Two Electric Co-ops Deliver Fiber

For electric co-ops, the stakes are high: Building broadband is an expensive, risky move into unfamiliar territory, but failing to build broadband can mean losing customer bases and stranding their electric assets.

A CoBank Report

These two case studies are excerpted from "Making the Move Into Broadband," published by CoBank Knowledge Exchange in September 2017. The full report is available on request from CoBank at KEDRESEARCH@CoBank.com.

On a Chain of Islands in Washington, An Unlikely Recipe for Broadband Expansion

Orcas Power & Light Cooperative (OPALCO) is a member-owned, nonprofit cooperative utility that has provided energy services to San Juan County in far northwest Washington state since 1937. Delivered to 20 islands in the archipelago by way of submarine cables, the majority of its power is hydroelectric energy generated by the Bonneville Power Administration.

Delivering power and broadband in this topography and environment creates a unique set of challenges. Together with its wholly owned subsidiary, Rock Island Communications, the cooperative has met these challenges with some very creative solutions to bring smart-grid technology and broadband services to its members. John Donner from CoBank's Electric Distribution team met with Foster Hildreth, the chief executive officer of OPALCO, to discuss how the co-op has used a unique combination of partnerships, member contributions and varying technologies to meet the critical needs of its members.

JOHN DONNER: *What was the initial driver behind your project?*

FOSTER HILDRETH: San Juan County was a severely underserved community for modern communications, with sole reliance on a national carrier that made little to no ongoing investment in its infrastructure. As with many co-ops, the very initial driver was a need to better communicate with key grid infrastructure (substations and submarine terminals).

Starting in 2000, OPALCO began sharing surplus fiber with larger institutions (public safety, government, schools, libraries) in the county to meet their demand for connectivity. However, a complete failure of an undersea fiber cable belonging to the national carrier disconnected the county for 10 days in November 2013. The immediate impact on emergency management systems, the economy and normal daily life initiated our current course of action.

JD: *What was the viewpoint of your board and membership before you started, and has it changed over time?*

FH: Yes, it did change over time. We do really see our world as the time before the cable broke versus the time after it. It was a defining moment in the community that brought home the need

for self-determination and the broad acknowledgment that we needed to fix our own problems. Relying on others to deliver a critical infrastructure, satisfying cooperative quality and service levels, was not going to happen.

JD: *What are the demographics of the area that you serve?*

FH: We are an older, seasonally driven economy and demographic. Our service territory has an average age of 52, compared with a Washington state average age of 38. Additionally, 35 percent of the home ownership is part-time/seasonal residents.

JD: *Are you providing broadband outside the electric service territory?*

FH: Not currently. However, if a cooperative is facing similar challenges, they can call us. We have had some interest from other communities and may explore replicating our fiber/LTE model in other parts of the county.

JD: *What broadband/telecommunications offerings already existed in your marketplace?*

FH: The primary offering was DSL internet delivered over an aging copper infrastructure, mixed with minimal cable and satellite. DSL was either provided by the incumbent carrier or resold via local ISPs.

JD: *Was there a competitive response to your offering?*

FH: We acquired the largest local ISP in an effort to expand our existing customer base and get closer to our subscriber break-even targets right from the beginning. The incumbent carrier started to upgrade portions of our mutual service area using governmental grants.

However, those efforts were short-lived; the cost to upgrade infrastructure in our county is very high, and our pricing and baseline service offering is beyond [the incumbent's] best capability. Based on substandard service for a

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number of years, there remains an overwhelming desire from folks to get away from the incumbent.

JD: *Did you complete a feasibility study and if so, did you prepare it internally or hire an outside firm?*

FH: Over the years, a number of studies were performed both internally and externally. The current plan was derived in mid-2014 after hiring a team to define a plan of action.

JD: *What technologies are you utilizing?*

FH: Our core network is an active Ethernet fiber to the home/premises supplemented with an LTE fixed wireless network. We entered into a long-term partnership with T-Mobile US, whereby we share investment and capability allowing us to offer a private wireless solution using multiple LTE spectrum bands (2, 4 and 12). We do deliver some services via public spectrum Wi-Fi as well as reselling DSL connectivity.

JD: *What services are you offering – triple play, broadband only?*

FH: We offer broadband and voice service. We do not offer traditional TV, taking the view that if you deliver a superior connection, people will adjust their consumption habits to streaming services. We also offer a full suite of IT services: hosting, email, technology classes, etc.

JD: *How are you marketing your services?*

FH: We market via the full range of media (print, online, social media, sponsorship, etc.).

