liquefied natural gas export facility. Part of Savannah compressed natural gas fueling station, and more. (Commissioners only) *Contact: Kara*
- More Info Available Soon: Energy Justice Midwest Regional Workshop (early May)**; Grid Data Sharing Collaborative Demonstration Workshop (mid-May)

Join a Member Working Group! For Commissioners and Commission Staff

- Integrated Distribution System Planning**. Register for presentations by subject matter experts and commissions followed by questions and facilitated discussions among members. Six sessions: **Feb 27 – Jun 12**. *Contact: Jeff*
- NARUC/NARUC Advanced Nuclear State Collaborative**. Exchange questions, needs, and challenges relating to the planning and deployment of new advanced nuclear generation. *Contact: Kara*
- NARUC/NARUC Microgrids State Working Group**. Explore capabilities, costs, benefits, and development strategies for microgrids with PUCs and State Energy Offices. *Contact: Kara*
- Electric Vehicles State Working Group**. Learn and discuss regulatory questions around transportation electrification, including charging infrastructure buildout, rate design, equity considerations, V2G, and more. *Contact: Danielle*
- Performance-Based Regulation State Working Group**. Examine approaches to performance-based regulation and alternative compensating across states in a collaborative peer group setting. *Contact: Elliot*
- UX Working Group**. DOE/National Lab effort for commissioners and stakeholders to identify grid interconnection challenges and discuss solutions. *Contact: Jeff*
- Workforce Development Peer Advisory Group**. Supporting recruitment & retention for commissions. *Contact: Heleah*

www.naruc.org/cpi | Last updated February 2023



MODERATOR

COMMISSIONER TIM ECHOLS, GEORGIA PUBLIC SERVICE COMMISSION

Speakers:

KATHARINE BOND, DOMINION ENERGY

KERRY KLEMM, XCEL ENERGY

JARED LEADER, SMART ELECTRIC POWER ALLIANCE (SEPA)

VINCENT POTTER, NC CLEAN ENERGY TECHNOLOGY CENTER



Smart Electric
Power Alliance

NARUC Community Solar Innovation Webinar

Jared Leader
Senior Director, Resilience
jleader@sepapower.org
SEPA

April 2023



Mission

To accelerate the transformation to a carbon-free energy system through actionable solutions

Vision

A carbon-free energy system that is safe, affordable, reliable, resilient and equitable

Who Are We?



Smart Electric
Power Alliance



**A membership
organization**



Staff of ~50



No Advocacy – 501c3



Founded in 1992



Unbiased



**Research, Education,
Collaboration
and Standards**



Technology Agnostic



**Local, State and
National Focus**



What's Driving Community Solar?



Customer Benefits

- Access to solar
- Hedge costs
- Catalyzes carbon-free transition
- Transferable
- Economies of scale
- Low O&M concerns
- Stand-alone pricing

Utility Benefits

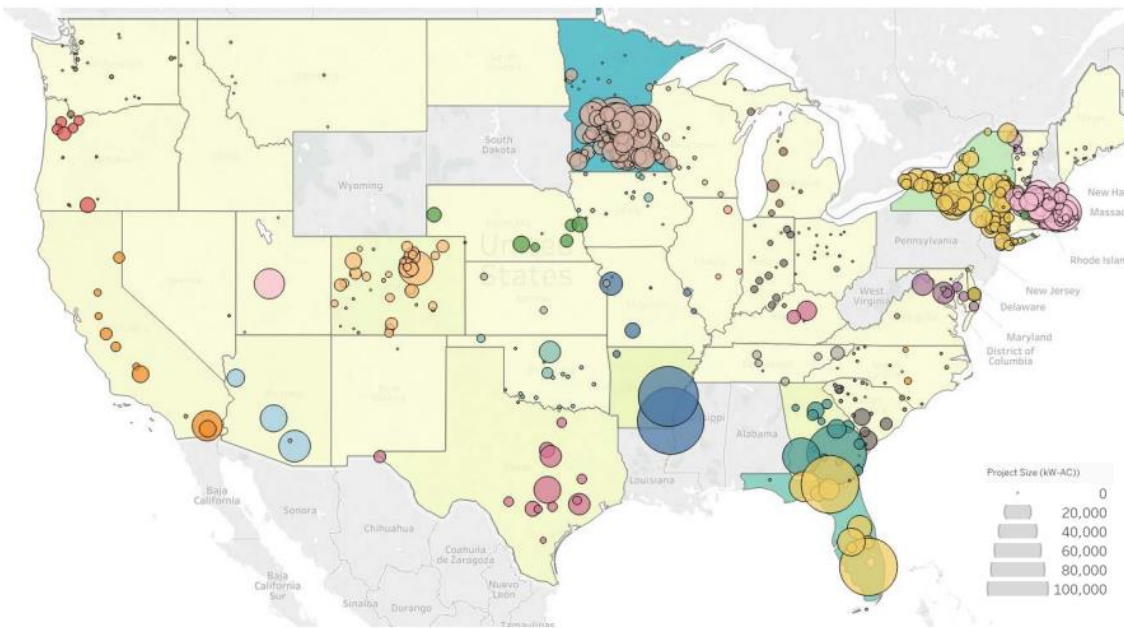
- Engage customers
- Support industry and economic development
- Understand solar resources
- T&D deferral
- Co-location with energy storage assets

