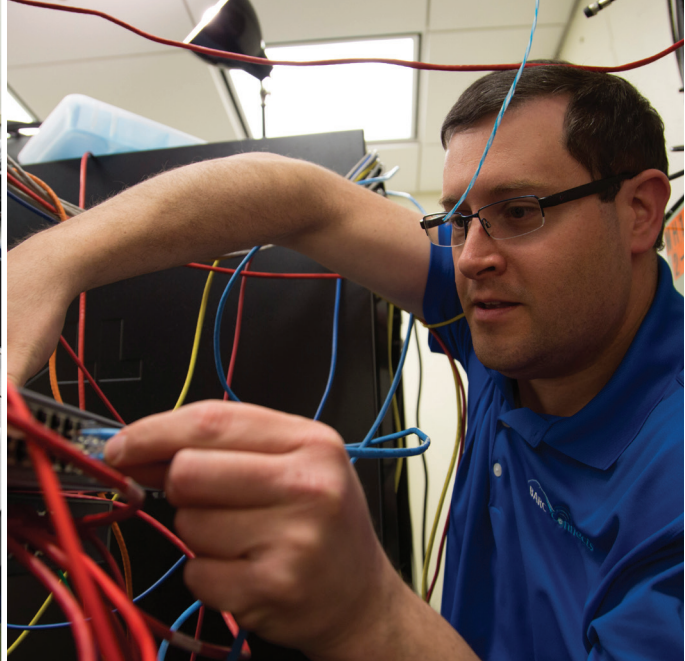# RE
RURAL ELECTRIC MAGAZINE

2022
BROADBAND
Special Insert

Your business is evolving. And so are we.

For more than 80 years, NRECA has been your trusted partner and the voice of America's electric cooperatives on the issues that matter most.

Now, as electric cooperatives play a leading role in closing the digital divide, NRECA is offering a dedicated set of services to position co-ops for success in the telecommunications arena.

Together, we can protect our co-ops' work in broadband for future generations through:

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NRECA
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cooperative.com/broadband

National momentum to bring broadband internet service into the country's unserved and underserved areas is at an all-time high. The stark rift between how connected and unconnected homes and businesses weathered the COVID-19 pandemic is driving unprecedented political will at the federal, state and local levels to fully close the digital divide.

Over the past 18 months alone, public funding for broadband projects has reached well into the hundreds of billions of dollars, with more likely to come. And as policymakers have searched for the quickest, most reliable way to turn these funding dollars into on-the-ground projects, electric cooperatives have emerged as uniquely reliable, qualified partners. Already, some 200 co-ops have stepped up with broadband initiatives, and another 100 to 200 are "kicking the tires."

NRECA has recognized this groundswell of interest from co-ops and has launched a special service tier to provide resources, advocacy, training and tools for broadband co-ops. (*See this month's cover story.*)

As co-ops embark on this new journey, they have another invaluable resource at the fingertips: the hundreds of associate members who have stood by and grown with America's electric cooperatives and their communities throughout the industry's many times of change. In this latest installment of the *RE Magazine Advertorial Broadband Insert*, you'll find a wealth of insights and information from broadband co-ops and the vendor-partners who helped them.

So whether you're already committed to a broadband project or still weighing the pros and cons, I hope you find value in these stories and that the lessons they offer will help you in this time of opportunity and change.

Scot Hoffman
Editor, *RE Magazine*

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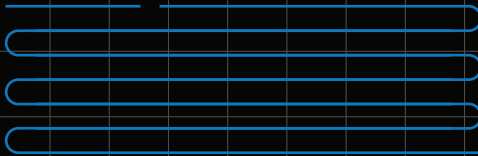
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MIDSOUTH ELECTRIC COOPERATIVE

HURRICANES DEMONSTRATE THE NEED FOR CO-OP'S HIGH-SPEED COMMUNICATION NETWORK

COOPERATIVE PROFILE

MidSouth Electric Cooperative delivers reliable power to 36,000 primarily residential meters spread unevenly across its six-county Texas territory, ranging from dense population areas near the city to very sparse rural areas, with suburban communities in between. The extreme weather that's been inundating Texas over the past few years has helped drive demand for high-speed communications from members of MidSouth, which operates outside greater Houston.

PROJECT OVERVIEW

The cooperative and its members have faced recurring outages due to the increasing number of severe hurricanes and other weather events, including Winter Storm Uri in 2021. Beyond the power outages themselves, communication during these events is both critical and lacking.

"When our territory faces a major weather event, especially one that requires evacuation, the cell phone systems get overloaded, which makes it exceedingly difficult for us to communicate effectively to maintain and repair our system so we can continue delivering services to our members. Hurricane Ike in 2008 is a perfect example," says Kerry Kelton, MidSouth's CEO.

In 2017, after Hurricane Harvey devastated the region, including crippling communications, MidSouth began researching the feasibility of building a high-speed communications system to connect its substations and offices so they'd be able to coordinate their emergency efforts when the next weather event hit. This isn't the cooperative's first foray into communications. It offered dial-up service in the late '90s and satellite internet in the early 2000s. But this is its first entry into high-speed broadband, and the initial efforts to connect several offices created a lot of questions from the members.