JD: *Did you hire any new personnel for this project?*

FH: Yes, our broadband business has

grown to 30 full-time employees since its inception in 2014. We have hired an extremely dedicated and talented group with a wide range of skills, including technology, finance, marketing and retail experience. Perfecting our team culture has been one of our largest challenges. Providing internet services is a competitive business and requires a slightly different attitude and sales mentality. We are fortunate to be able to attract talent from all over the United States.

JD: *What is your organizational structure? Who holds the broadband assets?*

FH: OPALCO is a 100 percent equity owner of Island Network LLC, doing business as Rock Island. OPALCO maintains ownership of our backbone infrastructure, while Rock Island owns all distribution assets installed.

JD: *Did you partner with anyone?*

FH: As mentioned previously we have a very unique partnership with T-Mobile. We each have access to each other's LTE spectrum. T-Mobile provides Rock Island with a managed virtual network operator (MVNO) arrangement through which we can deliver fixed wireless services.

JD: *How are you funding the project?*

FH: Operating revenue, loan/line of credit from CoBank and direct investment for construction from property owners. We have also benefitted indirectly from a multimillion-dollar investment in infrastructure by OPALCO and T-Mobile.

JD: *Did you collect contributions to aid in construction from your subscribers?*

FH: Yes, an average of $3,500 to $4,000 per location. Connecting parties organize and fund the cost of construction to bring this utility through their neighborhoods and to their homes. The Rock Island team is actively working with organized groups of homeowners in homeowners associations, road or water associations, or simply groups of neighbors who come together to share costs. To help offset the cost of construction, we are offering two types of incentives. The first is a construction incentive of $1,500 toward the last-mile construction.

The second is a discount incentive for those willing to cover their entire construction cost. Rock Island provides a $20 per month discount on fiber subscriptions for as long as the customer lives at the service address.

JD: *Did you encounter any surprises or challenges along the way?*

FH: In short, yes, lots of surprises and adjustments along the way. The introduction of T-Mobile was a massive benefit to our ability to quickly deliver a major improvement in services to a large number of customers, especially in remote areas of the county. The continued demand and need we are seeing has been a great surprise. Also, the degree to which we've been able to solve the cell coverage gap in our community – thanks to our partnership with T-Mobile US – was a surprise, and the benefits to our electric utility, public safety and our co-op membership are huge.

JD: *What is your long-term measurement of the success of this project?*

FH: On a practical level, cash-flow positive. On a wider community level, we would like to see growth in the social and economic capabilities of our now "connected" rural community. Our long-term goal is to put a gig into every building and 100 Mbps into every hand.

Broadband as a Way to Rebuild a Community in a Disadvantaged Landscape

Economic development is a primary driver for some rural electric cooperatives considering broadband builds. Time and effort spent reviewing options for construction, engineering and design can save significant money in the project. Grants can help protect the financial position of the cooperative, but additional private funding availability is necessary for speed of access.

North Alabama Electric Cooperative, headquartered in Stevenson, Alabama, relied primarily on a grant stemming from the American Reinvestment and Recovery Act to help build its broadband project. Allison Dunn, a lead relationship manager in CoBank's Atlanta office, spoke with Bruce Purdy, the general manager of North Alabama Electric Cooperative, about how the funding and the project came together to the benefit of an area with a difficult topography and a ravaged economy.

ALLISON DUNN: *What was the initial driver behind your project?*

BRUCE PURDY: There were two primary reasons I wanted to tackle broadband access and pursued application through the American Reinvestment and Recovery Act. First, in 2002, we were an electrical system of approximately 80 megawatts. We began to lose industry, and by 2008, we had declined to around 33 megawatts. Not only did we lose over half our load; we lost basically our entire industrial load. Economic development was a driver.

Second, we had a very large section of our service territory that was unserved by any broadband carrier, and when you added the portion of underserved, it was almost our entire territory. Those were the two drivers: economic development, and the co-op members who did not have quality access to the internet.

AD: *What was the viewpoint of your board and membership before you started, and has it changed over time?*

BP: The board's major concern was the potential for large telecommunications companies to come in and price us out of business. That was probably the major topic that was discussed in board meetings. A distant second was doing it right, building the network correctly, and [offering] quality, reliable service.

The members were just excited, at least the ones we heard from. They were very excited initially, and then over time, some expressed aggravation with how long it would take to get service to them. I think some members assumed that if we announced the project on Monday, they would be connected by Friday, not realizing it was going to take two and a half to three years to build out.