Developer Benefits

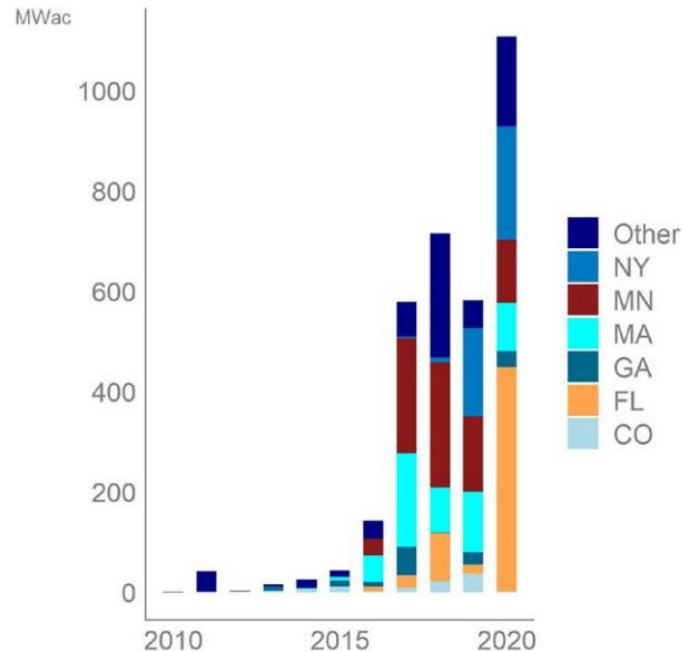
- Secure multiple off-takers
- Diversify portfolio
- Customer acquisition
- Development in new markets
- Tax rebates and incentives

Community Solar Market Snapshot

Community Solar Projects in the U.S.
(Source: NREL, Sharing the Sun 2020)



New Community Solar by Year, by State
(Source: NREL)



Community Solar Ownership



1. Vertically Integrated Utility Model:

- Directly connects to subscribers.
- Business handles both subscriptions and bill credits.

2. Third-party Model:

- Operates outside vertically integrated utility organizations.
- Can work at either the generation or distribution level.

3. Customer Model:

- Interconnects projects at the G&T or distribution level.
- Manages payments behind the meter.

4. Retail Electric Provider Model:

- Works at the interface of wholesale markets and G&T utilities
- Connects with subscribers for payments and credits.

5. G&T Muni/Coop Model:

- A G&T, JAA, or other aggregating organization collects benefits.
- Passes through benefits to customers via distribution utilities.

6. Distribution Muni/Coop Model:

- Utility owns or operates
- Subscription payments and bill credits flow between the utility and customers.

Community Solar Decision Tree

Program Administrati on

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

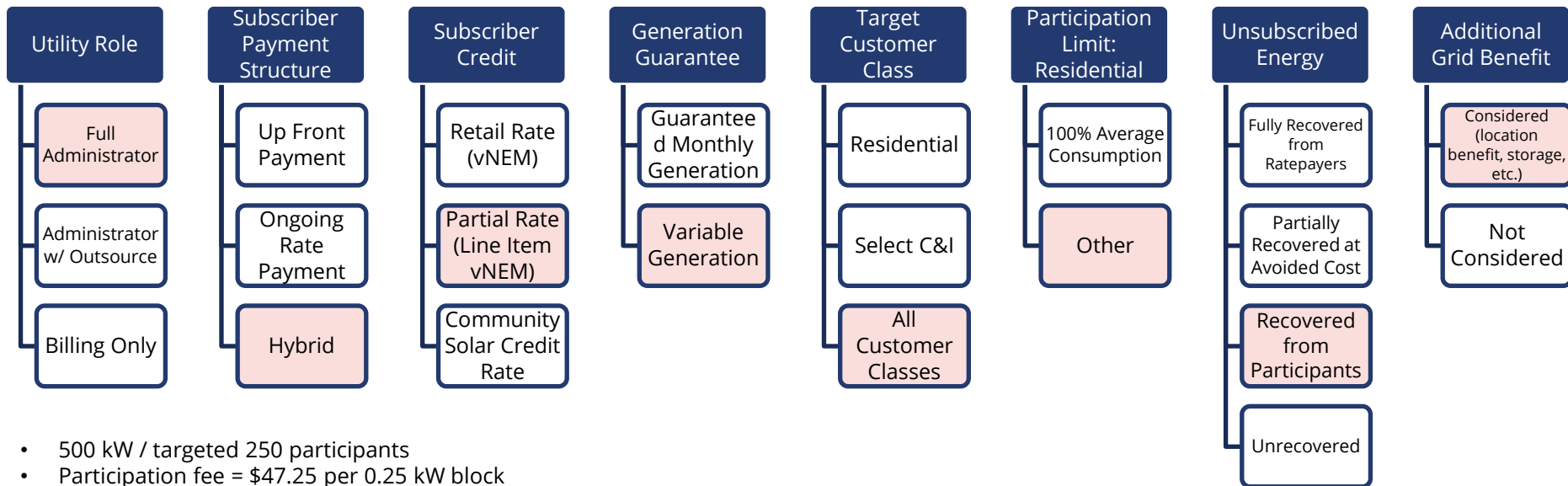
Subscription
Transferability

Additional Grid
Benefits

REC Treatment

Decision Tree in Action – MG&E

Madison Gas Electric Simple Solar



- 500 kW / targeted 250 participants
- Participation fee = \$47.25 per 0.25 kW block
- Current premium is 2.8¢/kWh
- Program length = 25 years
- Distribution charge tied to prevailing rate; credit of ½ transmission charge and all generation & fuel charges