"Almost as soon as we started building the test phase to connect the first of our facilities, members started calling to ask when they could get connected, especially in our more rural areas," says Kelton. "Our board was hesitant at first, because it's an enormous investment, but once the politicians started asking on behalf of their communities, we were given the green light to investigate offering high-speed broadband as a service beyond our own needs."

BROADBAND BUSINESS CASE

After extensive research, including talking with other electric cooperatives that have taken the plunge into broadband, MidSouth had a strong business case to present to the board. The plan demonstrated the multiple benefits of entering the broadband space, and it showed a positive income stream for the cooperative. In addition to meeting the co-op's communication needs, the high-speed communications network would meet the members' need for telehealth, remote schooling and work from home options.

"We had school districts shifting to online textbooks and testing even before the pandemic, but COVID really exacerbated the lack of connectivity," says Kelton. "For years, we've seen our rural families driving their kids into town just so they can access fast enough internet to do their schoolwork."

The business case was further strengthened by a phased approach that capitalizes on MidSouth's population diversity by building to the higher-density, higher-return areas to get revenue flowing, which then funds and speeds up construction in more rural areas.

LESSONS LEARNED

After exploring multiple cost scenarios and technical approaches, MidSouth decided to build fiber-to-the-home for every member throughout its territory rather than delivering service through wireless hubs situated at their substations.

"Knowing how quickly technology advances, we were concerned with obsolescence," says Brandon Northcut, MidSouth's vice president of technology. "But with the fiber in place, the electronics on either end can easily be upgraded to keep current as technology evolves."

Employing a distributed tap architecture, working with industry leader Conexon and cooperative lender CoBank, MidSouth launched its pilot program in 2018 and connected to its first paying customer in September 2020. With a rapid build approach and project completion in May 2022, return on investment was also accelerated, satisfying board concerns.

MidSouth offers three price points for 100 Mbps, 500 Mbps and 1 Gig speeds, and uptake has been substantial since the beginning, with wait lists full almost as soon as they're opened.

"It can be months between when a member sees the first truck in their area and when we're ready to deliver service," says Andy Dallmeyer, MidSouth's senior vice president of finance and accounting. "Several hundred people sign up as soon as we open up though, and we know other members are waiting for existing contracts to end so they can switch over to our service."

WHY THIS CASE STUDY IS IMPORTANT

While meeting members' and communities' needs is an important cornerstone of MidSouth's fiber build-out, enhancing its electric distribution system remains a primary driver. The cooperative is installing a smart grid and has devices communicating directly across its fiber network.

"With our fiber network in place, we can monitor our operations better, restore power faster and keep our employees safer," says Kelton. "All while also delivering essential communications services to our members and communities and financial returns to our cooperative."

The fiber network will also be in a position to support MidSouth's future smart grid implementation and consumer technology developments like smart houses and home solar installations.

COMPANY DESCRIPTION

CoBank is one of the largest private credit providers to the U.S. rural economy and delivers loans, leases and other financial services to infrastructure and agriculture entities. Visit CoBank.com to access various reports, podcasts, videos and webinars that cover industry trends, economic predictions, political implications and more.

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CENTRAL VIRGINIA ELECTRIC COOPERATIVE
BUILDING LOCAL RELATIONSHIPS AND LEVERAGING UNIQUE FUNDING SOURCES

COOPERATIVE PROFILE

Central Virginia Electric Cooperative (CVEC) is a mid-sized electric co-op serving 38,000 meters in portions of 14 counties across central Virginia. The co-op's density average is eight meters per mile, but its territory encompasses both very rural areas and some high-density subdivisions. The co-op doesn't have a large contiguous footprint, and its territory intermingles with investor-owned utilities, creating unique challenges in building, deploying and marketing fiber-to-the-home to 100 percent of its membership and beyond.

PROJECT OVERVIEW

What was originally slated as a five-year project to build 4,600 miles of fiber across the cooperative territory was accelerated when COVID-19 hit.

CVEC's board recognized the urgency to complete the project given members' changing needs, and CVEC's contractors determined the timeline could be condensed. Now, CVEC's subsidiary, Firefly Fiber Broadband, is on track to finish network construction to reach its 38,000 meters and connect all interested members by summer 2022—one year ahead of schedule.

"Our growth has surprised a lot of people. We surprised people inside the electric co-op and within our community by being able to move as fast as we have," says Gary Wood, CVEC president and CEO.

At the same time, Firefly is embarking on a significant network expansion outside of CVEC's service territory, a regional project the co-op has dubbed RISE (Regional Internet Service Expansion). Over the next three years, Firefly Fiber Broadband plans to build an additional 4,500 miles of fiber

off-system to pass another 45,000 homes and businesses.

CVEC has maintained a consistent dedication to its goal of bringing reliable internet to its members dating back to the late '90s, when the cooperative started a subsidiary delivering dial-up internet service. Almost two decades later, as technology evolved and demand surged, CVEC was desperate for a solution to bring high-speed broadband to its communities.

BROADBAND BUSINESS CASE

A feasibility study conducted by rural fiber broadband solutions provider Conexon changed the game in 2017, and CVEC embarked on its fiber journey, forming strategic partnerships and pursuing funding from a wide variety of traditional and innovative sources.

