

# Fiber’s Community Presence Transforms Consumer, Business Opportunities

The first virtual edition of the Fiber Broadband Association’s annual conference, Fiber Connect, held in December, showcased many fiber community success stories and a variety of innovations that promise to expand fiber deployment. The show highlighted how communities are banding together and working with state and federal agencies to build out broadband in underserved communities. It also brought to light the need to increase bandwidth and provide flexible service during the pandemic, along with the problem of permitting obstacles and other challenges.

By Sean Buckley / *Broadband Communities*

## Pandemic Drove Unexpected Broadband Growth

**A**s the COVID-19 pandemic took hold in March, it created a new challenge for service providers to allocate enough capacity to support a surge of bandwidth needs.

Network traffic increased by 30 to 40 percent after stay-at-home mandates forced many employees to work from home, schools to shift to remote learning, and health care providers to ramp up telehealth visits.

FCC Commissioner Brendan Carr said network growth surpassed providers’ network planning forecasts. “This is the type of traffic growth that network planners weren’t expecting to see for about two years,” he said.

Carr surmises that because the FCC promotes a regulatory environment that encourages fiber



Brendan Carr  
FCC Commissioner

network spending, the United States was able to maintain network speeds and reliability.

“America’s internet infrastructure – thanks in large part to FBA members building out fiber – is why we were able to keep chugging along as people started working from home, home schooling and doing telehealth,” he said. “Europe and China had a lot of slowdowns, so the incentives we have created are what allowed the [United States] to withstand a massive surge in traffic.”

### BALANCING SYMMETRICAL NEEDS

To support two-way applications such as Zoom, there has never been a greater need for symmetrical bandwidth – a concept touted by former FCC Chairman Ajit Pai’s Keep America Connected pledge.

“We were cognizant that there was going to be a lot of uploading of video and other content,” Carr said, adding that “we

need to be balanced because it's not a zero-sum game."

Carr would like to provide everyone access to fiber-based 1 Gbps service, but he wants to make sure that raising the broadband speed standard does not push away competitors.

In 2015, the FCC made 25/3 Mbps the broadband standard, replacing the previous standard of 4/1 Mbps, established in 2010. When it issued its annual 2020 broadband report, the FCC said the gap between urban and rural Americans with access to 25/3 Mbps fixed broadband service had been nearly halved, falling from 30 percentage points at the end of 2016 to just 16 points at the end of 2019.

"I want everyone to have symmetrical gigabit speeds, but the challenge is when we modify our policies to support that, it could have some distorting effects," Carr said. "When you raise the standard to let's say 100 Mbps, there's a risk that you take communities that have 25/3 or 50 Mbps and upgrade to 100 Mbps, [but] we're stuck with communities that have 1 to 2 Mbps or dial-up."

### EMBRACING ACCESS DIVERSITY

Though fiber is the ultimate broadband mechanism, the FCC remains open to other technologies, such as wireless broadband and low-Earth-orbit (LEO) satellite. These technologies have been touted as alternative methods to get broadband into hard-to-reach areas. Several wireless broadband and LEO providers, such as Starlink, bid in the Rural Digital Opportunity Fund (RDOF) auction.

"There are some unique advantages to fiber, but I am fairly optimistic about the new generation of low-Earth-orbit satellite," Carr said. He added, "incentivizing competition from fixed wireless and low-Earth-orbit satellite will have a good effect in disciplining the market, and I think we have to be open to other technologies being part of the solution in expensive areas."

### OVERCOMING DEPLOYMENT SPEED BUMPS

Besides supporting various last-mile methods, the FCC is easing regulatory restrictions for providers building

networks by creating timelines for local approvals and preventing large fees.

"Our focus early on is how [to] make it easy, so these dollars go more directly one to one into the ground rather than getting wasted with red tape and other government fees," Carr said.

However, rules related to building network infrastructure on federal lands remain challenging. "It's outside the jurisdiction of the FCC, but I am a little disappointed that we're not faster at the federal government [because] a lot of network builds in rural Western communities are on federal lands," Carr said.