Community Solar Resources



SEPA Research and Reports
available online at
www.sepapower.org

Considerations for Discussion

- **Wave of Funding:** IRA opportunities for solar builders, customers, and utilities
- **Location, Location, Location:** community solar as an adder and detractor to grid reliability and affordability
- **Equitable Clean Energy Access:** focused efforts on disadvantaged communities.
- **Utility-Driven vs. Policy-Driven:** some utilities are driving the market, in other states policy is driving third-party development

NARUC Innovation Webinar: Community Solar in the Southeast

Vincent Potter, Policy Analyst
NC Clean Energy Technology Center
August 17, 2023

The NC Clean Energy Technology Center

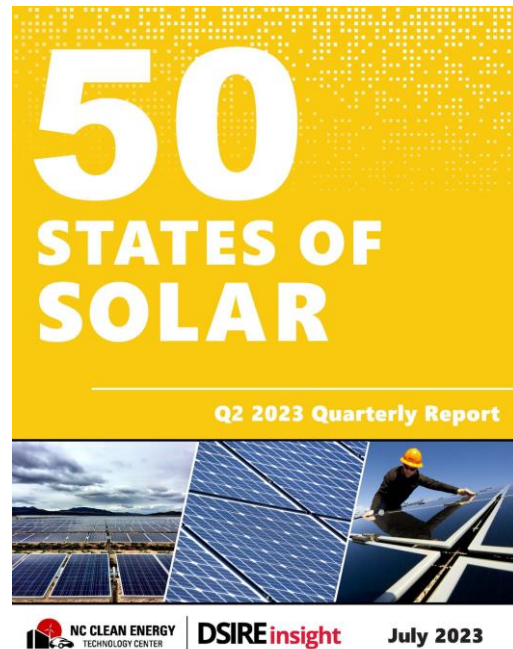
- University of North Carolina System-chartered Public Service Center administered by the College of Engineering at North Carolina State University
- Mission: advance a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies practices, and policies.
- Objective research, analysis, & technical assistance – no advocacy
- Manage the Database of State Incentives for Renewables and Efficiency

(DSIRE – www.dsireusa.org)

50 States of Solar

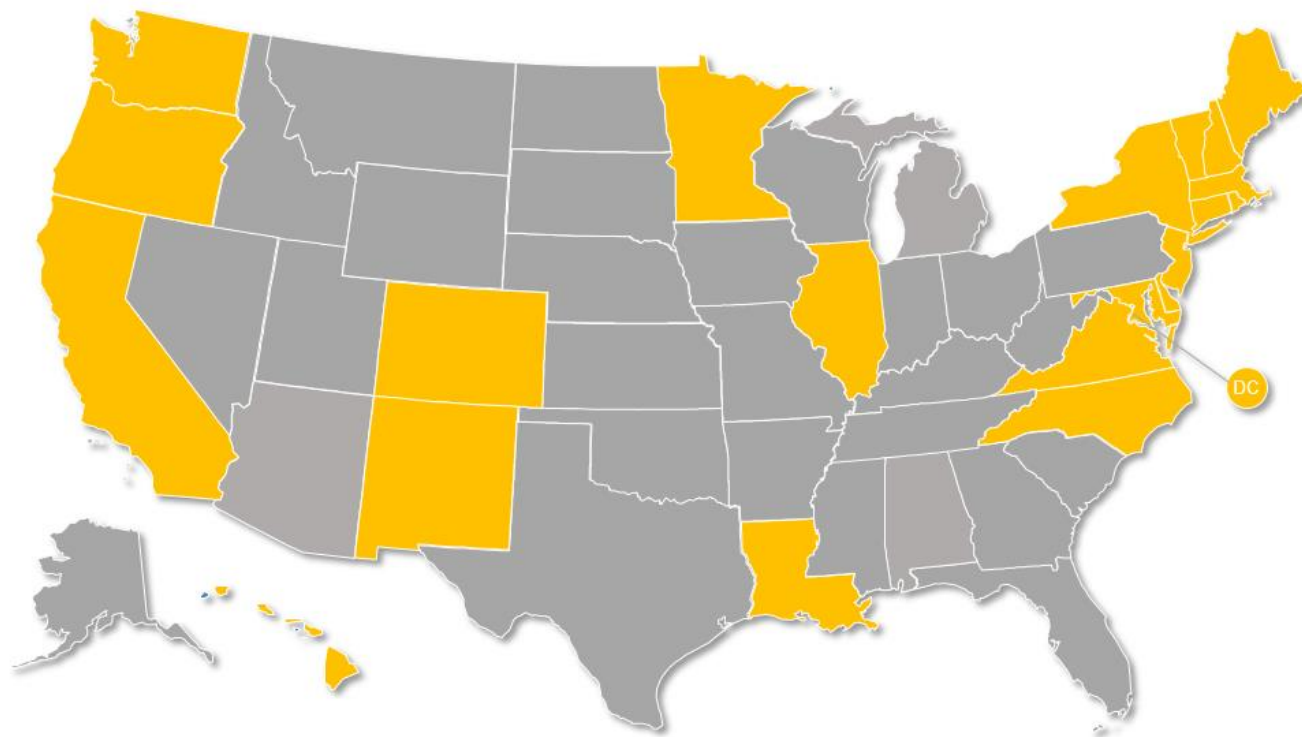
- Quarterly detail of state and utility distributed solar policy and rate design changes.
 - Net Energy Metering
 - Community Solar
 - Third-party Solar
 - DG Valuation Cost-Benefit Studies
 - Residential Solar Charges
 - Fixed Charges, Minimum Bills, Demand Charges, Capacity Charges
- Regulatory and Legislative actions
- Complimentary Copies for Policymakers

