Rural Electric Cooperatives - Broadband Update

H-GAC Meeting

May 13, 2021

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Member driven. Technology focused.

Electric cooperative broadband benchmarking survey

Goals of the benchmarking project

- Catalog and share the experiences of electric members that have deployed broadband to help those evaluating their plans

Survey population

- **36 electric cooperatives** that have deployed broadband
- Projects of **various sizes** from **21 different states** with diverse characteristics
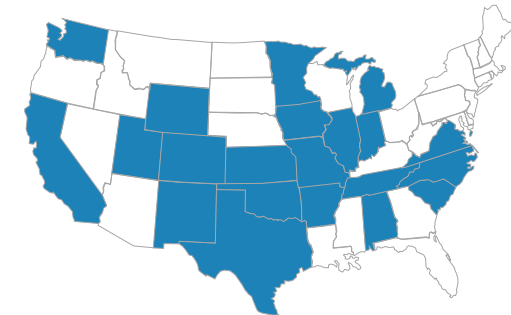- Used wide variety consultants, contractors, and equipment vendors

Topics for Today:

- Share summary of **deployment metrics, costs, funding sources, etc**
- **Case studies** where co-ops worked with municipals
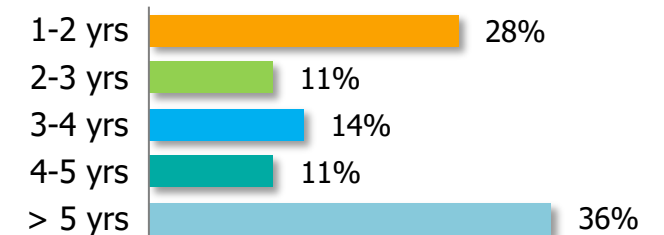- Advice for working together

Participants by member size

< 10,000	25%
10-20,000	19%
20-30,000	14%
30-40,000	25%
> 40,000	17%
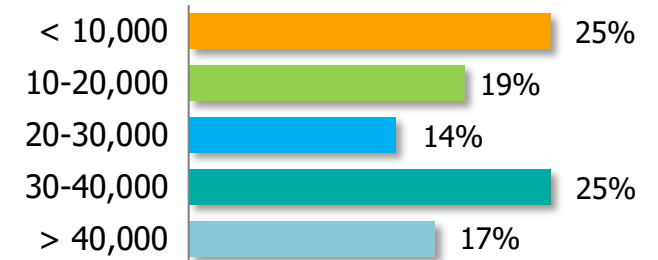
Participants by state

Time since live network

1-2 yrs	28%
2-3 yrs	11%
3-4 yrs	14%
4-5 yrs	11%
> 5 yrs	36%

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Electric Co-ops are building rural broadband networks

Broadband for rural members has largely been **successful**
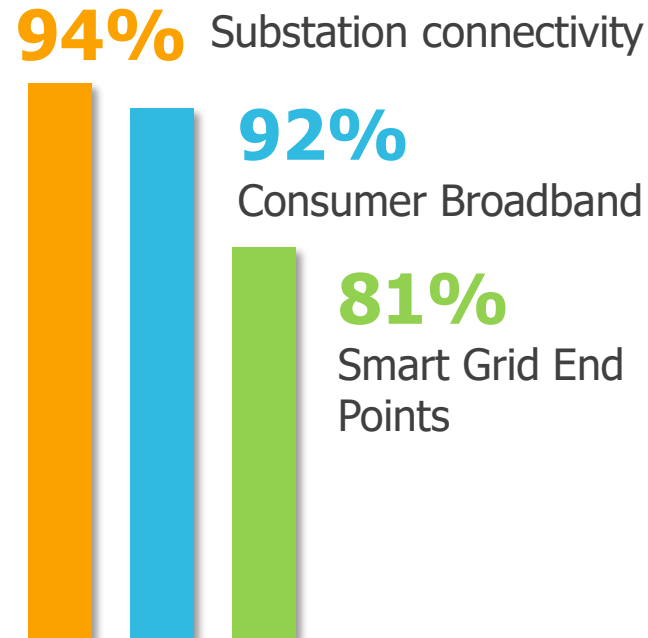
88%
Take rates greater than expectations