Firefly Fiber Broadband offers two residential internet service packages: 100 Mbps symmetrical and 1 Gigabit symmetrical, as well as three business internet packages and VoIP phone service. Wood says Firefly has been consistently aggressive with affordable pricing and hasn't increased rates, factors he credits for their success. "We're building a system that works really well, and we're able to deliver the service we promote," he says. "Equally importantly, our service is very affordable for everyone, including families and young professionals. Our price points don't create a significant hurdle."

In areas where construction and service drops are completed, take rates average more than 60%. He notes that even before service drops begin, take rates are typically at 40 to 45% and then climb as installations begin. Several substation service areas boast take rates of over 75%.

In addition to soaring take rates, Wood says that what sets CVEC and Firefly Fiber Broadband apart from other cooperatives building fiber is the approach to funding and a willingness to explore all sources. CVEC has financed its on-system build and expansion initiatives through a combination of grants, loans, operational support and in-kind donations through numerous programs at the local, state and federal levels.

While RUS smart grid loans and grants from the Connect America Fund (CAF) II and Rural Digital Opportunity Fund (RDOF) auctions undeniably ensured financial success for the project, CVEC's innovative approach to developing relationships at the county and state levels also changed the economic picture.

"We developed local relationships so that as more money became available, decision-makers took our input on structuring grants in a way that would allow funds to flow quickly and efficiently to get people connected as soon as possible," Wood says. "If there's anything that sets us apart, it was making the connections early and talking regularly to those funding sources to let them know our interest and capabilities. That allowed us to be part of the conversation on how the new funds could flow to us as they came out."

WHY THIS CASE STUDY IS IMPORTANT

The experience of Central Virginia Electric Cooperative and Firefly Fiber Broadband is a success story that showcases the impact of building local relationships and leveraging unique funding sources to drive business from the beginning of the co-op's fiber-to-the-home project. As a result of CVEC leaders' innovative strategies, Firefly is well on its way to the 15,000-subscriber milestone as the system build wraps up one year early and the next phase of off-system expansion begins to maximize growth and profitability.

COMPANY DESCRIPTION

Conexon works with rural electric cooperatives to bring fiber-to-the-home to rural communities. Conexon offers end-to-end broadband deployment and operations support, from a project's conception to long-term sustainability: analyzing economic feasibility, securing financing, designing the network, managing construction, optimizing business performance and determining optimal partnerships.

conexon.us

CRAIG-BOTETOURT ELECTRIC COOPERATIVE

SYSTEMS INTEGRATOR HELPS SMALL CO-OP WITH COMPREHENSIVE FIBER DEPLOYMENT PLAN

COOPERATIVE PROFILE

Craig-Botetourt Electric Cooperative (CBEC) delivers electric service to 7,200 residents, small businesses and family farms in southwestern Virginia and West Virginia. Headquartered in New Castle, Virginia, CBEC has served its local community reliably for 85 years. CBEC serves rural parts of seven counties with an average population density of fewer than six homes per mile. Recognizing its members' need for an alternative to slow DSL and spotty dial-up connections, the co-op established a subsidiary to deliver high-speed connectivity they call Bee Online Advantage Internet Services.

PROJECT OVERVIEW

To improve the community's quality of life, CBEC's board of directors resolved to implement a plan to roll out essential digital services in a phased approach. The co-op needed an experienced partner to plan, build and manage the complexities of deploying a greenfield fiber access network across mountainous terrain. CBEC selected Fujitsu as their prime broadband network and integration partner.

The co-op chose to initially serve members in the least connected areas within Botetourt County. Core network installation began in June 2020, just as the need for remote work and online learning skyrocketed. CBEC obtained new funding to extend the original scope and, in October 2020, began the infrastructure expansion. The result is a 53-mile fiber network passing 750 addresses, providing VoIP services and internet speeds up to 1 Gbps.

A third phase is under way in Roanoke County to add 495 addresses and expand the co-op's smart grid. Once complete, the co-op will reach 20% of its overall service territory.

BROADBAND BUSINESS CASE

Successful broadband deployments come from well-informed, careful decisions about how to move forward. Working with Fujitsu, the co-op received a comprehensive deployment plan detailing the market opportunities, risks, network design, construction, engineering plans, maintenance and support plans and a contract-ready cost breakdown. This gave CBEC's board of directors the information needed to move forward and successfully receive matching grant monies from the Virginia Telecommunications Initiative (VATI) program plus local, state and federal governments. CBEC achieved a 42% subscription take rate within 10 months of service availability, and the subsidiary was almost totally self-sufficient.

Jeff Ahearn, CBEC's CEO, noted that broadband access has created significant potential for future economic development. "We achieved a great milestone within the first year, and the delivery of improved broadband is a driving force for a thriving community," says Ahearn.

LESSONS LEARNED

CBEC could not directly offer broadband services, so a subsidiary was established, and an affiliation agreement was approved by the State Corporation Commission. "It was a cumbersome process," says Ahearn. "We had to establish an agreement that worked for the co-op and its subsidiary while meeting the commission's requirements."

Setting up a new business can be overwhelming and requires a well-trained staff that understands the broadband business. Fujitsu worked closely with CBEC to train technical support staff to manage and troubleshoot a fiber network and provision new subscribers before transitioning network management to the co-op. "We were up against a firm date to complete the project and turn up customers," says Ahearn. "If we'd had more time, it would have been great to phase in training over a longer duration."

