

# Institutional and Policy Barriers and Opportunities for Energy Storage Deployment by Electric Cooperatives

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## SPECs Project Background



**SPECs aims to increase the size and impact of battery energy storage in the local electric co-op market.**


Federal and state policies, as well as regional market rules and relationships between co-ops and their G&T suppliers set the context for co-op storage development and procurement.

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### **SPECs: Solar-Plus for Electric Co-ops: High-Value Project Planning, Procurement and Operations**

**Solar-Plus for Electric Co-ops (SPECs)** was launched in 2020 to help optimize the planning, procurement and operations of battery storage and solar-plus-storage for electric cooperatives. SPECs was one of eight projects selected by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) for the second round of the **Solar Energy Innovation Network (SEIN)**. Cliburn and Associates is joined by partners on this project, including Cobb Electric Membership Corp., Kit Carson Electric Cooperative, United Power, and **North Carolina Clean Energy Technology Center**, plus leaders from the co-op sector and the storage industry nationwide.





**SPECs: Solar-Plus  
for Electric Co-ops**  
A Participant in the Solar Energy  
Innovation Network of the U.S. DOE  
National Renewable Energy Laboratory

[www.communitysolarvalueproject.com](http://www.communitysolarvalueproject.com)

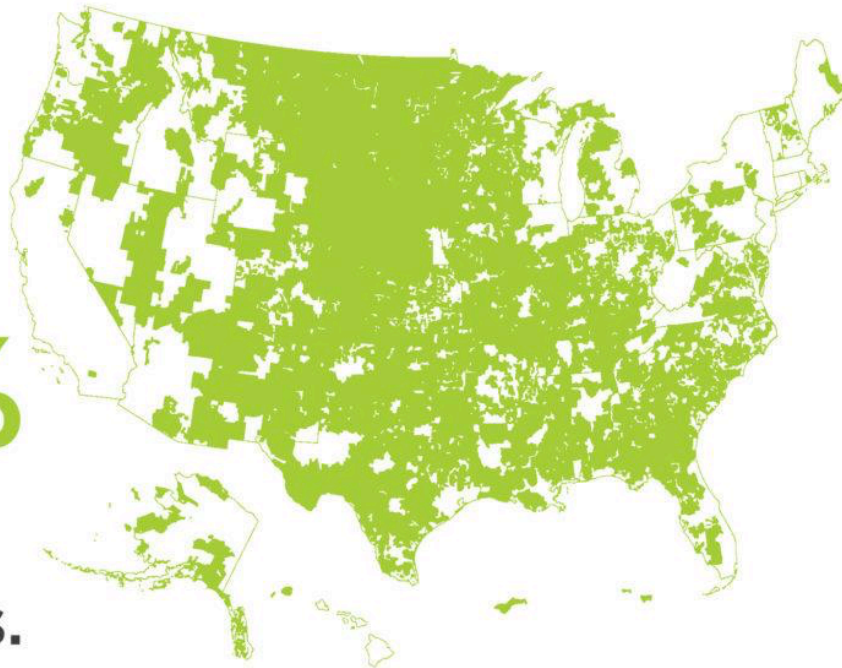
## The Electric Co-op Sector

Cooperatives

**Power**

**56%**

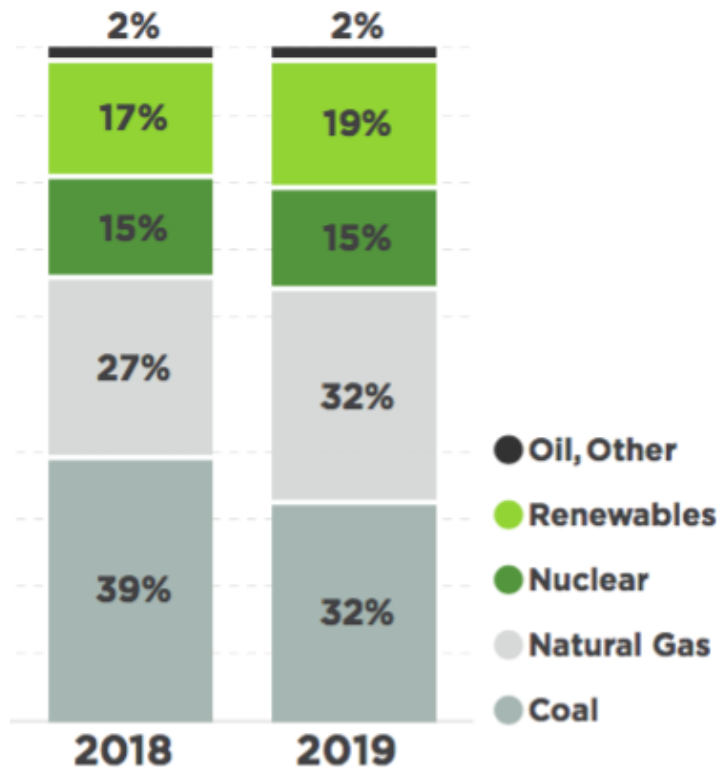
of the  
nation's  
landmass.