Likewise, the FCC acknowledges the challenges providers have with getting permits to build along and across railroad crossings. "Railroad crossings are a huge headache for fiber builders," Carr said. "They are outside our jurisdiction, but maybe there's more we could do to get some guardrails on that process, which slows people down."

## RUS' Rupe: Broadband Infrastructure Builds Need Public, Private Support

Having grown up and lived in rural Wyoming, Chad Rupe, the former administrator for the Rural Utilities Service (RUS), has seen firsthand how equal broadband access makes a community attractive.



Chad Rupe, former RUS administrator

RUS is a voice for rural communities that want the same broadband amenities available in large NFL cities. However, building broadband infrastructure demands cooperation between communities and providers.

"These builds require cooperation between public and private stakeholders that may have different priorities other than building out rural broadband," Rupe said. "But without broadband, farmers and ranchers won't be able to deliver the food, fuel and all the things

that people need to thrive in urban America."

RUS provides three major funding buckets:

- 100 percent grant: This provides 75 percent of the financing costs for the construction of a project.
- 50/50 loan/grant combination: This covers up to 100 percent of the construction cost.
- 100 percent loan: This can pay for 100 percent of the cost of a project.

Rupe said that although the 100 percent loan option has not been used as much as the grants, "It is a good supplement for the construction financing rural providers seek, especially as they partner up with the FCC on the Connect America Fund and the RDOF auction."

In the past fiscal year, RUS doled out \$10 billion in financing for rural America. The average amount of an RUS direct loan or grant is about \$900

per month at Treasury rates locked in for the entire term.

"It's a strong source of capital to deliver on these services," Rupe said. "We're being good stewards of taxpayer funds at low interest rates and giving providers a cheap source of capital to build their economic development structure."

### FIBER TAKES CENTER STAGE

As rural telcos and electric cooperatives expand broadband availability, RUS is receiving a lot of fiber-to-the-home (FTTH) proposals. An FTTH network can satisfy high-speed needs today and grow as those change over time.

"We provide a broad array of options for entities [...] to apply and are committed to providing service throughout the lifespan of the assets being used," Rupe said. "A lot of this has been fiber, which is a long-term solution."

However, RUS provides loans to fund projects using other media,

including wireless broadband. “We take a technology-neutral position just from the sheer fact that we know rural providers can’t build out fiber everywhere,” Rupe said. “But where we can and it makes sense, fiber is a wonderful solution.”

## BRIDGING ELECTRIC CO-OPS’ MIDDLE MILE

Having been in the electric industry for a century in some cases, electric cooperatives are pursuing broadband businesses either on their own or through provider partnerships. The RUS electric program includes more than 600 electric cooperative members.

In September, RUS implemented a new rule that allows up to 10 percent of a loan or grant to be used for last-mile and middle-mile connectivity.

“Electric cooperatives can take a lead role in rural broadband buildouts with the FCC’s RDOF program,” Rupe said. “Electric cooperatives can not only provide a smart-grid technology solution to achieve energy efficiency for their members but also close the middle-mile gap.”

An electric cooperative can get a loan with a fixed rate from the Federal Financing Bank. According to RUS, the interest rates include the Treasury Department rate plus one-eighth percent and vary depending on call options and the interim maturity rate selected at each advance, which may be as short as 90 days, with auto-rollover. Co-ops can use these loans to build out fiber past the electric substation all the way through the electric distribution system and use the reimbursement from

RDOF for last-mile connectivity.

RUS approved loans for 22,711 miles worth of smart-grid fiber investments.

“This is something that can give a leg up as electric cooperatives seek broadband funding,” Rupe said. “We can give them the cost of capital for construction that they need.”

This funding applies to electric cooperatives building their own fiber networks through provider partnerships. For example, Utilities District of Western Indiana recently broke ground on a joint fiber project in partnership with Smithville.

“Even if they don’t want to provide service themselves, they can partner with a telecom provider, get that last mile and lease out excess dark fiber capacity to get service to their members,” Rupe said of co-ops.

## Tennessee Utilities Fiber Boosts Business Growth, Electric Reliability

As traditional providers fall short on delivering high-speed broadband in smaller towns, several Tennessee electric utilities are entering the broadband game.