With less than eight weeks to complete phase two, Fujitsu project managers worked quickly. Complicating the situation, the ongoing pandemic significantly impacted the global supply chain, creating fierce competition for scarce resources. Fujitsu's experienced professionals and third-party ecosystem streamlined delivery timeframes, aligned delivery of materials and quickly mobilized resources and synchronized project elements.

Aerial all-dielectric self-supporting fiber cable was installed on CBEC's existing utility poles to simplify and speed deployment since minimal make-ready work was required. Deployment and integration of phase two were completed in time to meet the CARES Act deadline for funding reimbursement.

"The ability to accommodate a very tight deadline to complete the network and turn up subscribers meant that we were able to deliver new services to our members at a time when they were most needed," says Ahearn.

WHY THIS CASE STUDY IS IMPORTANT

To answer your membership's call for reliable and affordable fiber services, preparedness is critical for faster deployments. It takes time to launch or expand your broadband business, especially now with materials shortages. Selecting a broadband partner who can be a guiding hand and has a vetted third-party ecosystem for technology, resources and an experienced team is paramount.

Even though CBEC is the smallest co-op in Virginia, it's having a big impact on its members' lives by helping provide a better quality of life and increasing population growth.

COMPANY DESCRIPTION

Fujitsu brings more than 40 years of experience and technical expertise to the planning, deployment and activation of fiber and wireless broadband networks. Fujitsu's consultative, systems integrator approach provides co-ops with a single point of contact and peace of mind that the network will be services-ready on day one.
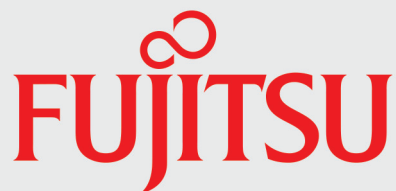
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GREAT LAKES ENERGY

REDUCING WORKFLOW INEFFICIENCIES AND STREAMLINING THE FIBER BUSINESS PROCESS

COOPERATIVE PROFILE

Great Lakes Energy (GLE), headquartered in Boyne City, Michigan, serves approximately 125,000 meters in 26 western and northern Michigan counties. The largest member-owned power company in Michigan, GLE operates out of eight offices and maintains over 14,000 miles of distribution line.

PROJECT OVERVIEW

The electric cooperative has reliably served its members for more than 80 years. In 2018, it officially launched a new venture: Truestream—a wholly owned subsidiary offering fiber-to-the-home broadband internet and voice services within the co-op's service territory. National Information Solutions Cooperative (NISC), GLE's technology partner, is supporting the co-op in the deployment of its network.

BROADBAND BUSINESS CASE

In a 2017 survey, GLE found that about 45% of those surveyed did not have access to high-speed broadband, and much of the remainder were hamstrung by unreliable or high-cost internet options. GLE was convinced that its local presence, focus on cooperative values and member-first mindset would translate well to its broadband undertaking.

"Truestream brings unparalleled service to rural homes and businesses," says Dale Stolt, Truestream solutions supervisor. "We're creating opportunities for our residents to thrive and for economic development."

Truestream collected leads and leveraged customer data to gauge interest in all 26 counties of GLE's service territory. When projecting the return on investment, Chris Barber, Truestream COO, says the goal for project viability was a 42% take rate.

By mid-2021, Truestream take rates in mature areas were higher than 60%.

The network is being installed in phases. GLE serves on average 8.7 members per mile, and the network is reaching rural, hard-to-serve areas of Michigan. GLE also serves approximately 35,000 seasonally occupied homes.

The existing competition includes cable operators, satellite broadband, digital subscriber line (DSL) and wireless internet service providers (WISP). To differentiate, Truestream offers a simplified approach to pricing and products, symmetrical product offerings and a high level of customer service GLE members expect.

LESSONS LEARNED

GLE navigated workflow inefficiencies, including the manually intensive delinquent and collection processes, that resulted in ineffective use of staff time and resources. Before partnering with NISC, time- and paper-intensive processes resulted in a strain on employees and less-timely customer service.

Additional challenges include operational hurdles posed by serving a large, non-contiguous service territory, limited access to construction workforce and materials, managing the financial capacity to build the necessary infrastructure and managing customer expectations.

"The excitement level was high—even people outside our service territory were asking to get on the list," says Jonathan Auman, GLE business systems supervisor. "We've done well managing customer expectations, but it's hard to tell members it'll take months, if not years, for us to build out the network in some areas. People need service now."

Among the greatest successes has been brand buy-in by Truestream customers, known as "Truestreamers." The formation of these brand ambassadors is reflected in a customer satisfaction rating of over 95% and a net promoter score of 87.

"As a local member-owned cooperative, we're used to members having strong feelings of investment and ownership in their co-op, and that mentality has taken root in the broadband side of the business," Barber says.

WHY THIS CASE STUDY IS IMPORTANT

One factor behind the success of Truestream is the importance of finding process efficiencies, particularly in the areas of mass disconnects and reconnects.

Before partnering with NISC, disconnecting a delinquent account meant manually writing a service order, watching for when the debt was paid even outside business hours, creating another service order and manually reconnecting the account. Each delinquent account required about 10 minutes of a staff person's time, multiplied by however many disconnects occurred that month.

Now armed with automation, reconnects occur automatically 24/7 with no human intervention. The total staff time required for each month's entire reconnect process is 15 to 30 minutes—most months creating a savings on staff time of more than 90%. The software also applies to the electric side of the utility and helps ensure credit history events are recorded in those accounts.