- **800+ Distribution Co-ops**
- **60+ G&Ts**
- **12% of US Retail Electricity**

Source: NRECA

## Co-op Sector Energy Transition



Source: NRECA research

- From 2010 to 2020, co-ops nearly tripled their renewable capacity, to more than 11.4 GW
- In 2020, co-ops added more than 1.6 GW—a record year, with more than 6.4 GW more expected by 2024.
- Yet co-ops are largely fueled by fossil energy resources.
- Energy storage will play a big role in a successful renewable-energy transition.

## Understanding storage project flexibility can help co-ops to shape better relationships and adapt to change

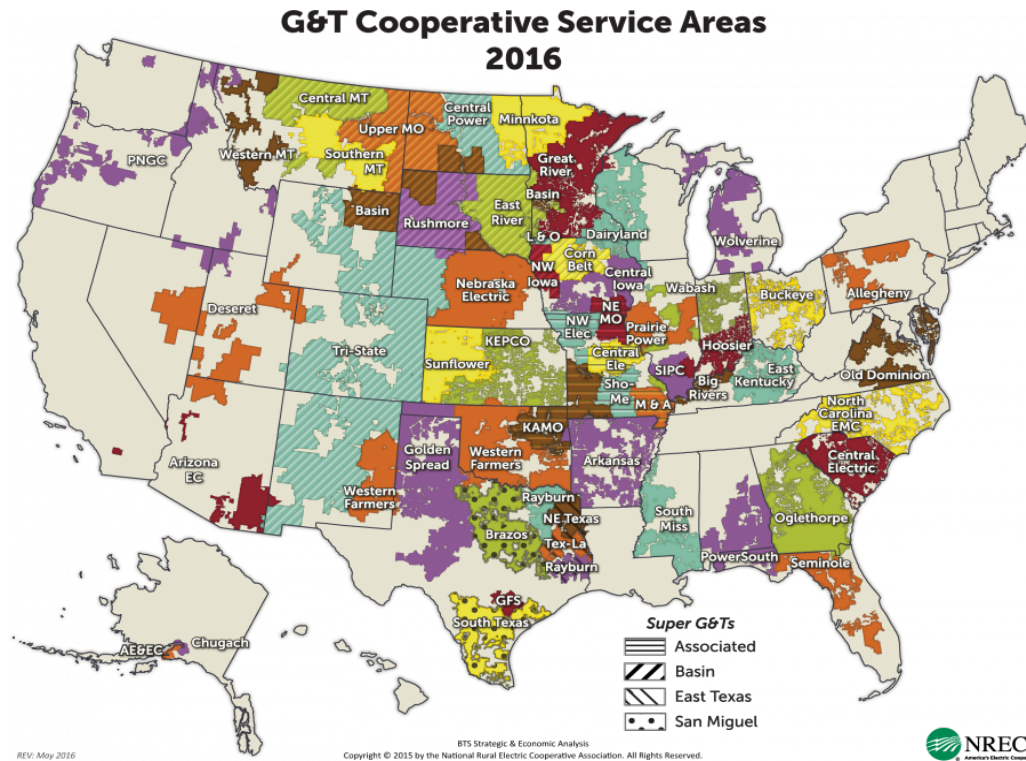
SPECs created an Early-Stage Decision Model to help co-ops:

- Explore value streams for a potential project
- Educate co-op decision-makers about storage operations and project benefits/costs
- Provide output regarding data, assumptions and use-case descriptions that should be included in a storage RFP
- Support for discussions with procurement partners.

## Agenda

- Wholesale Power Contracts
- Business Models
- State Policies
- Federal Policies
- ISO/RTO Rules

# G&T Utilities and Wholesale Power Contracts



<https://weown.it/resource-gnt-all-requirements-overview>

## All-Requirements Provisions

- Electric cooperatives typically purchase electricity from generation and transmission (G&T) utilities, which can be investor-owned utilities or cooperative agencies.
- Some contracts are “fixed”; in these, the distribution cooperative purchases a defined amount of electricity from the G&T utility
- Many contracts are “all-requirements”; in these, the G&T utility is obligated to supply all of the electricity needs of the distribution utility, and the distribution utility is obligated to purchase electricity to meet its entire load from the G&T.



## Exceptions to All-Requirements Provisions

- All-requirements provisions are usually not absolute; they typically have some exceptions allowing for self-supply by distribution utilities and/or their customers.
- Some exceptions are general; they allow the distribution utility to self-supply some set amount of capacity or percentage of its load.
- Other exceptions serve specific purposes, like economic development, PURPA obligations, or state policy requirements

## Wholesale Contract Rate Design

- Even when self-supply is allowed under a wholesale power contract, the usefulness of the self-owned capacity can be limited due to rate design provisions.
- Contract provisions may prevent self-generation from being used to reduce local demand, instead crediting it based on G&T avoided cost or wholesale market prices
- Alternatively, self-generation may incur charges from the G&T for backup, transmission, and other ancillary services
- Example: <https://cnee.colostate.edu/wp-content/uploads/2019/03/Powering-Cooperatives-CNEE-Report-on-Colorado-Cooperatives-and-TriState.pdf>

