Clarksville Connected Utilities Sees Potential In FTTH, Business Services

Clarksville Connected Utilities enhances its economic development plans with a multipurpose fiber network to satisfy residential, municipal and business needs.

By Sean Buckley / *Broadband Communities*

Located in the foothills of the Ozark Mountains, Clarksville, Arkansas, is quickly becoming known for the municipally owned fiber network built by Clarksville Connected Utilities (CCU). The utility's fiber network ensures that the city, which has experienced consistent population growth over the past few decades, will be able to remain an appealing destination for residents and businesses that desire affordable high-speed broadband.

CCU sees the fiber-to-the-home (FTTH) business network and its solar power projects as ways to differentiate its economic development initiatives from those of other communities, while growing its employment base and positioning itself to take advantage of emerging IoT applications.

CCU currently provides retail electric, water and wastewater services to Clarksville residents and businesses. It also operates a 17-mile, 288-fiber network ring throughout Clarksville. The fiber network provides connectivity for CCU's utility operations and its supervisory control and data acquisition (SCADA) systems, which monitor and manage its utility infrastructure.

With this core fiber network in place and a well established business-services customer base, CCU is in the process of implementing an FTTH network, the result of a multiphase plan to satisfy the city's diverse needs.

FIBER NETWORK ECONOMICS

As it looked to gain more security and control of its utility systems, CCU conducted a study on the best medium to connect its utility assets. It found fiber was the best answer. Like other utilities, CCU uses SCADA to monitor the electric grid.

"We needed to have SCADA communications with our infrastructure in the field, so that was the primary reason behind the fiber network," says John Lester, CCU's general manager. "As we completed the feasibility study, we had some additional questions about whether the network should be our own fiber, wireless or rented from an incumbent's fiber facilities, but ultimately the decision was that ownership made more sense." Though the fiber solution was more expensive, it had much more upward potential.

CCU realized the biggest cost was not the equipment, but the labor to install the fiber.

Unlike a CLEC or a cable MSO, CCU has one key advantage: It already has its own public infrastructure. Having access to existing utility poles – something that has been a challenge for new providers offering FTTH and business services – gives CCU a leg up.

"We own the poles, have access to rights of way, and have people who know how to string wires, so we have a lot of things working in our favor," Lester says. "We stood that network up and have our SCADA network operating separate from everything else within the core, including a business network."

By running its own business-communications services, such as voice and data, over its own fiber network, CCU reduced its overall telecom spending budget.

CCU isn't alone. Fellow utility Ocala Fiber Network in Ocala, Florida, found that by migrating its business traffic off the local incumbent's copper-based T-1 lines to fiber, it saved more than $1 million annually over the past 25 years. (See "Ocala Fiber Network Finds Its Residential Service Identity," November/December 2019.)

"The business network allowed us to reduce some of our communications expenses because we had locations with several landline voice circuits," Lester says. "Because we now had our own fiber network, we could eliminate those landlines except for one, which we use for backup."

CCU is building a multipurpose fiber network.

DEDICATED SERVICE STRANDS

When CCU built its core fiber network, it found two purposes: maintaining connectivity for its internal utility and dedicating specific fibers to connect all the local institutions, such as health care, government, public safety and education.

In 2016, CCU registered with the American Registry for Internet Numbers as an internet service provider under the name ClarksvilleConnected.net.

With all the extra fiber and network capacity, CCU formed an ad hoc group. It then talked to local IT providers about whether it could provide a mix of retail and wholesale services.

After six months of analysis, the group recommended that CCU offer data and telecom services to outside entities.

"The priority list was serving the other anchor institutions in town," Lester says. "We would focus on serving city and county government facilities, hospitals, and school districts as well as a small liberal-arts college. This was followed by the business community and then residential."

As a forward-thinking company, CCU built out the fiber network in a way that would immediately accommodate extra capacity. It installed extra conduits for different entities – all of which are color-coded. In all, the utility built a fiber core that includes 288 strands of fiber.

The white conduit tube is for health care. CCU dedicates fiber for health care providers all the way around the 17-mile loop, for example. Other tubes include orange for government use, red and black for the CCU network, and purple for education. In addition, CCU set aside fiber conduit tubes for public safety and traffic lights.

What's compelling about this structure is that each business or public entity has connectivity that's not shared with others, enabling greater control over quality and privacy.

