Fiber Connect 2022: A Focus on Fiber Growth, Public-Private Partnerships and the Middle Mile

The Fiber Broadband Association's annual conference, Fiber Connect, held in Nashville in June, highlighted many fiber community success stories and innovations that promise to expand fiber deployment. In addition to highlighting fiber's role in delivering symmetrical broadband speeds to residents, the show considered the growing role of municipalities, electric cooperatives and vendors. It also looked at the ways alternative providers build middle-mile networks to connect the dots of last-mile networks throughout states and communities.

By Sean Buckley / *Broadband Communities*

Public-Private Partnerships Require Work, Education

Public-private partnerships (P3s or PPP) continue to emerge as communities look for new ways to get broadband into the hands of more consumers and businesses.

Service providers are taking several approaches to establish P3s. Some of the most common are:

- **Build Operate Transfer (BOT):** A local government has a private party build and operate the network for several years. The local government then takes over operations of the network.
- **Build Operate Own (BOO):** A BOO is like a BOT arrangement, but the private entity is not required to transfer the project to the government.
- **Design-Build (DB):** A government contracts with a private party to design and construct a project for a fee. The government retains ownership and may either operate it or contract out operations.
- **Buy Build Operate (BBO):** This is a pre-existing network that is already complete and may have been operated by the government for some time. It is then transferred to a private party that takes it over entirely. An interim partner may need to invest in rehabilitating or expanding the project.

These agreements between ISPs and communities are gaining momentum as new federal broadband funding becomes available. States and local communities must consider partnerships with local service providers.

For example, the Broadband Equity, Access, and Deployment (BEAD) Program provides $42.5 billion to expand high-speed internet access by funding planning, infrastructure deployment, and adoption programs.

BEAD has three main priorities: unserved locations (no access to 25/3 Mbps); underserved locations (no access to 100/20 Mbps); and

community anchor institutions (without gigabit connections).

OVERCOMING OBSTACLES, CHALLENGES

Although using P3s can help make the most of federal and state broadband funding sources, panelists on the "Best Practices for Success with PPP" panel cautioned that public-private partnerships should be done carefully.

Scott Woods, vice president of community engagement and strategic partnerships at Ready.net, said there's always a hurdle when a provider and a community establish a public-private partnership. "A public-private partnership is not as easy as it sounds," he said. "They don't magically occur. It takes a lot of work to educate."

In Virginia, Lumos Networks/ NorthState, which just completed its Alleghany Highlands project in November, will bring fiber-based broadband to 12,000 addresses and add more than 650 route miles of fiber within the Alleghany Highlands. Botetourt County and Lumos received funding for universal broadband coverage for homes and businesses from the Virginia Telecommunications Initiative (VATI) grant from the Commonwealth of Virginia.

Lumos is also making progress in Orange County, North Carolina, which issued a broadband RFP. NorthState currently serves the area.

"When we began digging into the design, there were about 7,000 homes that were unserved," said Derek Kelly, senior director of market development for Lumos/ NorthState. "We said every other home in [the] county has been suffering with cable and DSL."

Derek Kelly

He added, "we were not only interested in [the area's] unserved consumers, but also the underserved."

Windstream, like Lumos and Ready.net, is also keen on pursuing public-private partnerships to enhance

> Communities should provide information about existing assets, local businesses and schools by conducting a feasibility study before approaching a provider about partnering.

its broadband reach where it could not before.

For example, in 2021, the telco announced that it would expand the number of customer locations in its Pennsylvania service area that qualify for fiber-backed, symmetrical, 1-gigabit broadband service.

"We have been going to counties to find out how they are using their ARPA funds and if they could do a project with us," said Trent Fellers, vice president and head of state government affairs for Windstream. "We then try to educate the community and ourselves on what it would take to develop a partnership in addition to looking at state grants and digesting the BEAD Program."

Trent Fellers

Besides working directly with communities, Windstream works with other P3 partners, such as electric cooperatives. Previously, the telco established a partnership with Colquitt Electric Membership Corp. Windstream and Colquitt EMC will share responsibility for expanding a fiber broadband network that will reach some of Georgia's most rural areas. "Colquitt helped build the fiber, and we used its labor to enhance that network," Fellers said. He added, "We're open to other P3 models."

FOCUS ON LOCAL COMMUNICATIONS

As providers pursue P3 arrangements, the focus should be on what a provider and a community can bring to a deal. This comes down to understanding a community's broadband needs and local regulations.

"Because there are a lot of different models out there, it's important to figure out what both sides bring to the table and to have an open dialogue to see if it's possible to make something work," Fellers said.

Lumos uses a similar process when it pursues community broadband partnerships.

"There's not a one-model-fits-all," when it comes to building public-private partnerships, Kelly said. "It all comes down to how you can build things faster and cheaper."

Establishing an agreement also depends on understanding how each state and town works. In North Carolina, many municipalities cannot issue grant dollars themselves because there may be a cable company serving that area.

"These agreements depend on every state and area by area," Kelly said. "One thing a community can do to make a project faster and cheaper is control costs with streamlined permitting."

In addition, a provider must take on the responsibility to understand the unique elements of a community. "The more information a community can come to the table with, the easier it is for the provider to work with it to structure a plan that works," Woods said. "Many times, we have good anecdotal data, but we don't have empirical data about where broadband is and where broadband is not."