"It means increased data integrity. Before, this labor-intensive process opened the door to human error, but now the system is doing it, and we know that when we disconnect somebody, all the pieces and parts that go with it are accounted for," Auman says.

Truestream notched its first subscriber on October 25, 2018, and currently serves more than 12,000 internet and voice subscribers. With an annual growth goal of 6,000 new Truestreamers, tools such as mass process automation help ensure customers are as pleased with their broadband services as they are with their electric service.

COMPANY DESCRIPTION

NISC is an industry-leading IT organization that delivers advanced solutions, services and support to more than 900 independent broadband companies, electric cooperatives and other public power entities. NISC's IT solutions include financials, service, operations and marketing, and additional supporting platforms and business services.

nisc.coop

NORTHEAST OKLAHOMA ELECTRIC COOPERATIVE
BROADBAND AVAILABILITY CREATES NEW BUSINESS AND JOB OPPORTUNITIES

COOPERATIVE PROFILE

Northeast Oklahoma Electric Cooperative (NOEC), based in Vinita, Oklahoma, serves approximately 40,000 meters in portions of seven counties with over 5,000 miles of distribution system. The area is diverse, with prominent agricultural industries, a bustling resort lake with homes and businesses and a strong Native American presence, including tribal citizens, businesses and service agencies.

PROJECT OVERVIEW

With a predominantly rural service territory, NOEC watched for-profit providers come to the region only to install broadband transport to population centers, completely bypassing the rural areas.

Recognizing the lack of broadband availability, NOEC decided to undertake a fiber-to-the-home project through its subsidiary, Northeast Rural Services (NRS). In 2014, the plan took shape under the business name BOLT Fiber Optic Services (BOLT).

BROADBAND BUSINESS CASE

NRS already had experience with final-mile fiber projects serving schools and linking anchor institutions. This experience made NRS acutely aware of businesses that would benefit or could locate in northeast Oklahoma with broadband availability. With a mission to expand access, the business case for BOLT was developed.

A three-stage strategy offered BOLT the opportunity to launch the first services in more populated areas around the popular resort lake, Grand Lake O' The Cherokees, then expand service to sparse populations.

After encountering a lack of suitable facilities to house BOLT's head-end and other equipment, NOEC constructed a data center capable of withstanding an EF-5 tornado to support service reliability. Included in the build were space and provisions for colocation with other cooperatives to support and enhance future fiber projects.

LESSONS LEARNED

The initial project stage was funded by a loan secured through RUS. The loan carried a strict three-year timeframe that proved challenging to meet. Contractor availability, permitting challenges, construction conditions and supply chain issues threatened to significantly delay deployment.

The membership of NOEC was eager for a broadband provider. Once NOEC announced the creation of BOLT, people were ready to enjoy the service. It was challenging to manage the expectations of the membership through construction and equipment delays.

It became clear that constructing and operating a full fiber-optic network would require leveraging trusted partnerships with vendors to meet supply chain demands.

WHY THIS CASE STUDY IS IMPORTANT

NRS's assumptions regarding business and broadband were correct. BOLT's high-speed connectivity enhances the potential for current businesses while providing the infrastructure necessary to attract businesses and workers that would not otherwise consider or be able to operate in northeast Oklahoma.

Ferra Aerospace, one part of a "global group specializing in the design, manufacture and maintenance of subsystems and structures for commercial and military aviation, defense, automotive and other sectors," is now located just outside of Grove, Oklahoma, creating high-tech career opportunities in an area with a population approaching 7,000. Ferra also has facilities in Australia, India and the United Kingdom.

Shangri-La Resort, a complex featuring hotel, golf, entertainment and conference facilities, is a reality because of broadband availability. "Without fiber optic services, the story of Shangri-La Resort would be a much smaller story. Instead of our $85 million resort, we would have a $20 million golf club," says Mike Williams, the resort's director of communications. "Unlike most of rural Oklahoma, we were able to compete with resorts in metropolitan areas."

With the first fiber connection in 2015, BOLT now provides first-in-class service to over 14,500 customers and has 2,000 miles of mainline infrastructure passing 32,000 homes and businesses. It was important to community-oriented NOEC that all BOLT services be locally supported and locally staffed.

With the deployment well underway, BOLT continues to expand on investment and service offerings. XGS-PON will soon be available in select markets with speeds up to 10 Gbps.

The broadband build also laid the foundation for technological enhancements to NOEC's electric infrastructure. Access to newer technologies improved system reliability, efficiency and response.

COMPANY DESCRIPTION

Nokia helps electric utilities realize their smart grid vision, optimize power distribution, adapt to changing energy demand and support new business models. With Nokia's fixed and wireless communications solutions, electric utilities can achieve their business-critical objectives.

NOKIA

nokia.com

SOUTHEASTERN INDIANA RURAL ELECTRIC MEMBERSHIP CORP.
PARTNERSHIP HARMONY KEEPS PROJECT ON TRACK

COOPERATIVE PROFILE

Southeastern Indiana Rural Electric Membership Corp. is headquartered in Osgood, Indiana, and serves 27,578 accounts in portions of seven counties in southeast Indiana. Even under ideal circumstances, building a fiber-optic network across rugged terrain is a difficult task. Overcoming the complications of a global pandemic at the same time adds difficulty. But a partnership of Southeastern Indiana REMC and neighboring telephone/internet provider SEI Communications is on schedule to complete an 1,800-mile network covering the seven counties by the end of 2022.