## Does Storage Count as Generation?

- Technically, energy storage is not energy generation, but how is storage capacity treated for wholesale contract purposes?
- Some all-requirements contracts do not prevent distribution utilities from using it to reduce demand
- With stand-alone storage, the same amount of electricity is purchased from the G&T, but, due to demand charges and time-of-use rates, the amount of money paid to the G&T can decline
- The status of storage under wholesale contracts may be different if paired with generation
- This issue is not unique to the cooperative utility environment; see <https://www.utilitydive.com/news/ferc-reverses-40-years-of-purpa-precedent-in-ruling-on-small-solar-definiti/585104/>

## Contract Renegotiations

- Wholesale power contracts are often renegotiated and updated
- This presents risks for distribution utilities who pursue projects that rely on certain contract terms
- A project may appear economically beneficial using current contract rates and provisions, but changes in future contracts may reduce the benefits
- Renegotiations are a two (or more)-way street; they can also allow distribution utilities to make contracts more favorable for storage projects, particularly if multiple member utilities can benefit and the G&T is not harmed
- Issues like this make communication and cooperation between distribution and G&T utilities very important when considering energy storage projects

## Business Models and Examples

- Independent for use on own system – Kit Carson Electric Cooperative, NM
- Own system w/G&T Support – Oglethorpe Power Corporation and Green Power EMC, GA
- G&T-owned – North Carolina Electric Membership Corporation, NC
- Wholesale Market participation – Old Dominion Electric Cooperative, VA
- Customer-sited – Dairyland Power Cooperative, WI

## Government Policies

- One reason why local co-ops may choose to work with their G&Ts on solar-plus projects is that there are myriad state and federal policies that can impact solar-plus-storage value
- Any co-op that is planning a project--and any developer that wants to work in co-op territory--should familiarize themselves with these policies and market rules

## State Policies

- Deployment Mandates
  - Renewable Portfolio Standards/Clean Energy Standards
  - Some states are adopting storage targets as well
  - Requirements for co-ops can be different than for investor-owned utilities
- Storage Compensation
  - Value Stack development in New York
- Clean Peak Policies
- Integrated Resource Planning
  - Several states have resource planning requirements for co-ops
  - Typically apply to G&Ts rather than distribution co-ops
- Distribution System Planning

## Federal Policies

- Tax Credit
  - Solar Investment Tax Credit was extended by December 2020 legislation
  - Storage investment is eligible for tax credit if paired with solar generation
- FERC Policies
  - Order 841 - Storage Integration
  - Order 872 - PURPA Reform
  - Order 2222 - DER Aggregation in Wholesale Markets
  - Storage as Generation Capacity



## ISO/RTO Rules



## Policies, G&T Relationships and Regional Market Rules Affecting Local Co-op Solar-Plus Project Value Streams

	Government Policies	G&T Issues	Wholesale Market Rules
All Value Streams	<ul style="list-style-type: none"> <li>- Tax and other direct incentives</li> <li>- Local permitting and zoning</li> </ul>	<ul style="list-style-type: none"> <li>- All-requirements provisions</li> <li>- Storage categorization</li> </ul>	<ul style="list-style-type: none"> <li>- Storage ownership rules</li> <li>- Market participation requirements</li> <li>- Aggregation rules</li> </ul>
Local Demand Reduction	<ul style="list-style-type: none"> <li>- Resource planning</li> </ul>	<ul style="list-style-type: none"> <li>- Rate design</li> </ul>	
Coincident Peak Demand Reduction	<ul style="list-style-type: none"> <li>- Resource planning</li> </ul>	<ul style="list-style-type: none"> <li>- Rate design</li> </ul>	<ul style="list-style-type: none"> <li>- Existence of capacity market</li> <li>- Capacity market participation limits for storage</li> </ul>
Ancillary Services	<ul style="list-style-type: none"> <li>- Compensation rules</li> </ul>	<ul style="list-style-type: none"> <li>- Rate design</li> </ul>	<ul style="list-style-type: none"> <li>- Market participation requirements</li> <li>- Presence or absence of ancillary service markets</li> </ul>
Energy Arbitrage	<ul style="list-style-type: none"> <li>- Compensation rules</li> </ul>	<ul style="list-style-type: none"> <li>- Rate design</li> </ul>	<ul style="list-style-type: none"> <li>- Market participation requirements</li> </ul>
Local Grid Reliability	<ul style="list-style-type: none"> <li>- Distribution System Planning</li> </ul>		
Distribution Deferral/NWS	<ul style="list-style-type: none"> <li>- Compensation Rules</li> <li>- Distribution System Planning</li> </ul>		<ul style="list-style-type: none"> <li>- Rules on storage as a T&amp;D asset</li> </ul>

## For More Information

See resources available at:

- NCCETC website: <https://nccleantech.ncsu.edu/our-work/>
- Community Solar Value Project: <https://www.communitysolarvalueproject.com/>

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