Kit Carson Electric Cooperative Deploys FTTH for Economic Development

With help from a broadband stimulus grant, an electric co-op in northern New Mexico is lighting a fiber network that will fulfill its members' long-held dreams.

By Masha Zager / *Broadband Communities*

For Kit Carson Electric Cooperative (KCEC), building an FTTH network was just one more step along a nearly 80-year path of serving its members. Founded in 1937 to deliver electricity to unserved areas, KCEC is now the second-largest electric co-op in New Mexico. It serves nearly 30,000 members in Taos, Colfax and Rio Arriba counties.

Though electricity distribution was – and still is – its primary business, the cooperative considered diversifying as early as 1999, when deregulation of the energy markets got underway. Feedback from members at that time indicated that the region's top needs were for economic development, propane and Internet service, and the cooperative set to work on all of them.

In 2000, KCEC launched a fixed wireless Internet business, but because of the mountains and difficult terrain, it soon became clear that wireless couldn't serve all the members adequately. Soon afterward, embarking on its economic development mission, the cooperative built a call center, recruited three tenants for it, created 200 new jobs – and discovered fiber optics. The call center needed good connectivity, and KCEC became a competitive local exchange company so it could run fiber to the call center. It also began using fiber to build a smart grid.

Over time, the fiber network expanded. School districts hung bundles of fiber on KCEC's poles and traded fibers for pole access. Several more businesses connected to the network. The smart grid began to grow. "Every time, it stretched our comfort level, and that made us a better company," says Luis Reyes, KCEC's CEO.

THE LEAP TO FTTH

By the time the broadband stimulus program was announced, KCEC was ready for an even greater stretch. Along with the state of New Mexico and several other organizations, it applied for a $200 million grant to build a smart grid across New Mexico. When that application was rejected, the cooperative scaled back the proposal to include only fiber to the home in its own territory.

After canvassing its members and meeting with representatives of universities, schools, municipalities, tribal governments, consumer groups and others, KCEC determined that it had overwhelming support for the FTTH project. It submitted the proposal in the second round of the stimulus project and this time was awarded $64 million in Rural Utilities Service grants and loans.

The cooperative put together an all-star team that included Fujitsu Network

The Taos Pueblo is the oldest inhabited structure in the U.S.

Communications, Pulse Broadband, Atlantic Engineering Group, Zhone Technologies, CommScope and several others and began designing and building the network. John Chowdhury, utility practice director at Fujitsu, explains his role as project integrator as "someone to look end to end, manage risk, reduce finger pointing and make sure all the pieces come together at the right time." Fujitsu evaluated several GPON vendors on the basis of their current and future technology – including the ability to support cellular backhaul, a potentially important revenue stream – as well as security, flexibility and total cost of ownership and eventually recommended Zhone's products to KCEC.

STARTING AT THE OUTER EDGE
Today, the backbone is nearly finished, more than 1,500 drops have been completed and several hundred customers have been connected. Reyes explains, "We didn't start in the hub areas but at the farthest points away that cost us more to get there. We got those areas hooked up first both to comply with the cooperative spirit

of serving the underserved and to demonstrate what kinds of speeds we could get. Our first customer was a graphic designer who had moved from California and thought he could work from his cabin. … We hooked him up at 20 Mbps symmetrical, and now he really *can* telecommute."

KCEC offers Internet access and voice, but video is "on the back burner" for now. "Our customers are more interested in jobs than in TV," Reyes says. More than 10,000 members have already signed up for services, and Reyes expects to see a final take rate of between 60 percent and 70 percent.

Chowdhury comments, "One of the key success factors is the effort they put in to keep the community involved. That is huge. If you don't get everybody involved, you will have a different kind of take rate." KCEC's outreach efforts included making presentations

at community meetings and Chamber of Commerce meetings, sending newsletters and holding countless ad hoc meetings with any members who had questions or issues.

AN OPEN-ACCESS NETWORK
The network will be open access, as required by the stimulus program rules. In most stimulus-funded projects across the United States, no third-party providers have taken advantage of the open-access requirement, but Reyes says several providers, including the incumbent, CenturyLink, have expressed interest in delivering services over the Kit Carson network. He says, "We've positioned ourselves well to offer service *and* allow others a piece of the pie. … Competition will make us all better; the monopoly model isn't working." Third-party providers that want to offer services over the network

KCEC connected its most remote customers first to comply with the cooperative spirit of serving the underserved.

> Though KCEC benefited from broadband stimulus grants, Reyes believes many electric co-ops can deploy fiber without such grants.

will be able to purchase dedicated wholesale capacity or pay an access fee to use pooled bandwidth.

A REPLICABLE MODEL?

Nearby electric co-ops are watching KCEC's progress, and several mayors in their service territories have called Reyes to ask how they could replicate his model.

Could they succeed without stimulus grants? Reyes believes it's possible – and desirable – for electric co-ops in underserved areas to build FTTH in the post-stimulus world. Between the availability of low-interest RUS loans and the fact that co-ops are already building smart grids, he says, the economics can frequently be made to work, especially if there are anchor tenants such as colleges or large businesses. In addition, fiber is critical for economic development in all these

The network interface device serving the Taos Pueblo government is a bridge between ancient and modern worlds.

areas. Reyes points out, "Co-ops have to be aware that if we are to continue to sell electricity, we have to keep businesses there."

FIBER AND ECONOMIC DEVELOPMENT

KCEC has always been an economic development leader in its region – not just by building call centers but also by participating in all local economic development groups. Now, Reyes sees an uptick in corporate interest because of the fiber optic network and cites proposals to locate small data centers, software companies and other broadband-dependent businesses in KCEC's service area. He warns that the network is only one piece of the puzzle, however: "Fiber is the hook to get them there; then it's up to the city leaders to make a compelling case to relocate there."

The network has direct economic development benefits as well, Reyes adds. Providing permanent, skilled jobs for local residents was important to the cooperative, so Fujitsu, as integrator, trained KCEC staff to take over the maintenance and operation jobs. Reyes says, "We're finding good network people, and as the requirements get higher, we'll have to look for more. There's a high level of expectation of quality of service – the Internet can't go down."

KCEC was particularly concerned about serving the two tribal communities in its territory. "Recognizing and honoring their traditions is important," Reyes says. "We want to enhance but not destroy their culture." The cooperative committed to connect the tribal authorities ahead of any other government organizations and is helping them use broadband for education, health, e-government and

economic development. Some members of one tribe, the Taos Pueblo, still live in their traditional dwelling, the oldest inhabited structure in the United States. "There's no electricity, and they cook outside," Reyes says, "but a few feet away, there's the governor's office with gigabit service."

Some electric co-ops have found their entry into the telecom world to be a major culture shock. Electric distribution is a regulated industry with fixed rates of return, and broadband is, by comparison, a competitive and risky business. However, Reyes says, "We embrace the idea that a risk environment would make the company a better company. When you think like a monopoly, you can ignore customer service. Customers stay with you because they have no choice." KCEC is using this opportunity to change its employee culture to being "about people." The company now tries to sell safety, entertainment, convenience and quality of life rather than electricity. Competing in the broadband world, Reyes adds, is good practice for eventually having to compete with other electric companies. ❖

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KCEC SMART GRID APPLICATIONS – CURRENT AND PLANNED

- Smart meters
- Smart thermostats
- Energy efficiency programs
- Peak load management
- Electric vehicles
- Substation automation
- Distribution automation
- Solar inclusion (distributed generation option)
- Grid sensors
- Auto reclosers
- Smart outage detection for reliability