PROJECT OVERVIEW

Forming the SEI Fiber partnership in late 2020, construction began in May 2021, and the first customer was connected in July 2021. By February 2022, they were serving more than 1,000 subscribers. SEI Fiber, at the time, was confident it would soon be adding up to 10 new subscribers a day. After a short winter slowdown, they were back to 25 to 35 miles of new network completed weekly. It's been an efficient and successful project by any measure.

BROADBAND BUSINESS CASE

Ask those closest to the partnership, and they'll mention two keys to success—a close relationship between the leaders and staff of both companies and excellent planning.

Individuals in both companies have known each other for a decade or more. Bryan Miller, director of the REMC IT and Diversified Services, remembers consulting with current SEI Communications CEO Tony Clark as the two companies built the electric cooperative's switched communications network. "We've known each other for years. And when you

can trust the person that you're dealing with, that makes it a heck of a lot easier," Miller says. "We had that foundation well before we even started these [broadband] talks."

At the same time, both companies being cooperatives made a difference. "They've got a good feel for what our objectives are in dealing with our members because they have the same objectives for their members," he says.

From his perspective, Clark sees electric and telephone cooperatives nationwide growing closer as more partnerships work out revenue sharing and operational considerations. "That's what makes it work. And again, that stems from the relationship of the two companies to be able to discuss those ideas and actually make them happen," Clark says.

LESSONS LEARNED

SEI Fiber divides duties based on what the two companies do best. "We're basically building [the fiber network] for each feeder from the substation out," Miller says. The REMC is building an XGS-PON network with service tiers currently topping out at 1 Gbps but with future service expandable to 10 Gbps. It also handles billing and first-tier technical support.

Says Clark, "From that point, we do the in-home installation, and we work with the REMC on the pre-engineering for home installation." SEI Communications, which was one of the first dial-up internet providers in the state of Indiana in the 1990s and has long provided fiber service to its telco members, also acts as the internet service provider for the partnership and covers home service visits. The REMC, however, retains customer service responsibilities for its own electric members.

Miller and Clark credit NRTC, who manages the project, with ensuring good preparation. During the onset of the COVID-19 pandemic in 2020, it became evident that delays in the supply chain could affect broadband projects. "NRTC had the foresight to say, 'Hey, guys, you gotta buy a lot of fiber right now.' That was at the very beginning of the project," Miller says. "We bought millions of feet of fiber back in October 2020 with NRTC helping us negotiate those contracts with suppliers."

Early delivery of fiber plant and other materials prompted the REMC to lease a 12,000-square-foot storage space adjacent to its offices to ensure that all the material was safe and secure. "We were not at the mercy of the suppliers saying, 'We will hold it for you,' and then when we need it, them saying, 'It's not here.' We can actually physically see it, and it's in our hands," Miller says.

Miller had high praise for the REMC's board of directors for approving the construction material purchase and storage expenditures. "When you're dealing with millions of dollars, and you're buying material that's not being used, that's a lot of money being pumped out and not a lot of revenue coming in," Miller says. "It allowed us to get to where we are so that we're not in a crunch."

SEI Communications took the opportunity to put in early orders for home installation equipment and is glad that it did. "We found the benefit of NRTC being a distributor of electronic equipment," Clark says. "It's been a nice partnership with them."

WHY THIS CASE STUDY IS IMPORTANT

The thing about this project that stands out most, Miller says, is "community impact. ... Our project is providing something to our seven counties that will be lasting for decades to come."

COMPANY DESCRIPTION

NRTC provides solutions to help its 1,500 electric and telephone members bring all of the advantages of today's evolving technologies to rural America. NRTC's products and services meet the needs of rural utilities and telephone companies with broadband infrastructure, smart grid solutions, managed network services and wireless technologies.

nrtc

Member driven. Technology focused.

nrtc.coop

MISSISSIPPI ELECTRIC COOPERATIVES
DEPLOYING A STATEWIDE CO-OP FIBER PREP PLAN

COOPERATIVE PROFILE

Mississippi's 26 electric cooperatives serve 50% of the electric meters in the state and energize a service area covering 85% of its landmass. They serve an average of 8.3 consumers per mile of line, compared to the national average of 32 for investor-owned utilities and 41 for municipals.

PROJECT OVERVIEW

Availability of funds was announced in July 2020, and utilities were given until the end of the year to complete their builds. This was a tall order made more difficult by an active storm season on the Gulf Coast that further strained limited resources. To streamline their build, the co-ops needed a collective group of companies that were very experienced in deploying fiber optic networks and needed field analysis of utility assets (make-ready engineering) completed quickly to mobilize construction resources.

Osmose provided both an experienced workforce and deployed best-in-class technology to efficiently complete the critical make-ready engineering required to meet the December 31, 2020, build deadline.

Osmose addressed success factors by:
- Focusing on critical tasks which contribute to getting the fiber built.
- Collaborating with all stakeholders to ensure they were positioned for success.
- Rolling out new LiDAR-based mobile technology to support rapid field assessment.
- Utilizing back-office data processing technology to automate parts of the field-to-pole modeling process to optimize make-ready design and pole loading analysis.