"When we built the 288-strand fiber core network, we dedicated buffer tubes for specific public purposes," Lester says. "We're carving out dedicated fibers for capacity for those purposes, and we're not necessarily rolling them into an ISP network."

GROWING MOMENTUM

Momentum around CCU's network is growing. The Johnson County Library began taking service recently, and the University of the Ozarks agreed to connect to the network in a similar fashion as the school district with a pair of dedicated fibers.

The utility also provided connectivity on a beta test basis to several local businesses, including a manufacturer, a law firm, a title and abstract company, an entertainment provider and an internet sales company.

The Clarksville School District, an early customer, has a pair of exclusive fibers around the entire core. CCU uses that fiber to provide 10 Gbps data transport between its buildings and 1 Gbps of internet bandwidth to the schools.

Lester says that "because the school district's primary network connection is through the state IT agency, we're the backup connection at 1 Gbps."

By switching to CCU, the Clarksville School District was able to immediately reduce its networking costs. "We were able to save money for the local school district, which was paying the local cable company $72,000 a year," Lester says. "With our 10 Gbps connections and our dedicated fiber pairs, the district is now paying $42,000." He adds that although "a lot of the pricing is due to E-Rate, it's still a pretty substantial savings."
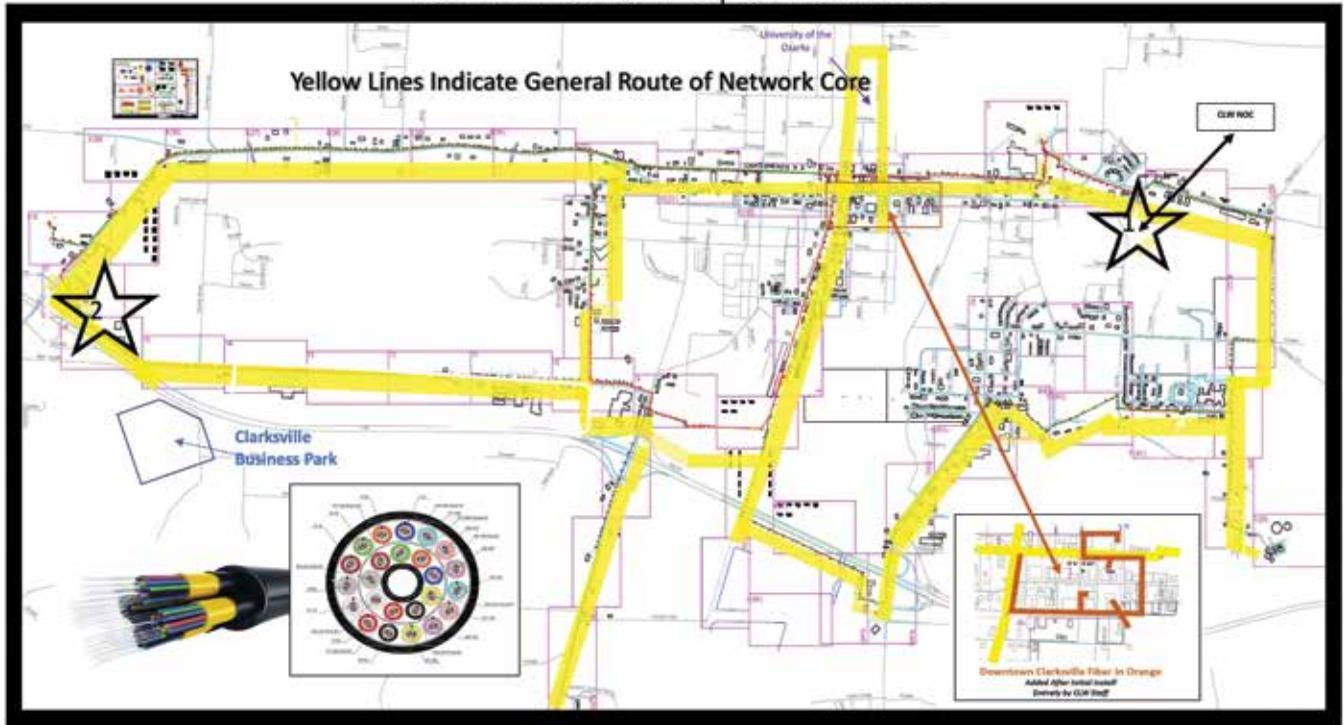
Clarksville's 288-strand, 17-mile fiber core network

FTTH PROCESS GETS UNDERWAY

CCU has been studying the possibility of deploying an FTTH network design using a GPON architecture for several years.