EPB, Bristol Tennessee Essential Services and CDE Lightband found their fiber networks are helping drive business growth and improve electric reliability.

When EPB devised its fiber plan, it considered three main points: take rate, electric system impact and the impact on the Chattanooga community.

Since launching its fiber network in 2009, EPB surpassed its initial 30,000 customer mark. It now serves more than 117,000 customers.

Before EPB launched the service, it asked the chair of finance at the University of Tennessee at Chattanooga to build an economic model of how fiber would affect the community. A new study by the university revealed that Chattanooga gained a \$2.69 billion community benefit during the first 10 years.

“The university projected EPB would see a \$605 million return over the 10 years,” said David Wade, executive vice president and chief operating officer of EPB. “We just

completed the study again, and this time the realized value brought almost \$2.7 billion worth of value to Chattanooga.”

Bristol Tennessee Essential Services and CDE Lightband see similar benefits. Bristol currently serves 33,000 electric customers and 19,000 fiber customers, surpassing its goal to sign 7,000 fiber customers.

Mike Browder, CEO of Bristol Tennessee Essential Services, said the fiber network is attracting and retaining residents. “We had other things in our community that people like and want, but we needed something to keep our young people here,” Browder said.

Meanwhile, CDE Lightband posted a 32 percent take rate with more than



David Wade  
President and COO,  
EPB



Mike Browder, CEO,  
Bristol Tennessee  
Essential Services

24,000 customers. The presence of fiber

made it a new spot to host gaming conferences. “We have seen a \$66 million return on our fiber investment,” said Brian Taylor,

general manager of CDE Lightband.

“We host an annual gaming conference called F2Con, which we’re able to do because of our high-speed internet service.”



Brian Taylor  
General Manager,  
CDE Lightband

## ENHANCING ELECTRIC-GRID RELIABILITY

Given that the utilities are in the electricity business, the fact that fiber networks improved electric-system reliability was an obvious benefit.

Fiber allows a utility to get information at any point along the electric cable. The technology can improve the monitoring of components of a substation or other high-powered infrastructure and provide immediate information on the health of a smart grid.

In addition to improving its broadband take rates, EPB has

exceeded its electric-grid efficiencies. “We have seen a more than 50 percent improvement since we built our smart grid,” Wade said.

Similarly, CDE Lightband has seen annual operational savings. “The broadband division is paying the electric division \$8 million per year in rental of the fiber and shared costs,” Taylor said.

Browder said the fiber network enables it to be proactive, which is key for business customers who rely on power to keep running. “The fiber network helps us provide on-time electric service,” he said. “Being able to read meters, report outages, automate switching and relocate a load without anybody having to touch anything has been huge.”

In one case, the network prevented an outage from impacting The Pinnacle shopping center in Bristol, Tennessee. “The person who built The Pinnacle told me it had not had any outages since it opened,” Browder said. “I held up four

fingers and told him, ‘You had four, but the longest one was 36 seconds.’”

### ATTRACTING BUSINESSES

Building out a fiber network enables a city to attract new businesses and employees. For instance, the Clarksville, Tennessee, industrial development board touts fiber-based broadband as a core amenity. Large industry titans, including Google, have come into the broader county, and fiber is attracting residents who work at those companies.

“While the large, industrial load has been out in the county we don’t serve, much of the residential load and their small partners are on our system,” Taylor said.

But Taylor added that fiber is not only about attracting large businesses. “We have a church that does virtual sessions that asked to be annexed into the city so it would have fiber-based internet,” he said. “Fiber has been a strong economic development tool.”

Likewise, Bristol Tennessee Essential Services attracted Agero, which offers roadside assistance and dispatch services to automakers, insurance companies and tow-truck providers. Initially, Agero did not want to locate a facility in Bristol, but it liked a particular building.

“Agero came back and looked at the building and saw that our fiber was connected to some sandwich machines,” Browder said. Bristol Tennessee Essential Services was able to connect the building with fiber in one day, which enabled Agero to improve internet-based phone calls.