<https://www.dsireinsight.com/>



State Programs for Community Solar – June 2023

20 States + DC have rules allowing or requiring utilities or other entities to develop community solar programs.



Community Solar in the Southeast

- 2022 American Rescue Plan Act Project
Community Solar Access for Low- and Moderate-Income Utility Customers
- Improving economics for community solar projects

Case Study Overview

- Partners: Cooperative and municipal utilities in NC
- Strategy:
 - Evaluate sites for solar feasibility
 - Analyze potential savings
 - Research program design options
 - Identify benefits for customers and utilities

Research: Southeast Programs

State Programs

- Louisiana: 300 kW limit, avoided cost credits
 - 2 MW in New Orleans, retail rate credit
- North Carolina: 5 MW limit, avoided cost credit
- Virginia: 5 MW limit, retail rate, minimum bill
 - LMI customers exempt from min. bill
 - Multifamily: 3 MW, retail rate credit

Research: Southeast Programs

- Community Solar as a "Premium Offering"
- Subscription fees exceed expected credits
 - Florida (IOUs, Munis, Solar co-ops)
 - Georgia (Georgia Power)
 - South Carolina (IOUs, Santee Cooper, Coops)
 - HB 3659 (2019) utilities must eliminate cross-subsidies

Research: Southeast Programs

- Georgia: Green Power EMC
 - 14 co-ops allow subscriptions to 4 projects
- Kentucky: LGE-KU Solar Share
 - More value for energy meeting site demand (less value for excess generation)

Case Study: Stakeholder Engagement

- NC DEQ, Utilities, Developers, Community Orgs.
- Concerns: first cost, cross-subsidization, complexity, marketing/communication, wholesale contracts
- Benefits: low-cost renewable power, distribution deferrals (situational), demand charge reductions

Analysis Results

- Scale matters - larger projects are cheaper per watt
- Coincident Peak Reductions
 - Working within wholesale contracts
- Hard to value ancillary services

Program Design

- Potential issues for Utilities and Community Solar
 - Customer enrollment and communication
 - Income verification for some programs
 - Tariff design
- Potential Solutions
 - Opt-out program design
 - Existing income verification - LIHEAP, WAP
 - Simple structures

Community Solar: LMI Recommendations

- Targeted carve-outs or rates
- Opt-out design for automatic subscription enrollment
- Subscription movement within service area

Thank you

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XCEL ENERGY COMMUNITY SOLAR

Kerry Klemm – Manager, Renewable Choice Programs

Aug. 17, 2023

Xcel Energy Priorities



**Lead the Clean
Energy Transition**

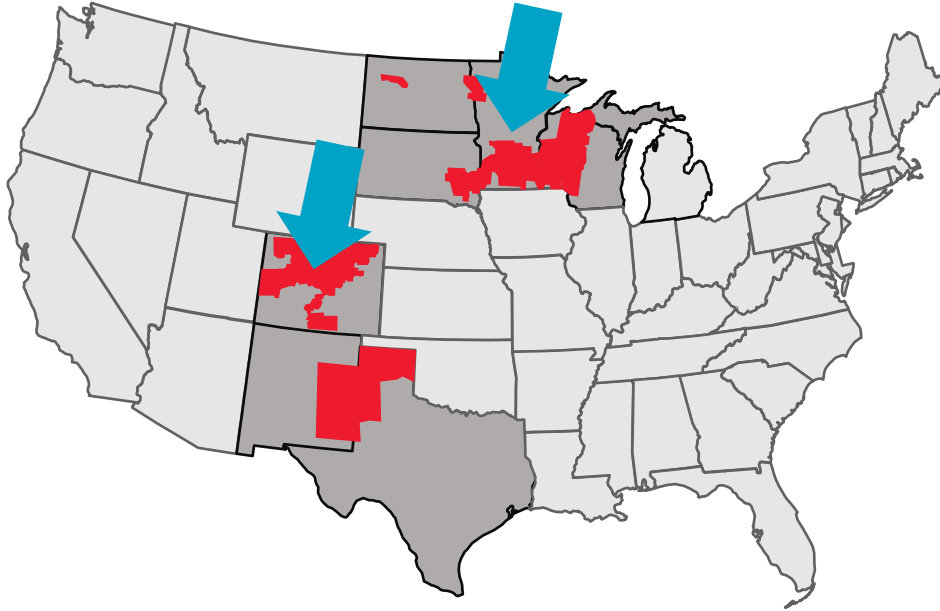


**Enhance the
Customer Experience**



Keep Bills Low

Xcel Energy



Serving eight states

3.7 million electricity customers

2.1 million natural gas customers

Nationally recognized leader:

