Electric Co-ops Build Rural Broadband Networks

Electric co-ops in underserved areas have many natural advantages as broadband providers. Some are now building out fiber to the home.

By Craig Settles / *Gigabit Nation*

Broadband is often compared to other vital utilities, such as electricity, water and gas. When discussing broadband in rural communities, industry and media draw parallels to the 1930s-era efforts by electric cooperatives to bring electricity to communities that investor-owned utilities refused to serve.

Today, electric cooperatives are reinventing themselves as broadband providers. There are roughly 900 electric co-ops nationwide, which serve mostly rural areas and small towns. Estimates indicate that 10 to 15 percent of them may ultimately launch some type of broadband deployment to remedy a lack of services from incumbent providers to their members.

Of all the entities capable of driving broadband deployment, few are as well equipped as electric co-ops to build and operate high-speed networks that meet rural communities' specific needs. Most have 70-plus years' experience providing a vital service, their existing business and service operations are similar in many ways to ISP operations, customer loyalty runs deep and community members literally own the co-ops. Co-ops are skilled at building, maintaining and operating outside-plant infrastructure. This includes electrical plant, but many have also built out fiber to substations to meet their internal network needs.

Understanding and responding to rural communities' needs is the modus operandi of co-ops. Those tasked with developing effective strategies for getting better – or any – broadband into rural and urban communities should analyze how co-ops are tackling the broadband challenge. Metropolitan areas obviously do not have the issues of sparse population and difficult terrain that rural communities face. However, some aspects of electric co-ops' operations, such as being owned by community members and having nonprofit status, can be replicated in underserved urban areas.

KNOW WHAT RURAL COMMUNITIES NEED

A challenge for rural communities is developing strategies that reflect their needs. "A lot of the organizations doing economic analysis and creating or influencing broadband policy come from big cities and bring only big-city perspectives to solutions they recommend," states Don Sidlowski, civic/government strategist for the Northwoods Broadband Economic Development Coalition in northern Wisconsin. "For example, they measure success in terms of a new company's bringing hundreds of jobs to an area because of broadband. For us, a company's bringing 10 jobs has a major impact or having a dozen senior executives moving here because of the good connectivity and then spending thousands of dollars with local businesses."

Co-Mo Electric in Tipton, Mo., is quickly becoming the poster child for electric co-ops.

ELECTRIC COOPERATIVES BUILDING OR PREPARING TO BUILD FIBER TO THE HOME

(from the Broadband Communities fiber deployment database at www.fiberville.com)

PROVIDER	STATE(S)	DATE PROJECT STARTED	FTTH ELECTRONICS VENDORS	TECHNOLOGY	SERVICES	BROADBAND STIMULUS FUNDING	POTENTIAL FIBER SUBSCRIBERS	PARTNERSHIPS
Arrowhead Electric Cooperative	MN	2010	Calix	GPON	Data, Voice	✓		
BARC Electric Cooperative	VA	2014			Data			
Blue Ridge Mountain Electric Membership Cooperative	GA, NC	2006	Allied Telesis	Active Ethernet	Data			
Bolt Fiber Optic Services (Northeast Oklahoma Electric Cooperative)	OK	2014	Alcatel-Lucent	GPON	Data, Video, Voice			
Co-Mo Electric Cooperative	MO	2011	Calix	GPON	Data, Smart Grid, Video, Voice			
Consolidated Electric Cooperative	OH	2012	ADTRAN	Active Ethernet	Data, Video, Voice			
Douglas Fast Net	OR	2002	ADTRAN, Ciena	Active Ethernet	Business Services, Data		Businesses only	
French Broad Electric Membership Corporation	NC				Data		Businesses only	ERC Broadband
GCEC Telecom (Grayson-Collin Electric Cooperative)	TX	2013	ADTRAN	Active Ethernet	Video, Voice			
Genuine Telecom (Richland Electric Cooperative)	WI		Calix		Data, Video, Voice			Richland-Grant Telephone Co-op, LaValle Telephone Co-op
GVEC.net (Guadalupe Valley Electric Co-op)	TX	2013	ADTRAN	Active Ethernet, GPON	Data, Video, Voice			
HEMC Broadband (Habersham Electric Membership Cooperative)	GA	2010	Allied Telesis	Active Ethernet	Business Services, Data			
Kit Carson Electric Cooperative	CO, NM	2010		GPON	Data, Smart Grid, Voice	✓		
Lake Region Electric Cooperative	OK	2012	CommScope	EPON	Data, Voice			
Lumbee River Electric Membership Corp.	NC	2010	Allied Telesis		Data, Smart Grid, Video, Voice	✓		
Midwest Connections (Midwest Energy Cooperative)	MI	2013	Calix	GPON	Data			
NineStar Connect (company is both electric co-op and telephone co-op)	IN	2002	Calix, Zhone Technologies	GPON	Data, Smart Grid, Video, Voice			
North Alabama Electric Cooperative	AL	2010	ADTRAN	GPON, Active Ethernet	Data, Voice	✓		
Plumas-Sierra Telecommunications (Plumas-Sierra Rural Electric Cooperative)	CA	2010	Calix			✓		
Ralls County Electric Cooperative	MO	2010			Data, Smart Grid	✓		
San Luis Valley Rural Electric Coop	CO		Calix	GPON	Business Services, Data			
SECOM (Southeast Colorado Power Association)	CO	2009	Calix	GPON, Active Ethernet	Data			
United Electric Cooperative	MO	2010	Calix	GPON	Data, Smart Grid, Video, Voice	✓		