AD: *What are the demographics of the area that you serve?*

BP: The best answer I can give, that the people in the co-op world would understand, is we average 8.5 meters per mile. We have approximately 18,200 meters. I would consider our area low income, similar to neighboring north Alabama counties, with the exception of Madison County, which includes Huntsville. We are low income, especially with the loss of jobs from the loss of industry.

The geography is pretty tough. We have two kinds of land: we have mountains, and we have water, and you're either climbing a mountain or you're crossing a body of water. That's not a demographic, but it sure makes it a little bit more difficult. Our flat land is basically one valley corridor located between several different mountain ranges.

In North Alabama Electric Cooperative's service territory, "you're either climbing a mountain or you're crossing a body of water."

AD: *Are you providing broadband outside the electric service territory?*

BP: Not as an ISP.

AD: *What broadband or telecommunications offerings already existed in your marketplace?*

BP: In two of our incorporated towns, Stevenson and Bridgeport, Charter was an existing provider. Though they did not serve the entire city limits, they did serve the downtown areas and the neighborhoods surrounding downtown. CenturyLink also had a portion of our service territory, but not a large portion. CenturyLink served Hollywood and a little bit of the surrounding area outside Scottsboro, Alabama. CenturyLink was limited in a lot of places to 1.5 Mbps and in some areas 3 Mbps. Charter, at that time, was limited, if I remember correctly, to 6 Mbps.

Even though Charter and CenturyLink, large companies, were available in some places,

the territory was still very much underserved. AT&T also provided 50 accounts with internet, but no more. It had been at 50 for years.

AD: *Was there a competitive response to your offering?*

BP: CenturyLink does so much marketing that I can't tell you if any was directed at us. More recently, Charter has done a pretty aggressive price marketing plan, which is basically triple play for $99 for two years. I don't think that's directed at us because I think they're doing that in a number of places. That is pretty much it.

AD: *Did you complete a feasibility study, and if so, did you do it internally or hire an outside firm?*

BP: We used an outside firm, and then we revised it internally. Our initial feasibility indicated a much higher cost than we felt we could manage, so I tabled it. I can tell you that we ultimately built our entire fiber network for significantly less than

the original estimates. It took a lot of legwork and time on our part to find the right partners for engineering, design and construction, but we had good contacts and excellent internal expertise.

For our revised projections, we reached out to ADTRAN out of Huntsville. Then ADTRAN brought in two or three others. Basically I went into the boardroom with this group of companies, and I said, "I'll tell you what, guys, if we're fortunate enough to go forward with this project, I will buy your material, I'll buy your access equipment, I'll use your engineering services." And that's how we put together the revised projections. I had a group of people from the different aspects of building this project in a room, and they all put their numbers together. We took those numbers, we added them together, and we came up with our new cost.

That new cost came in the low twenties, which turned out to be

pretty accurate and about half the original projection. To date we have $24 million in the project with 4,000 installs. In the end, how many customers will we have? I'm hoping somewhere around 7,000 to 9,000. All that said, the feasibility study is very important, because you have to have something to present to your board.

AD: *What technologies are you utilizing?*
BP: We built a GPON network. More importantly, because the population density is so low in much of our service territory, we did distributed split. Distributed-split GPON is a term that's very important for rural electric co-ops. Without getting too technical, instead of there being a cabinet on the ground, for a distributed split you have splicing enclosures on the pole. You just don't have the population, the density, to just build active Ethernet. When you go into an area like we have called Paint Rock Valley, and you probably have 2.5 customers per mile, distributed split is the only way to financially reach those areas.

I know that there is discussion about wireless for the more rural areas. I get wireless, and I'm sure you could line up 10 million people [who] disagree with me, but wireless is not hardwired, and it will never be. Wireless fluctuates for what appears to be millions of different reasons. When you're an electric co-op, people expect reliability and quality, especially reliability. The only way to accomplish that is a wire or fiber.

We use the Cisco 9000 router, and all of our access equipment is ADTRAN.

AD: *What services are you offering – triple play, broadband only?*
BP: Triple play.

AD: *How are you marketing your services?*
BP: Basically, we are not. Alabama Living magazine is the only place that we have marketed anything, but there's a reason for that: we keep a wait list of seven weeks, and we really don't want any more people

calling, requesting service, than we have now. There will come a day when we begin marketing, but we've actually, for a while, hoped our requests for service would slow down and let us catch up.