92%
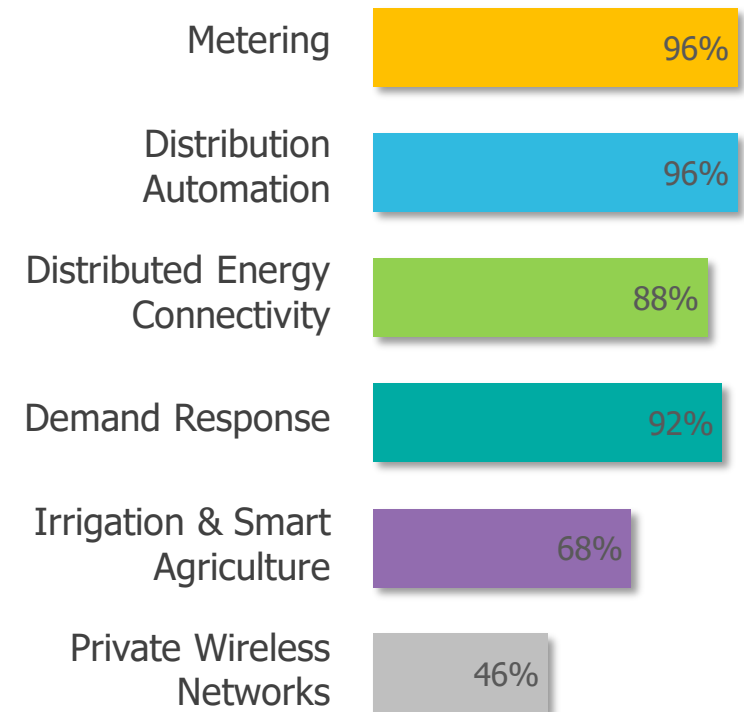Favorable response in member surveys

10%
Median Internal Rate of Return

Fiber is being leveraged for **Broadband** *and* **Smart Grid**

94% Substation connectivity

92% Consumer Broadband

81% Smart Grid End Points