BROADBAND BUSINESS CASE

The COVID-19 pandemic made the critical importance of internet access painfully clear to both rural Mississippians and to the electric cooperatives that serve them. As in many other states, people in rural areas who did not have high-speed broadband services were isolated from family and friends, could not participate in telehealth appointments with their doctors, attend remote learning classes or work from home.

The pandemic's exposure of the disparity between rural and urban communities prompted Mississippi lawmakers to earmark $75 million of federal COVID-19 relief money to expand broadband in rural areas. Following 2019 legislation that permitted Mississippi electric cooperatives to diversify their services, several cooperatives applied for and were awarded funds from the Coronavirus Aid, Relief and Economic Security (CARES) Act to deploy high-speed internet.

LESSONS LEARNED

Make-ready engineering was completed to satisfy an accelerated timeline and stay ahead of fiber construction teams. Osmose ramped engineering to 2,000 poles per week by the third week, with a peak of approximately 3,000 poles per week. The co-ops achieved 10% savings in costs while also supporting mandated build requirements.

"Osmose surveyed our entire 1,300-mile project. They were very professional and responsive to our needs. The communication between our companies and with our partners was great," says Shawn Edmondson, general manager of Natchez Trace Electric Power Association.

"We would definitely recommend them for any of your engineering or inspection projects."

Creating the right team of capable business partners is vital to successful deployment, and every team brings its perspective and expertise to the table. Osmose has developed best-in-class approaches to efficiently support cooperative fiber deployment projects.

WHY THIS CASE STUDY IS IMPORTANT

Electric cooperatives are best positioned to provide broadband services to rural America, given their existing infrastructure, local footprint and ability to serve their members. Multiple funding resources (federal, state and local) are available to help utilities bring fiber internet networks to their customers. Rural communities will be able to develop new economic opportunities when high-speed internet is available.

COMPANY DESCRIPTION

Osmose provides life-extension services designed to build resiliency into transmission and distribution infrastructure. Osmose products and services preserve, protect and restore in-service utility structures from structure top to below grade. Osmose has the tools and expertise to help relieve the strain on your resources created by the increase in broadband construction initiatives.

Osmose®
Resilient Grids. Strong Networks. Safe Energy.

osmose.com

BLUE RIDGE ELECTRIC COOPERATIVE

CO-OP PARTNERSHIP ROLLS OUT FIBER ACROSS MOUNTAINOUS AREA

COOPERATIVE PROFILE

Located in the foothills of the famous Blue Ridge Mountains of South Carolina, Blue Ridge Electric Cooperative serves portions of five counties and roughly 70,000 members. Its service territory is spread across approximately 1,800 square miles in the most mountainous part of the state.

Established in the fall of 2020, Upcountry Fiber is a partnership between Blue Ridge Electric Cooperative (BREC) and West Carolina Rural Telephone Cooperative (WCFIBER) designed to connect the unserved and underserved rural areas in upstate South Carolina. With more than 2,500 subscribers, they're presently averaging a connection rate of more than 100 new subscribers per week. Current goals anticipate that up to 250,000 homes will have access to fiber internet within five to six years.

BROADBAND BUSINESS CASE

BREC has long recognized a large unserved and underserved population in their region when it came to high-speed internet service. While hoping for years that a larger carrier would come to the rescue, BREC gradually realized that if progress was going to be made, it would be incumbent upon the co-op to take the initiative. In 2018, BREC decided to survey its membership to gauge interest in having access to fiber service. When the surveys came back, interest was through the roof.

Around that time, Jim Lovinggood, CEO of Blue Ridge Electric Cooperative, met Jeff Wilson, CEO of West Carolina Rural Telephone Cooperative, at a state legislative meeting. The topic was fresh and alive in Lovinggood's mind at their meeting, and the casual

conversation quickly led to serious discussions about partnering to bring fiber to these underserved areas.

Founded in 1952, WCFIBER has been established in the broadband business since the late 1990s, with an all-fiber network since 2011. Currently serving more than 27,000 customers, WCFIBER knows the business and has the network engineers, service technicians and customer support experience necessary to help drive the project forward.

Building and deploying a new fiber broadband service in a mountainous rural region can be labor-intensive, but BREC already has a large portion of the necessary infrastructure in place. Additional planning, project management and construction are currently being led by BREC, with direct and heavy involvement from WCFIBER. Turning up the customers and building the core network are being handled by WCFIBER. And both companies are cooperating in the marketing effort.

LESSONS LEARNED

"I can't imagine doing this kind of a project without the help of a partner like West Carolina Telephone," says Lovinggood. "The expertise and knowledge that's required to do it—you've either got to go find it or go develop it. And in this case, we were lucky to partner with West Carolina."

As with any start-up, there will always be daily challenges as new issues arise, but the secret to staying on track is summed up by Wilson. "You simply take the time to work through and refine your processes to get things lined up. What's made this process so smooth for us is that we're very well-aligned and can easily figure out how to work together. At the end of the day, as we work through this project, we don't think of ourselves as two separate companies. We're in it together and unified in our commitment."