Co-Mo is notable for being the first electric co-op to launch FTTH to all its members using its own funding, with no government support. Big-city tactics and benchmarks would clearly be wrong for Co-Mo's service area, which today is mostly unserved or underserved.

Co-Mo conducted extensive consumer surveys of its members to help it determine the extent of broadband coverage and to test different service tiers.

Another pioneering co-op, Midwest Energy Cooperative in southern Michigan, believes rural communities are best served through a mix of technologies. Midwest developed a proposal for round 1 of the broadband stimulus program that was a hybrid fiber and wireless network, then recalibrated and submitted an all-fiber network proposal in round 2. Though neither was accepted, Midwest learned that communities' diverse needs benefit from flexible approaches to technology.

"Few people dispute that, in many ways, fiber is a superior technology for broadband compared to wireless," states Terry Rubenthaler, vice president of operations and engineering at Midwest. "However, the reality is that terrain issues, geographic isolation, low-income status and other factors make it difficult in some places to deliver fiber ubiquitously. We must be realistic with the technology we invest in because our members expect us to spend their money wisely. Most of them do not care whether they get broadband over fiber or wirelessly as long as the service is available, reliable, affordable and fast enough to do what they need."

Electric co-ops' customers are also members who own the organizations, elect representatives to co-ops' boards of directors, participate actively in meetings and vote on major issues. This community ownership and participation in the governing process ensures that the executives running the broadband business get plenty of current and accurate market feedback that produces high take rates. Business models that can replicate co-ops' approach have high likelihood of marketing and financial success.

IN THE CO-OP TRENCHES

"Many co-op members can't get broadband, but they know they need it and they want it," states Alyssa Clemsen-Roberts, industry affairs manager for the Utilities Telecom Council (UTC), a trade association for utilities and co-ops. "A year ago, just a handful of co-ops were offering broadband services. Now it appears 10 to 15 percent of them are actively planning or building networks, and other co-ops are discussing it while watching how initial networks are panning out."

When co-ops first formed, rural people could barely comprehend the value of electric lights in every room, let alone the marvels of TV and Internet. Some people today may not understand what a gigabit is, but there is fairly widespread understanding that life for rural businesses, schools and consumers will improve with faster Net access. This dynamic drives take rates to the point where some co-ops' goals often are met right from the start.

"Further driving take rates is the fact that 340,000 people and a sizeable number of businesses have moved from rural areas in the past three years," states Clemsen-Roberts. Local governments and business owners who fear their communities will become ghost towns are leading the constituents pressuring co-ops to take action and also are potentially some of the biggest broadband customers.

CO-MO ELECTRIC CO-OP

Co-Mo Electric Cooperative, which celebrates its 75th anniversary this year, is bringing gigabit service to 34,000 subscribers in rural central Missouri between Kansas City and St. Louis, some in areas with only seven homes per square mile. Co-Mo actually has deployed fiber for several years to support its internal electric service infrastructure. In 2009, the company discovered that 80 percent of its members were relying on dial-up and satellite Internet services.

Moving the broadband needle forward required a level of marketing discipline and creativity that all organizations delivering community broadband should study. Co-Mo began executing a pilot that was more than a test to ensure the technology worked properly. It built a 1,000-mile network covering an area representative of its diverse demographics and geography. For more than a year, the pilot tested construction time and cost estimates, sales tactics, take rate assumptions and other factors that influence business operations.