They are investing for current and **future use cases**

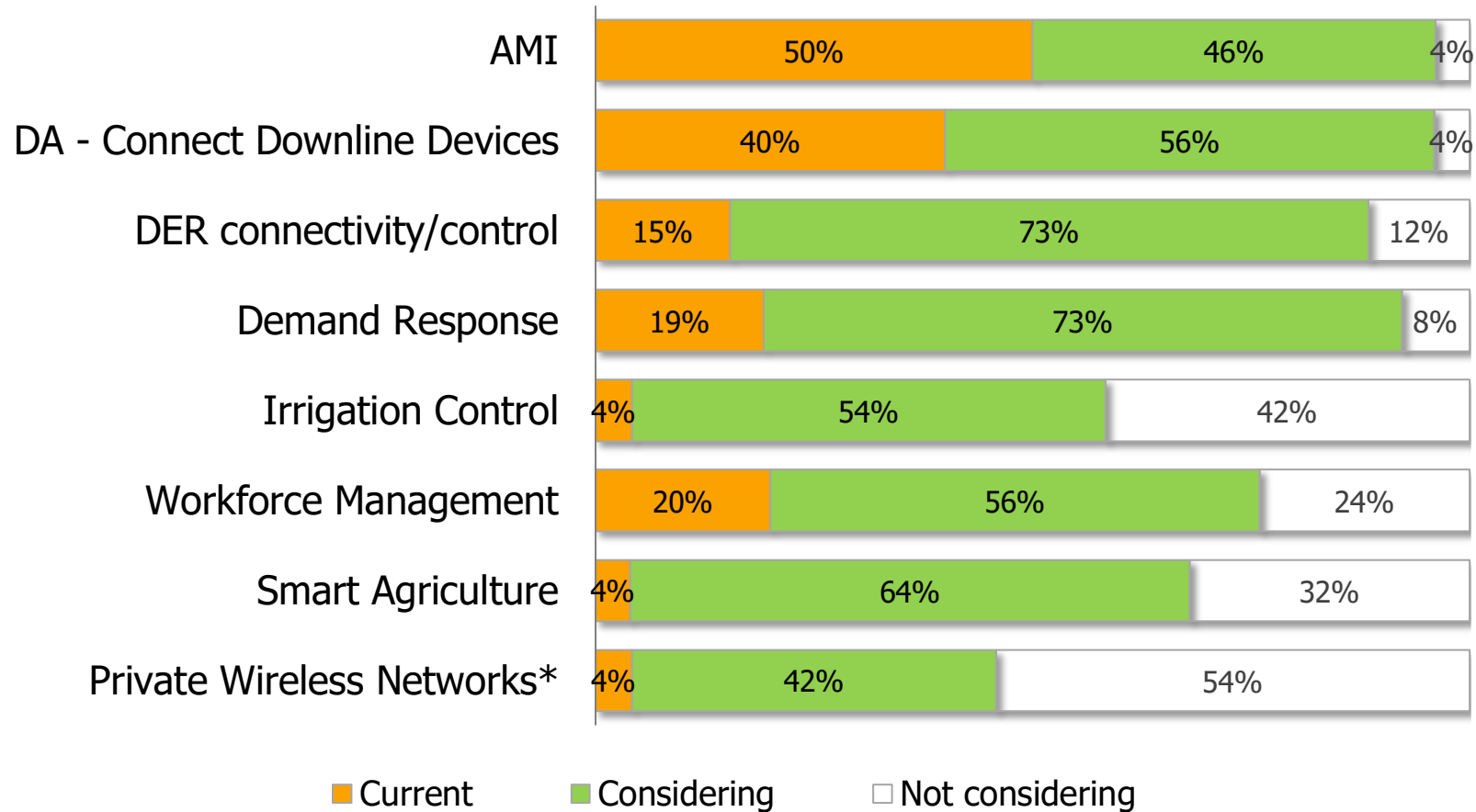| Use Case	Percentage
Metering	96%
Distribution Automation	96%
Distributed Energy Connectivity	88%
Demand Response	92%
Irrigation & Smart Agriculture	68%
Private Wireless Networks	46%