“Agero’s president told us we’re the only ones that enable them to do internet phone calls without background noise,” Browder said.

Similarly, EPB attracted International Maritime Security Associates, which creates a location-specific set of information to send to ships at sea. “They said a big reason to locate in Chattanooga was EPB’s fiber service,” Wade said.

## Costs, Permitting, Procurement Pose Challenges

A fiber provider may offer high speeds and economic development benefits, but permitting, regulations, procurement and overbuilding competitors mean new entrants must be prepared to deal with unforeseen issues.

Chris Calhoun, vice president of operations and technology at Newport Utilities, said a well-thought-out business plan can prevent headaches. “Some of the things we missed are cost-associated,” he said. “You can’t forget all of the different costs it’s going to take, which are yearly costs, because that determines your rates.”

One unwelcome surprise for Newport Utilities was annual software license fees for its optical and video



Chris Calhoun  
Vice President  
of Operations  
and Technology,  
Newport Utilities

equipment. “Every piece of equipment that you get, there’s going to be software attached to it and licensing attached to it,” Calhoun said. “You have to account for them in your business plan.”

But software is only one cost element that can come back to bite a provider. For BrightRidge, an electric utility company in Johnson City that’s building a hybrid wireless and fiber network, utility pole overhead and aerial and underground costs were an issue.

“What we saw early on by working with consultants was that there was a big miss in assumptions for overhead and aerial fees,” said Stacy Evans, chief broadband officer at BrightRidge. “There was an assumption that systemwide, it was 20



Stacy Evans  
Chief Broadband  
Officer, BrightRidge

percent underground, but you may find out there is a lot more underground.”

He added that new providers should “do a thorough pre-engineering plan before deployment.”

### PERMITTING, FACILITY BLIND SPOTS

Service providers building out fiber must navigate a complex web of permitting and facility ownership rules. Ryan Smith, engineering manager for the City of Loveland, said permits can become more painful if not managed correctly.

“One of the big unknowns with the ditch companies is that their pricing can be all over the board – meaning some are cheap and some are expensive,” he said. “Railroads often name their own price, but you have no choice if you need to go under a railroad. Those little unknowns can add up quickly to a substantial amount of money.”

But another, more perplexing issue for fiber builders is homeowners association (HOA) irrigation systems.

Because HOAs often do not mark these systems, contractors digging ditches to install fiber often cut into them.

“We’re hitting their lines because no one knew they were there,” Smith said. “When you hit them, it affects your reputation because the HOA can raise a stink to the other nearby HOAs.”

Smith said Loveland’s marketing department is doing PR outreach “to make sure we’re doing what’s right for the city and the general public.”

After securing rights of way and other permits, Newport Utilities ran into trouble with the Department of Transportation’s intersection redesign plans. The DoT was going to move everything at its cost, but when it found out there was not a permit, it said it would not touch the company’s fiber.

“It was going to cost us a pretty

penny after the DoT redesigned the intersection, but we negotiated with [the agency],” Calhoun said. “It can cost you a lot of money, so do your due diligence beforehand.”

## OVERCOMING PROCUREMENT ISSUES

After putting together a business plan and securing permits, service providers must take into consideration procurement timelines. Procurement for products, such as fiber and trucks to string wires on poles, has been delayed by the pandemic. “COVID-19 has made procurement a challenge with supply chains,” said BrightRidge’s Evans. “Even before the pandemic, getting bucket trucks could take a year.”

Evans added that after BrightRidge went through the RFP process for a

construction company, it had to get a performance bond for each one.

“It took us four months after we selected a vendor to get it to do work,” Evans said. “Put as much of the contract in the RFP as possible, so you’re not negotiating after the fact.”

Delays with contractors are not unusual. The City of Loveland’s fiber network build plan was delayed when its legal team could not agree on contract terms for the construction it assigned for its project.

“We had a nice design, but then we had a huge delay between the design and putting boring cable into the ground,” said Ryan Smith, the city’s engineering manager. “We went through months and months of legal issues and procurement processing.”