Following a business case study showing positive financial results and two statistically valid customer surveys, CCU began building the network. CCU is leveraging ADTRAN's Total Access 5000 fiber access platform as the foundation to provide gigabit services.

CCU is working with CT&T/ Palmetto on designing, organizing and planning the build. CCU had to prepare the make-ready work for the rights of way, moving existing attachments that are on the poles out of the way for the fiber construction.

"We started the make-ready process, which calls to move the electric infrastructure to create clearance, and then the telecom infrastructure in August," Lester says. "In parallel, we began underground work on the construction piece."

The utility has taken what it calls a nontraditional design/build approach. After receiving bids from various contractors, CCU selected a construction manager.

"This structure gives us one party to choke if there's a problem," Lester says. "You don't get in a position where you're bidding things out on price."

Given the size of the project, CCU's website says it expects building out the distribution network will take about 12 months. While it constructs the distribution network, CCU will also start connecting customer drops in the city.

Some areas for the fiber drops could be available as early as three months from the launch date of the first four of what it calls "PON/Zones." They are located near Clarksville's commercial business sectors.

As the PON/Zone equipment cabinets are installed at other locations, CCU will connect other customers who are downstream from the cabinets. Following the first four PON/Zones, CCU will build to areas where customers show the highest interest in FTTH service.

The utility also selected the outside contractor to build the fiber distribution network that manages the materials and parts for inventory. In addition, it selected the electronics for the distribution network and the in-home Wi-Fi router, network operations software and provider to do the initial drops to homes and business.

Services on the FTTH data side will include several speed tiers: 100 Mbps, 250 Mbps, 500 Mbps and 1 Gbps symmetrical. Pricing is quite competitive: the lowest tier – 100 Mbps – is $45 per month and 1 Gbps is $89 per month.

CCU also will offer a series of VoIP services. A single line costs $25 per month, and additional lines cost $19.95.

This FTTH network will address a mix of MDUs, duplexes and single-family homes.

Regardless of the type of building a potential customer lives in, Lester says, "we'll connect anybody who wants to be connected."

NO COMPETITIVE PROTESTS

How have telco and cable competitors responded to Clarksville's FTTH moves?

The main providers in the utility's markets – CenturyLink and Suddenlink – are not protesting CCU's FTTH build.

Like other states, Arkansas has not always welcomed municipal broadband. In 2011, the state passed a law that banned cities and towns from building their own networks.

But after hearing strong protests from constituents complaining about poor internet connections, the state legislature in February passed a bill to repeal the ban.

Arkansas was hardly alone. As of 2018, 21 states had passed some law that either banned or restricted municipal broadband.

Several of the anti-muni laws were from "model legislation" from the American Legislative and Exchange Council, which was backed by the large telcos. This group cited the well-worn argument that "such services should not be offered by government in competition with private-sector providers."

Although CCU had to deal with state laws that prohibited municipalities from offering residential service, it has not seen a major outcry.

"While I still operated under the radar worrying about the incumbents pulling out the rug, we heard no objections after we conducted a public notice process," Lester says.

CCU has, however, been engaged in a six-year battle with the local cable operators' pole attachment agreements.

"They have avoided and refrained from doing a pole attachment agreement with us for almost six years," Lester says.

A LOCAL FEEL

Feedback on the FTTH project has been favorable.

A CCU-conducted customer survey revealed that potential customers would be happy for CCU to provide their FTTH broadband service. "They were not very content with the existing providers," Lester says.

Besides having the necessary operational infrastructure, the fact that CCU is local is a plus. When CCU asked how many people would switch from an incumbent even if the speed and reliability was the same, 67 percent said they would be likely to subscribe to CCU's FTTH service because they could deal with a company present in their community.

"We've got guys to pull wires, we've got trucks and a built-in customer service department, and by the way, we're local," Lester says. ❖

Sean Buckley is the associate editor of **Broadband Communities***. He can be reached at sean@bbcmag.com.*