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Electric co-ops have deployed a mix of technologies for smart grid communications and member broadband; Fiber is the overwhelming choice
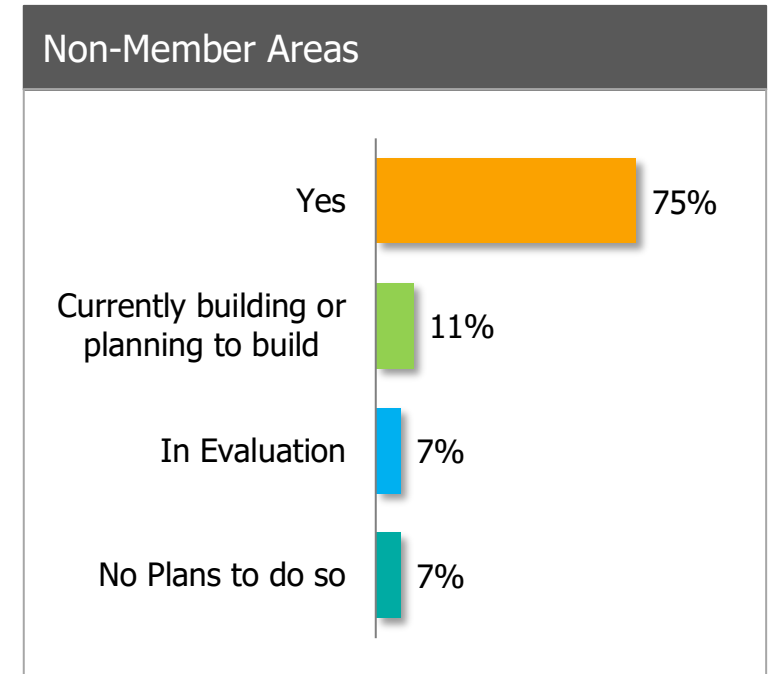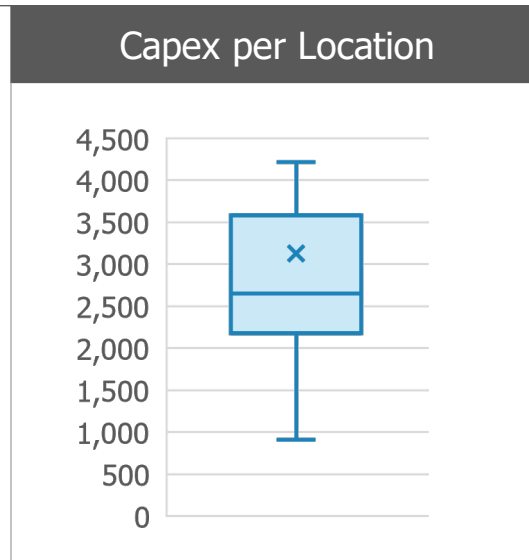
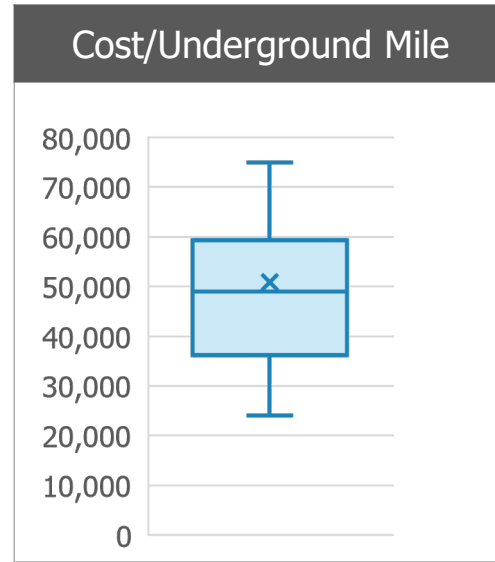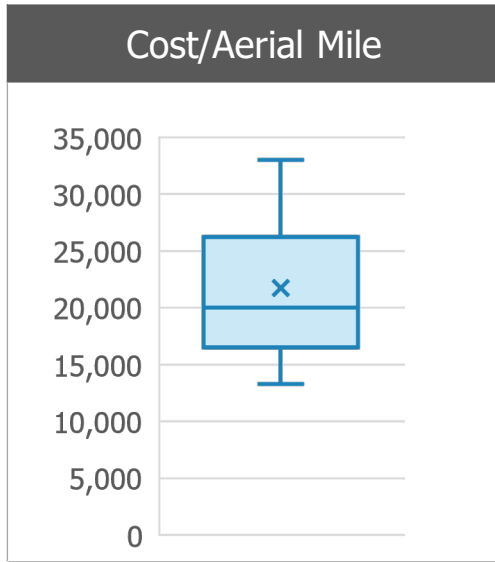**Use Cases and Technologies Employed**