## Google Fiber’s ‘Un-Cable Provider’ Approach Focuses on Customer Experience

With a focus on being what it calls the “un-cable provider,” Google Fiber wants to win customers *and* manage the experience during the entire relationship life cycle.

Today, Google Fiber is in 11 markets with plans to enter more this year and next.

Melani Griffith, vice president of customer engagement for Google Fiber, said everything “begins and ends with the customer.”

Griffith says that Google Fiber views customer relationships as ongoing rather than one-time transactions. They begin when potential customers look at Google Fiber offerings online, sign up, and become paying customers.

“We want to make sure we reflected engagement in our name, which is how we bring this product to customers every day and interact with them

when they notice us through marketing and through our onboarding experience,” she said. “Engagement is an important word for me because it shows the commitment we’re making to our customers.”

## AN ESSENTIAL SERVICE

Being an internet-based company, Google Fiber delivers what has become an essential service. As students and businesses were forced to learn and work from home at the onset of the pandemic, symmetrical broadband became just as important as heat and electricity.

“What we’re bringing to our customers is something that used to be in some people’s mind a luxury, like entertainment,” Griffith said. “Now, in the last year, it has proved to be an essential service for people.”

Knowing how fundamental the internet is, Google Fiber touts simple pricing and personal customer support. Google Fiber still charges \$70 for a 1 Gbps service and now \$100 for its new 2 Gbps product. Google Fiber’s 2 Gbps service is available in Utah (in Provo and Salt Lake City) and in Atlanta,

joining Nashville and Huntsville.

“We want to show that we’re ‘un-cable’ in that we have not raised our internet prices in more than 10 years,” Griffith said. “We don’t charge an install fee or an activation fee.”

## FOCUS ON EXPERIENCE

Google Fiber’s “Refreshing Internet” campaign touts that its service does not include data caps, annual contracts or hidden fees – issues that have long aroused the ire of internet users.

It also focuses on how its human customer service team is available anytime to help customers – by phone, text, email, chat or direct message.

“People don’t know the difference between broadband and Wi-Fi,” Griffith said. “If you say, how is your network, people often use the word Wi-Fi, so we want to make sure that the whole internet experience is phenomenal.”

Download speeds are important to watch Netflix or stream the latest Foo Fighters single on Spotify, but consumers notice speed lags when they conduct two-way Zoom meetings. Griffith said COVID-19 has enabled Google Fiber to highlight the importance of symmetrical speeds.



Melani Griffith, Vice President of Customer Engagement, Google Fiber

“COVID-19 helped tell the symmetrical story for us,” she said. “Nothing is worse than when you’re on a video call and jitter interrupts a person working from home, so we’re making sure you know how fiber does a better job for this pain point.”

Before a customer signs up for service, Google Fiber makes the onboarding experience easy, with simplified setup and appointment times for customers who need on-site assistance. It sends a self-install kit with setup instructions. For example, the instructions tell customers where fiber jacks are in their apartments.

“Any step that causes a customer a challenge, we try to anticipate it and plan ahead for them,” Griffith said. ❖

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*Sean Buckley is the executive editor of BROADBAND COMMUNITIES. He can be reached at [sean@bbcmag.com](mailto:sean@bbcmag.com).*

## EXPERT PERSPECTIVES

“The pandemic isn’t making broadband essential; it is exposing that it always was.”

– *Dr. Bento Lobo, First Tennessee Bank Distinguished Professor of Finance, College of Business at the University of Tennessee, Chattanooga*

“The predominant technology used by providers that apply for funding is fiber to the home, which I feel is the best technology to deliver services in rural areas.”

– *Shawn Arner, deputy assistant administrator, USDA/RUS*

“There’s not a one-size-fits-all approach to funding broadband.”

– *Crystal Ivey, broadband director of federal and state funding programs, Tennessee Department of Economic and Community Development*

“We think 25 Gbps PON is the sweet spot to be able to get a big bang for your buck right now.”

– *Doug Blue, residential broadband business development leader, Nokia*

“The biggest thing we learned is that if you create advocates for your service, they become another level of your marketing arm.”

– *Teles Fremin, chief communications engineer, LUS Fiber*

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