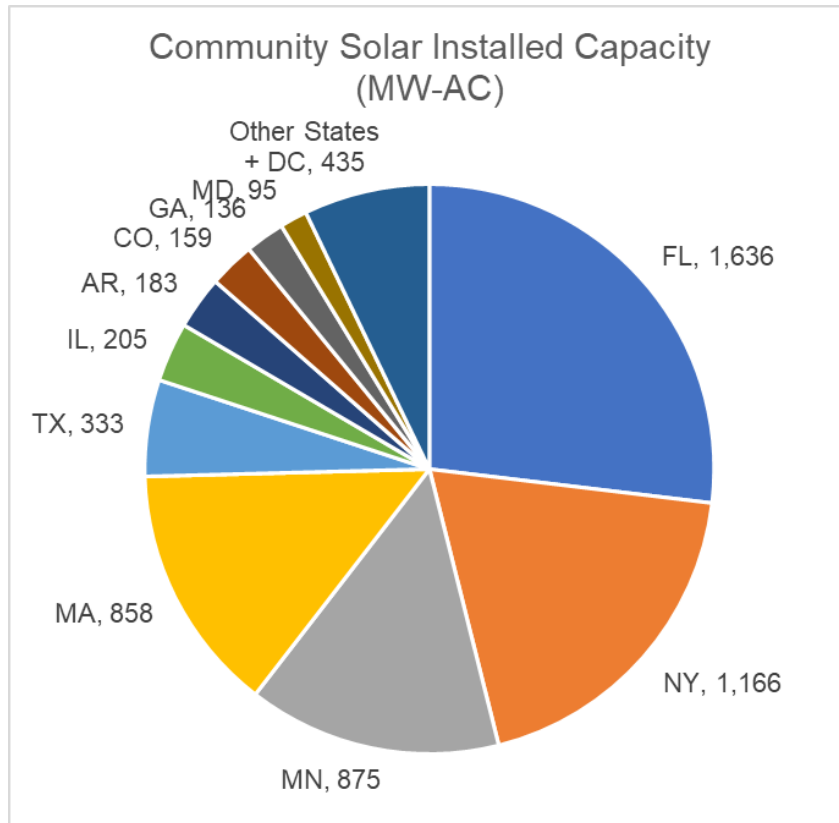
- Wind energy
- Energy efficiency
- Carbon emissions reductions
- Innovative technology
- Storm restoration

Data based on 2021 Sustainability Report. To view full report: [xcelenergy.com/sustainability](https://www.xcelenergy.com/sustainability).

NREL Community Solar National Snapshot

**Year-end 2022
Information Released
TODAY**

<https://data.nrel.gov/submissions/220>



MANY STATES = MANY CONSTRUCTS

	MN 2014-2023	CO		WI	NMX	
Model	3 rd Party	3 rd Party	Xcel Energy	Xcel Energy	3 rd Party	Xcel Energy
Annual Capacity	Uncapped	PUC Approved	PUC Approved	PUC Approved	Legislation/PUC	PUC Approved
MW Online Today	869	136	6	3	0	2
MW in Development	~330	182	8	0	45	0
Subscriber \$	Value of Solar bill credit	Retail rate minus distribution & transmission		Fuel + capacity credit		Fuel + capacity credit
Developer \$	Subscription \$ unknown	Subscription \$ + RFP incentive	Subscription \$ + incentive	Subscription \$ (Self funded)	Subscription \$ + RFP incentive	Subscription \$ (Self funded)
Income Qualified (IQ)	Voluntary	10% Historic 50%+ Future	100%	0%		0%
IQ Net Savings Minimum Required	N/A Legacy 10% Future	0% Legacy 30-50% Future	30% Current 50% Future	NA	TBD	NA
2022 Bill Credits	\$182.7M	\$23.2M	\$0.6M	\$0 (Credits offset by subscription fees)	\$0	\$0 (Credits offset by subscription fees)

Changes Underway

Recent Legislation and Settlements Drive Community Solar Innovation

Minnesota 2023 Community Solar Legislation

- Introduces capacity cap
- Varying bill credit rate by subscriber characteristics
- Consolidated billing
- IQ subscriber requirements
- IQ customer cost protections
- Interconnection considerations
- Subscriber protections

Colorado 2022-25 Renewable Energy Plan

- Cost caps instead of capacity
- More Standard Offer – price set by RFP
- Customer REC option
- 50% of capacity for IQ subscribers – half residential direct billed with donated subscriptions
- Interconnection considerations

MN 2023 Community Solar Legislation (embedded in broader bill):

https://www.revisor.mn.gov/bills/text.php?number=HF2310&version=4&session=ls93&session_year=2023&session_number=0&format=pdf