% using respective technology	Fiber	Fixed Wireless	Cellular	Satellite
Substation Connectivity	94%	25%	8%	3%
Smart Grid Endpoints	81%	42%	8%	0%
Workforce/Vehicle Management	6%	6%	58%	3%
Land Mobile Radio	0%	47%	11%	3%
Consumer Broadband	92%	42%	0%	8%

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Looking forward, members considering how they can leverage their comms assets for advanced smart grid solutions and applications such as Smart Ag

Category	Current	Considering	Not considering
AMI	50%	46%	4%
DA - Connect Downline Devices	40%	56%	4%
DER connectivity/control	15%	73%	12%
Demand Response	19%	73%	8%
Irrigation Control	4%	54%	42%
Workforce Management	20%	56%	24%
Smart Agriculture	4%	64%	32%
Private Wireless Networks*	4%	42%	54%

■ Current ■ Considering □ Not considering

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Given the expense, rural deployments often require serving non-members

Cost/Aerial Mile

Cost/Underground Mile

Capex per Location

Non-Member Areas

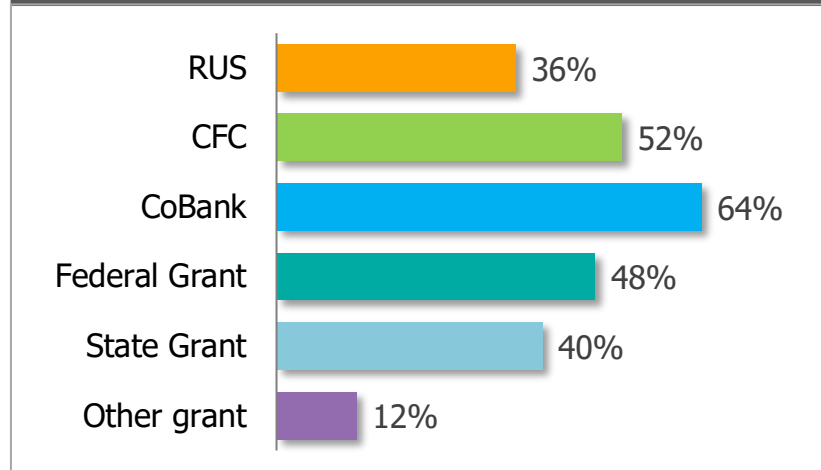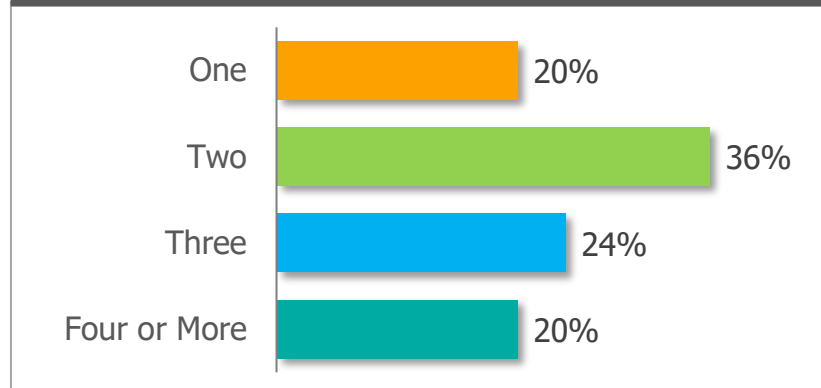|	
Yes	75%
Currently building or planning to build	11%
In Evaluation	7%
No Plans to do so	7%

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Funding Sources

Multiple sources available to Co-ops for rural broadband

- **Lenders - CFC and CoBank**
  - › Private lenders to electric cooperatives
- **USDA's Rural Utilities Service (RUS)**
  - › ReConnect program
  - › Electric Infrastructure Loan & Loan Guarantee Program
- **FCC/Universal Service for** "eligible telecommunications carriers"
  - › BTop and Connect America Fund Phase II (past)
  - › E-rate (continuing)
  - › Rural Digital Opportunity Fund (RDOF) (in process)
- **Other Federal-driven programs**
  - › CARES Act
  - › American Rescue Plan and American Jobs Plan (proposed)
- **State programs**
  - › Many have related and separate broadband programs

Funding Sources

Source	Percentage
RUS	36%
CFC	52%
CoBank	64%
Federal Grant	48%
State Grant	40%
Other grant	12%

Number of Funding Sources

Number	Percentage
One	20%
Two	36%
Three	24%
Four or More	20%

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Case Study

Midwest Energy and Communications Cooperative, Cassopolis, MI

Situation

- Midwest has been building a fiber network throughout southern Michigan for the past 5 years. They ring many smaller cities and towns with terrible internet options
- They have worked with Lyndon Township, the City of Niles and several villages (Mendon, Marcellus, etc) to expand broadband access

> "The **City of Niles** had an industrial park that could only get DSL/T1 service. The customers in the park were so unhappy, that they were considering moving to another town.
>
> We offered to build fiber throughout the park in exchange for dark fiber access on a network they built years ago and any pole attachments needed.
>
> We have since used their fiber and their poles to get to many other customers through the city. The partnership has been beneficial to both parties. "
>
> Terry Rubenthaler, VP MEC

Working with existing utilities

There are options for Municipal entities to collaborate

- Muni funds the build (partial or full) and optionally outsources the operation to a local co-op
  - › Co-op agrees to provide services to residents and businesses

- Muni provides access to infrastructure
  - › (poles, towers, building, conduits, etc)

- Muni provides access to muni or county owned fiber or other access if available
  - › Dark fiber leasing
  - › Swap fiber routes and access to augment their own networks

- Be aware: Co-op often want to prioritize build to own members first

Thank You