WHY THIS CASE STUDY IS IMPORTANT

As the pandemic has shown, reliable internet connectivity is not a luxury—it's a necessity. In many parts of rural America, electric utilities, with much of their infrastructure and business systems already in place, become the best hope for helping communities gain access to the benefits that high-speed internet provides. Often, all they need is an experienced partner to make fiber internet a reality in their area.

Lovinggood says the goal is to find a partner whose company and values are synergistic with your own. "If you can find that, the whole process is better and so much more doable," he says. And this is echoed by Wilson. "The way our companies and staff have meshed, it's as if they've been working together their entire lives."

COMPANY DESCRIPTION

Pivot is broadband's leading marketing and CX (customer experience) agency. We collaborate with people doing meaningful work in the communities they serve and come alongside electric co-ops to help them grow and thrive in broadband. We accomplish this through our core offerings: marketing, branding, customer experience, research, website development and employee training programs.

askpivot.com

HOLSTON ELECTRIC COOPERATIVE

ADDING WIFI SERVICE WITH THE RIGHT IN-HOME EQUIPMENT PROVIDER

COOPERATIVE PROFILE

Headquartered in Rogersville, Tennessee, Holston Electric Cooperative (HEC) is a member-owned distributor of Tennessee Valley Authority power, providing electric and broadband internet services in Hawkins and Hamblen counties in rural upper East Tennessee. Operating a distribution system of more than 2,600 miles with 12 substations, HEC provides electric service to more than 30,000 residential, commercial and industrial customers and broadband service to nearly 11,000 customers over a 525-square-mile service area.

BROADBAND BUSINESS CASE

One of the primary reasons that HEC began considering the investment to deploy broadband services to their customer base was due to the economy and energy-saving innovations. "Around 2015, we began to see a huge decline in the use of electricity by our customers because of all of the energy-saving innovations like LED lighting," explains Jeffery Gunter, director of network administration at HEC. "People were using less electricity, and this led to less revenue for HEC."

Gunter explains that HEC began looking for additional revenue streams. "We recognized the need for broadband services across our service area because, at the time, only half of our service area had access to high-speed internet," he says. With dial-up access being the only available method for many of the homes and businesses to receive internet connectivity, and the telecommunications provider getting out of the copper business, HEC identified the opportunity and demand for broadband services.

PROJECT OVERVIEW

After evaluating the needs of their business and residential customers, HEC decided to deploy fiber-to-the-home to provide high-speed internet, digital video services and telephone services across their service area.

The build-out, which was scheduled to be a five-year process conducted in four phases, took only two and a half years. HEC initially utilized third-party contractors for installations and technical support for the build-out. However, in April 2021, as they neared 10,000 subscribers, they created an in-house technical support group and moved completely to in-house technical support in July 2021. HEC continues to utilize third-party providers for installations and overflow service calls. HEC initially offered three tiers of high-speed internet service, delivering 300 Mbps, 500 Mbps and 1 Gbps. Whole-home WiFi is available at an additional charge. The non-profit recently began offering 2.5 Gbps, 5 Gbps and 10 Gbps services.

In addition to broadband services, HEC provides television services through an app-based set-top box from XPERI. Using an intuitive remote control, the solution provides a user experience similar to a television, making it simple to power on and scroll through and select channels. The app-based solution allows HEC to assign channel numbers to each station, enabling their customers to instantly tune to the channel numbers they are familiar with from over-the-air programming.

HEC maintains a network operation center in Rogersville, Tennessee, and another in Russellville for backup and disaster recovery. Routers and aggregate switches are mirrored at each location and connected via a diverse ring that provides multiple paths between the two sites, enabling HEC to maintain service if the network goes down at one of the NOCs. A hub-and-spoke configuration connects the individual customers to the network.

HEC delivers its broadband service over fiber-to-the-home, with about 70% of its customers subscribing to their whole-home WiFi service. HEC turned to Border States to assist in selecting the customer premise equipment (CPE) for the deployment. "During the selection process, they provided sample units and support with deployment ideas," Gunder says. "After a considerable amount of testing, we finally settled on Zyxel because it was clearly the best product out there." Border States also assisted with the planning for the rollout by helping to manage the inventory to minimize costs and reduce the amount of storage space required in the warehouse.

The broadband connection is distributed by the Zyxel WiFi gateway inside the home or office. "We have a lot of people working from home, but many don't know about routing and network management," Gunter explains. "If customers are using our CPE, our technicians are able to quickly access the router to assist in network settings such as adjusting port settings or establishing forwarding rules to support special applications or devices."

WHY THIS CASE STUDY IS IMPORTANT

The fiber deployment has not only provided valuable broadband, television and phone services to customers throughout the service area, it has also improved HEC's delivery and maintenance of electrical services. Gunter says that fiber provides the ability to capture and analyze power data from pole-mounted collectors. "Through advanced analytics, we can identify shortcomings in our electrical power grid, allowing us to identify problems before they happen." He says that the fiber deployment enables HEC to separate their SCADA for all stations and put it on a private network for added data security.

COMPANY DESCRIPTION

An internet connection is just the start. Subscribers expect ultra-fast, seamless and efficient bandwidth and connectivity that is available anytime, anywhere. Zyxel works seamlessly with service providers to unlock the internet's full potential with high-performance, reliable and scalable broadband access solutions. Their solutions include the latest fixed and mobile technologies such as 10G fiber, 5G, WiFi 6 and more.

ZYXEL
COMMUNICATIONS

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