CO 2022-25 RE Plan Docket: 21A-0625EG -

Ongoing Considerations

Subscriber Balance

- Residential vs. Commercial, “Anchor”, Income Qualified, Public Interest
- % of Capacity, or % of Subscribers - Critical

Interconnection Queues

- Impacts to customer-sited solar
- Need clear, transparent interconnection rules, technology systems to support
- What happens when feeder/substation maximums are hit

Supporting Technology

- Technology takes time and heavy investment to build
- Variations and changes aren't always easy to implement
- Legacy billing systems aren't flexible – different systems often are needed
- Plan for at least 6-12 months (or longer if starting from scratch) to build it out

Costs

- Who pays for setup/admin?
- Impact to fuel costs
- Total cost cap vs. capacity cap



Kerry Klemm

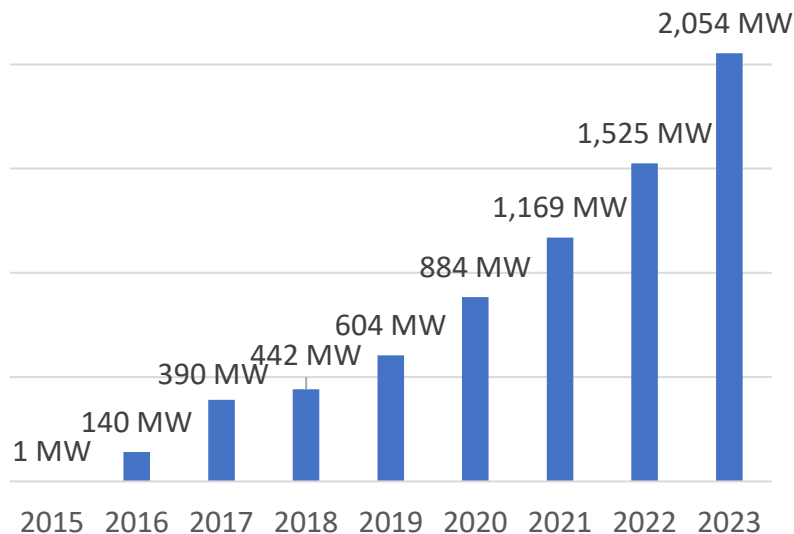
Manager, Renewable Choice Programs

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www.xcelenergy.com/renewables

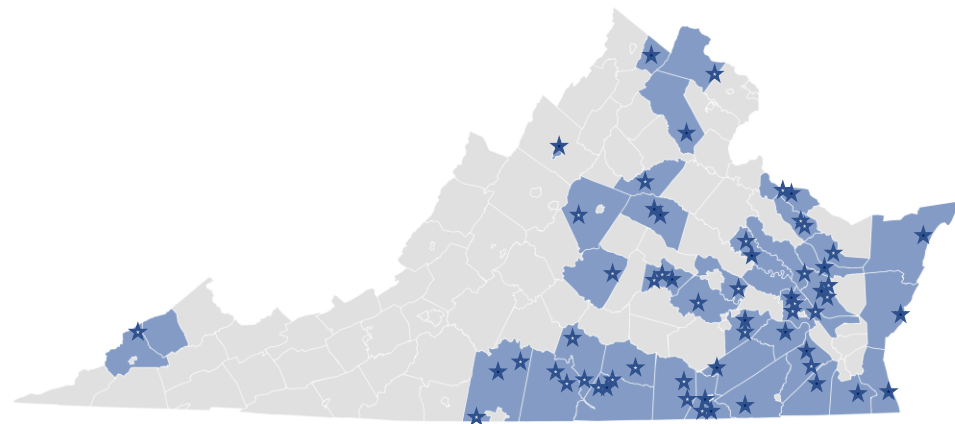


Solar in Operation



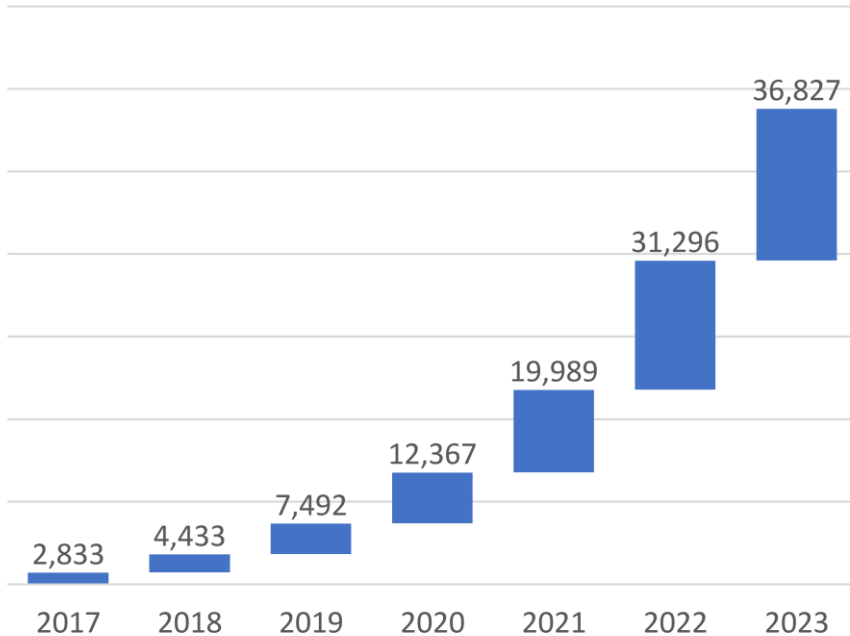
Dominion Energy Solar Projects in Virginia