"We collected $100 commitments from members to validate their interest in the service, which mirrors how Co-Mo started when its first members went door to door asking for $5 prepayments for electric service," says Randy Klindt, the general manager of Co-Mo's communications division. "We determined that buildout costs could be notably less than projected, and we achieved a take rate of about 46 percent, which was considerably more than expected."

Take rates exceeded expectations as the network expanded. At a recent meeting of the UTC's independent operating unit, the Rural Broadband Council (RBC), Co-Mo and its vendor/partner Calix reviewed the key elements of an FTTH business plan – cost per home passed, cost per home served, average revenue per user and penetration rate – and showed that Co-Mo beat business plan projections for every variable.

"Co-Mo is a very disciplined but innovative operator. It is doing so many things right that it serves as an excellent guidepost to other electric co-ops. Being the first entity to offer a symmetrical gig in a very low-density, rural area is part of that leadership," says David Russell, senior solutions marketing director at Calix, who works with electric co-ops and municipalities.

Co-Mo is continuing to use good marketing practices as it swings into full deployment after completing its year-long pilot. In 2013, it completed phase 1 of the project. In the spring of 2014, it started phase 2 while dramatically increasing speeds. Starting May 1, 2014, Co-Mo raised all its speed tiers permanently, at no extra charge – the lowest tier from 20 Mbps to 35

Mbps, the middle tier from 50 Mbps to 100 Mbps and the highest tier from 100 Mbps to 1 Gbps.

Co-Mo's staff crafts different marketing messages to address specific needs of its various market segments, whether in farming areas or the summer resort area of Lake of the Ozarks. Klindt explains, "Our service covers parts of nine counties. We have home-based businesses and economic development groups, an ag-based economy in some areas and summer-only residents [in others]. We have members [customers] from every one of the 50 states, and 2,000 members have their primary residential addresses in gig cities [Google's Kansas City deployments]. Our marketing plants little seeds of ideas for how the different groups can use broadband."

MIDWEST ENERGY COOPERATIVE

Midwest Energy Cooperative had fiber infrastructure to substations in place for several years to support smart meters in its 2,000-square-mile service area. It tried selling satellite Internet access in 2007 – 2008 and broadband over power line (BPL) service starting in 2010. It recently started a soft launch of FTTH services in a pilot area and already has a long waiting list.

Because the providers of satellite and BPL services went out of business suddenly, Midwest is reluctant to heavily promote a service until it is sure about the technology. Today it is leveraging the lessons learned by Co-Mo Electric and also partnered with Calix, because of the belief that the co-op's biggest marketing asset is the service quality members receive and that partners are key to delivering that quality.

Midwest also takes care to match the speed it promotes to constituents' needs. "We might push a gig, but we have plans to heavily promote 10 Mbps and 20 Mbps services," states Bob Hance, president and CEO. "Executives of companies and universities often are not able to be productive working online from home, so they'll want a gig. But for those performing basic tasks, 10 Mbps is a big deal."

Bob Hance was instrumental in organizing electric cooperatives to improve the level of broadband services available to their members. The RBC grew out of that organizing activity, stimulating many co-ops to take a more holistic view of the needs of members and rural economic development.
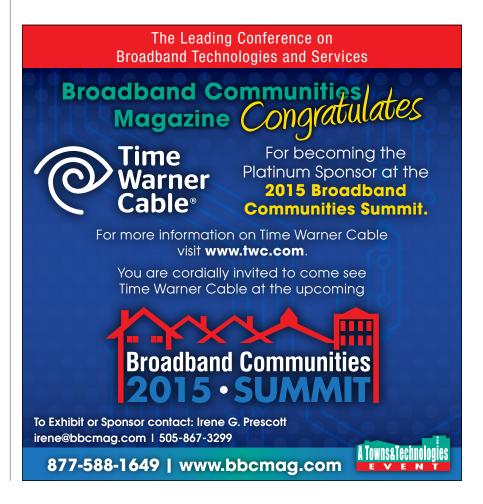
BARC ELECTRIC COOPERATIVE

The chair of the RBC, Mike Keyser, is the CEO of BARC Electric Cooperative, which serves 1,500 square miles of Virginia from the Shenandoah Valley to the West Virginia border. BARC expects to begin building out fiber services to members in the fall of 2014 or the beginning of 2015. A needs assessment survey by the Virginia Information Technology Agency shows 67 percent of the co-op's customers have only dial-up or satellite Internet access.

BARC commissioned a second survey, this time asking members what kinds of services they wanted and how much they were willing to pay for those services. Results show there could be a take rate between 70 and 80 percent. "In our financial plan, we conservatively project a 40 percent take rate," states Keyser. "We plan to invest revenue from initial subscribers to fund the network buildout to our outlying customers."