AD: *Did you hire any new personnel for this project?*
BP: Yes, of course. At one time, we had approximately eight construction crews, and we had drop guys and install guys. Now, we have two local guys work with our engineering and design firm, then work with the construction contractors, then work on drops and installs, so that we ultimately have two local guys who went through the entire project and would immediately go to work for us at the completion. Additionally, we encouraged contractors to hire local people, and we contracted separately with others who will eventually be hired full time at the co-op.

AD: *What is your organizational structure? Who holds the broadband assets?*
BP: The assets are at the electric cooperative. Because of the federal grant money, the broadband cannot be a subsidiary. We call it, for internal purposes, North Alabama Fiber Co-op, but that's not a legal distinction. We do keep separate accounting for the fiber side.

AD: *Did you partner with anyone?*
BP: We did initially partner with a local telephone cooperative for the first three years. Earlier this year, we dissolved that partnership and took everything in-house.

AD: *How are you funding the project?*
BP: We were awarded a $19 million grant under the American Reinvestment and Recovery Act that covered the bulk of the build. Right now we owe approximately $4.5 million in borrowed funds. At this point, we're paying for everything out of our operating revenue, so we're not borrowing. We haven't borrowed money in a while. All of the heavy expense is behind us now. As far as funding the project,

you're going to need the ability for immediate monies from time to time, because these projects have many different moving pieces. You've got the fiber construction. You've got the electronics. You're building your network operations center. Lead time on fiber is approximately 18 weeks, so you can't wait until you're almost out. You have to stay ahead of the lead times. You're probably going to need a local bank or other bank that will provide you the means to get money immediately.

Waiting on the grant money to come was often months after we actually had invoices that had to be paid. That was difficult. You need a line of credit, you need short-term borrowing, and then at some point you'll turn it into long-term loans.

AD: *Did you collect contributions in aid to construction from your subscribers?*
BP: Zero. It's what we felt like we had to do as a co-op.

AD: *Is the project on time and on budget?*
BP: Yes. The project was on time, because we didn't have a choice. That $19 million grant turned into a loan if it was not on time. On budget, yes. I feel very good about us having a total of $24 million or so, and being completely built out and now serving 4,000 people.

AD: *Did you encounter any surprises or challenges along the way?*
BP: Answering that could literally take the rest of the day. The biggest issue that we had, period, was the bad contractors that came in and did work. That is very hard to overcome. In the beginning you don't know enough, and by the time you figure out they're doing bad work, there's already quite a bit of bad work completed. You're trying to keep your schedule, but you're having to back up and redo work. That happened multiple times, and it really caused us problems. I'd almost classify it as devastating at the time.

The biggest mistake I made – and on a scale of one to 10, it is a 10 – I did video. I had many people telling me from day one that you had

driven to
serve

powered by
innovation

to do video, that it was the sticky service that would keep people from leaving. I was convinced, and we did video. I can't describe the mistake I feel like that was. Now, I don't have specific numbers based on facts, but I feel confident in what I'm about to say: 80 percent of our problems are video related, and I may be selling that short. It may be 85 percent or 90 percent. You absolutely have no margin to go along with that. Our other broadband services are subsidizing our video customers to the tune of between $6 and $7 per account. We were taking the margin off our broadband and subsidizing every video customer. Video programming costs are outrageous. The restrictions they put on you, you don't understand, but you have to live by them.

I just cannot say anything positive about video, and even in rural Alabama, we're beginning

to see people cut that cord and go to Amazon Prime and Netflix. It's happening, so video will die. We did have someone close by with a reliable quality service, and we got signal from them.

We don't have a lot of money in our video today, so we'll be OK, but I could not imagine spending a few million dollars building a headend. As negative as my video story is, we're not sitting out here with a headend, so when it does go away, we won't have stranded costs in some of the infrastructure.

AD: *What is your long-term measurement of the success of this project?*
BP: If we can improve our reliability to the point that almost all our members have nothing but positive things to say, even about video, that's a success. It's about reliability, and here in the next month, we're going to begin offering a gig

residential speeds. I feel like we have crossed the threshold where we're going to be OK now.

The people we hired locally are more competent each day. You have to build up your personnel, because when you first get started, you can't just go steal the skill sets. You can't pay enough. You have to kind of grow your own workforce. That's what we've done.

How do I measure success? Financially, we're stable. We're a nonprofit. We're not here to make money. We're very reliable, and we hope to get our gig service to a point that most of our customers can afford a gig to their house. ❖

CoBank is a national cooperative bank that provides loans, leases, export financing and other financial services to agribusinesses and rural power, water and communications providers in all 50 states.

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