Projects in Operation, Construction, or near-term Development

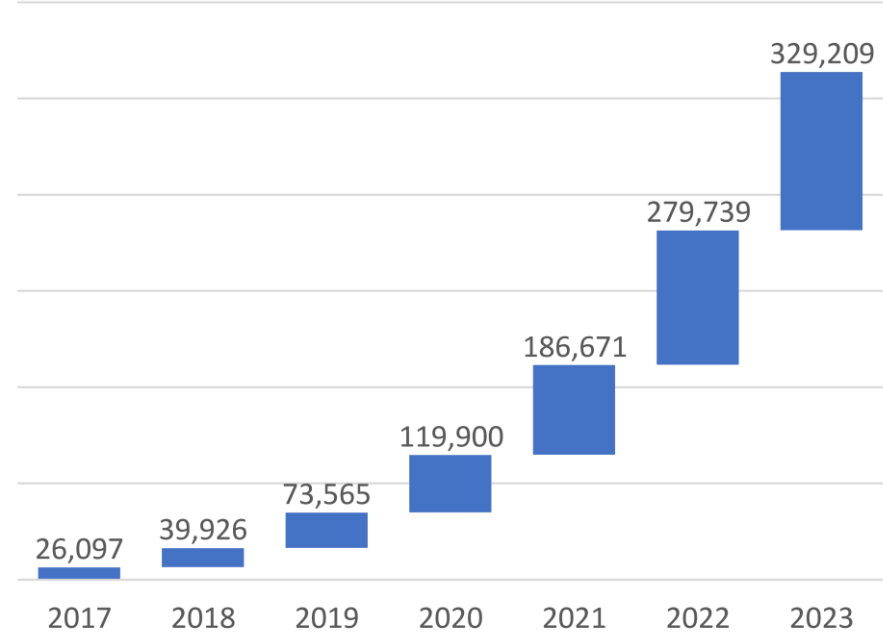


- ★ Projects in Operation
- ★ Projects Under Construction/In Development

Net Metering Customers



Installed Capacity (kW AC)



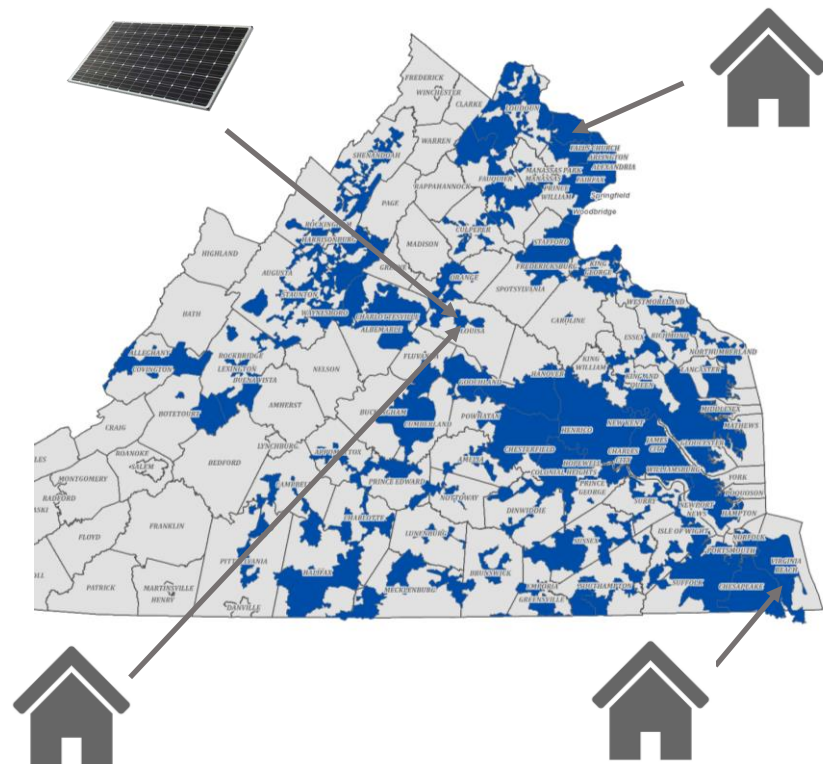
Community Solar Programs in Virginia

- **Three Variations:**
 - Utility-sponsored program
 - Developer-sponsored shared program
 - Developer-sponsored program for multi-family
- **Key Differences:**
 - Cost to customers and nonparticipants
 - Size
 - Qualifications
- **Considerations:**
 - Subscription term
 - Remaining obligation to / of utility
 - Location proximity