BARC is implementing a sales strategy similar to that of Co-Mo and Google, asking members to pay $50 toward connection costs if the core fiber ring passes their homes but giving them the first month's service free. "Because we are planning to presell the service, the deposit reserves your place in line when we are building out the network," reports Keyser. "If you've paid your fee up front, when we pass your home you will get a free service drop. It might not be free if we have to come back later and connect you." The presale on the core ring ensures

Funding from the Universal Service Fund and the Rural Utilities Service may help electric cooperatives build out fiber to the home in underserved areas.

that BARC meets its minimum required revenue level to start. Each area within BARC's service footprint has its own take rate requirement to be financially feasible.

THE FCC OPENS A DOOR

Many electric co-ops have great pent-up demand for broadband and communities that are committed to networks' success. However, most co-ops are still waiting on the sidelines. Their primary challenge is funding buildout costs. Recent actions by the FCC may allow many more co-ops to get into the broadband game.

In January 2014, the FCC said it planned to make millions of dollars available for innovative rural broadband deployments, and the UTC wants the agency to know that electric co-ops have shovels in hand and are already working.

"Many co-ops are experienced at deploying fiber for their own business needs," states Clemsen-Roberts. "In short order, you'll see co-ops with ready business plans, needs assessments and prepared engineering and construction plans. Some already have begun pilot projects and started long-term building."

UTC, together with RBC, spent many hours meeting with the FCC to help define the agency's Connect America Fund (CAF), the successor to the high-cost program of the Universal Service Fund, which primarily funds incumbent telcos. The RBC, with founding members such as Midwest Energy, Co-Mo and BARC, has been ground zero in the effort to expand broadband services in rural America as AT&T and other operators pull back from funding wireline broadband in rural areas.

In response to these and allied efforts, the FCC invited expressions of interest (EOIs) for potential broadband projects from many types of entities, including co-ops, and it received more than 1,000 responses. The initial program is likely to be small but, according to the FCC, could serve as a model for the larger CAF. "We saw all kinds of EOIs," says Paul Lekan, director of marketing for UTC. "Quite a few co-ops applied on their own, some partnered with a provider and some with each other. Unlike private-sector companies, co-ops aren't targeting just dense populations but are offering ubiquitous coverage for all their members. Their strategies are dictated by the needs of their members."

Keyser adds, "Since we don't need annual operating subsidies like the phone companies … this is our best selling point for receiving CAF funds. If the FCC only has to give co-ops a one-time shot of money, then CAF can create a revolving fund. If they continue to guarantee telecom companies' funds, CAF will be continually drained as there's no motivation for the companies to change to more cost-effective ways of doing business."

Co-Mo anticipates that the FCC funding will help reach the hardest-to-serve areas. "We are requesting only $21 million toward a $70 million total project," states Klindt. "Our project is being built in phases. We are using our own money to fund the first two phases, which target areas with denser populations, and asking for the FCC portion to cover the last two phases, which build out our least-populated regions."

Midwest believes working with the FCC could be a lot better than applying for a stimulus grant. "That process was very rigid," comments Hance. "The FCC's EOI process gave us more guidance for how to structure our proposals, but they were less rigid in what they asked for from us. For them, the EOI was a placeholder for ideas and establishing possible costs. They know the details will come later. The FCC has a real opportunity to get broadband funding right."

HELP FROM THE RUS

The Rural Utilities Service (RUS) of the Department of Agriculture is currently adapting its broadband loan program to conform with the 2013 Farm Bill. Historically, the program has been a major source of loans for fiber buildouts to rural areas. Electric cooperatives have a unique opportunity to access or combine funds from broadband programs and electric programs. The RUS electric program will fund middle-mile fiber infrastructure, but this infrastructure must be used for internal operations along with any services that are offered to the public.

"Since Congress continually depletes the loan program, UTC is trying to coordinate between the FCC and RUS so that complete middle-mile/last-mile projects are funded," states Clemsen-Roberts.

Rural communities are banking on electric co-ops to come through with broadband solutions. The rest of the country should be cheering for co-ops as well because their actions are defining best practices for broadband that can be duplicated elsewhere, including in metropolitan areas. The spirit and initiative shown by co-ops is a great model for all communities.

The model of community ownership of a nonprofit entity operated by competent people with the community's best interest at heart has great potential. The question remains whether the FCC (and maybe the RUS) can create funding models that recognize the value of supporting these nontraditional broadband service providers. ❖

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