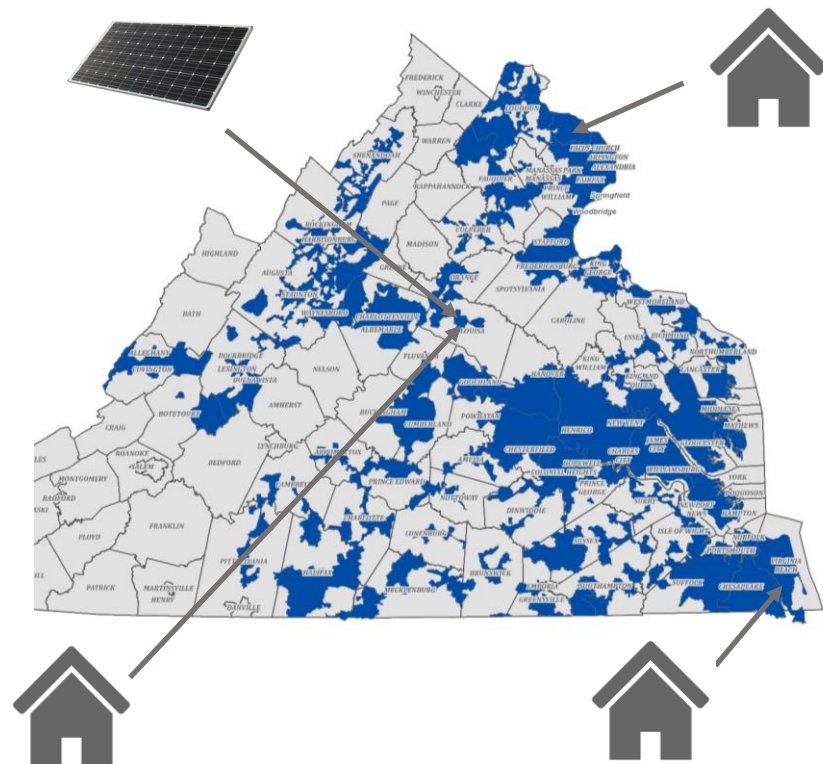
Utility-Sponsored Program

- Established in 2017 by the Virginia General Assembly
- Program capped at 40MW in aggregate
- 3-year pilot period
- Key requirements:
 - Individual projects not to exceed 2,000 kW
 - Must be in Dominion Energy Virginia service territory and connected to DEV distribution grid
 - 3rd-party-owned; selected through RFP process
- Program is fully subscribed based upon projects currently in place.



Developer-Sponsored Program

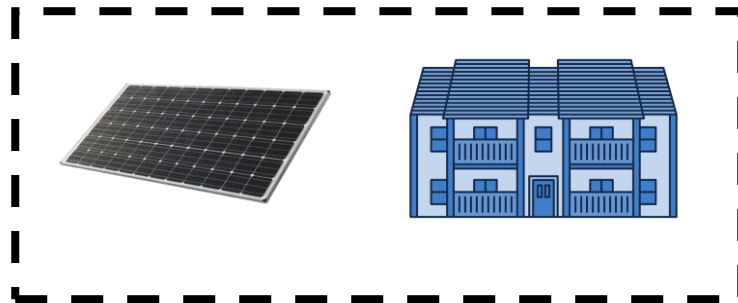
- Established in 2020 by the Virginia General Assembly
- Program capped at 150MW + 50MW, minimum of 30% low-income customers
- Key requirements:
 - Individual projects not to exceed 5,000 kW
 - Must be located Dominion Energy Virginia service territory and connected to DEV distribution grid
 - Must have at least 3 subscribers per project
 - Must have at least 40% subscribed by customers with subscriptions of 25kW or less
 - Scaled minimum bill
- Legislative changes proposed.



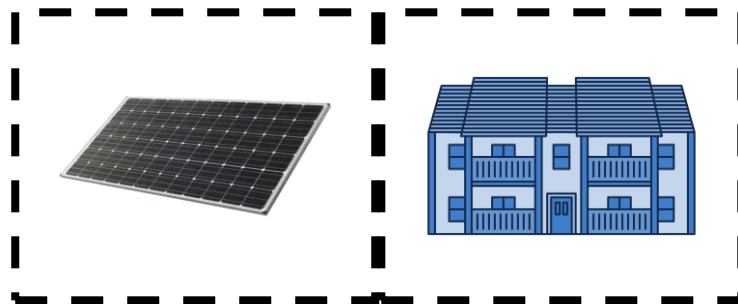
Multi-Family Shared Solar

- Established in 2020 by the Virginia General Assembly
- Key requirements:
 - Cannot exceed 3,000 kW at any single location or 5,000kW at contiguous location
 - At least three subscribers per facility receiving bill credit
 - Must be connected to distribution grid in Dominion Energy Virginia service territory
 - Must be located on same parcel or adjacent
- Registration of Subscriber Organizations opened with Dominion Energy Virginia on July 1, 2021
- So far, no Subscriber Organizations have registered to participate in this program; therefore, no solar facilities have been developed to support the program

Same Parcel



Adjacent Parcel







NARUC Innovation Webinar Series

One webinar most months

All NARUC members and stakeholders are invited

Topic: Indexed storage credits

September 21, 2023 | 3:00 – 4:00 PM EST

Topic: Energy Efficiency

October 19, 2023 | 3:00 – 4:00 PM EST

More webinar information will be added soon!

<https://www.naruc.org/cpi-1/innovation-webinars/>