A community should also provide information about existing assets, local businesses and schools by conducting a feasibility study before approaching a provider to engage in a broadband partnership.

"You have to know where the assets are and what local businesses and the education community needs," Woods said. "All that information will then be fed into what a provider partner will use to design and build."

AT&T Sets Organic, Community Partner FTTH Build Approach

AT&T has set an aggressive fiber-to-the-home (FTTH) build schedule to extend services to new markets and enhance speed tiers. During the first quarter of 2022, the service provider reported that fiber broadband generated $1.1 billion in revenue for its consumer segment, up 6.2 percent quarter-over-quarter.

AT&T also gained 289,000 fiber broadband subscribers and lost 284,000 nonfiber broadband subscribers. This represented a 21 percent gain in fiber broadband subscriber count compared with AT&T's 5.19 million fiber broadband subscribers as of the first quarter of 2021.

The telco is not resting on its laurels. AT&T has plans to build fiber to 30 million premises by 2025. Specifically, this coverage includes more than 25 million consumer locations, 4 million small businesses, and 1 million enterprise locations.

"We have been building fiber in earnest for several years and now serve 17 million customer locations," said Chris Altomari, vice president of broadband network product management for AT&T, in an interview with **BROADBAND COMMUNITIES** during the Fiber Connect 2022 show in Nashville. "We will be building at scale for the next several years."

FOCUS ON MULTI-GIG SPEEDS

As it ramps up FTTH coverage, AT&T is enhancing its speed tiers. After an initial launch in January, AT&T began offering up to 5 Gbps across parts of its entire footprint of more than 100 metro areas.

As part of those expansion efforts, the telco will bring AT&T Fiber and its Hyper-Gig speeds to seven all-new fiber metro areas in Texas, Oklahoma and Ohio by the end of the year.

Altomari said the speed increases reflect the growing demand for higher speed bandwidth. "It was time to introduce the 2 Gbps and 5 Gbps speeds given what happened during and after the pandemic with remote work and remote schooling," he said. "Many of these high-bandwidth activities are here to stay."

Although it is still early, Altomari said that AT&T sees "some nice take rates both from our existing customer base that is on lower speeds and also new customers coming into AT&T."

AT&T is also keeping a close eye on growing broadband data consumption. "Today, the average consumer on the network is consuming around 400 Mbps of data per month, which is about 15 to 20 connected devices in a household," Altomari said. "The upper-quartile customer is consuming a lot more than that."

Though these even higher gigabit speeds aren't neccessary today, AT&T wants to be prepared.

An early adopter of XGS-PON, AT&T held its first multi-gig trial in North Carolina in late 2021, with a wider, multi-gig customer launch in 2022 featuring 2 Gbps and 5 Gbps symmetrical broadband services.

In June, AT&T conducted a trial of 25GS-PON technology to demonstrate how to develop 20 Gbps speeds and beyond FTTH services out of a central office in Austin, Texas. "Our 25 Gbps trial shows the production capability of our fiber network," Altomari said. "We think 2 and 5 Gbps speeds are adequate for now, but with fiber, you can update the equipment on both ends of the fiber to keep climbing up the gigabit stack."

NECK-DEEP IN P3S

To complement its FTTH investments, AT&T has entered public-private partnerships in various communities. The telco recently announced agreements with Boonville, Indiana, and Amarillo, Texas.

AT&T finalized a $4.4 million contract in Boonville to build its

fiber network to more than 4,000 locations throughout the city. Amarillo announced a $24 million project with AT&T to build its fiber network to more than 22,000 customer locations throughout the city.

"We're neck-deep in public-private partnerships," Altomari said. "Communities are leveraging American Rescue Plan Act funds, which is now known as BEAD."

AT&T is excited to find ways to work with communities on leveraging new broadband funding sources, but the telco admits it's not an easy process. The federal government has mandated that states use the funds to initially focus on bringing broadband to unserved and underserved areas that can't get 100/20 Mbps.

"While it's exciting and opportunistic to see all the federal funding flooding into this space to build fiber broadband in the next five to seven years, it's equally complicated," Altomari said. "It is challenging not only to get the funding at the state and local level but to square off with the right folks to understand their priorities and processes."

Regardless, AT&T sees an opportunity to engage with several communities in its territories. "Our interest is to do as many partnerships as we can across our entire footprint to bring fiber broadband to those underserved areas," Altomari said. "It's a generational moment, but we're seeing a lot of complexity."

The BEAD funding will be released by the first half of next year. When that happens, Altomari expects it will spur an "intense squaring off with states on how those funds will be released and how they will be awarded."

He added that because these awards require a 25 percent capital matching requirement, "the capital intensity for AT&T is going to be significant to win those awards and compete for those infrastructure builds."

Chris Altomari

Middle Mile Presents New Opportunities for Providers, Vendors

Though there has been a continual emphasis on enhancing last-mile broadband networks, middle-mile networks are gaining attention on two fronts: new federal grant programs and networks that require backhaul and connectivity to internet access data centers.

The middle-mile network is the intermediary between an ISP and the high-speed internet. Local networks can ensure reliable, high-speed internet service for even the most remote communities by connecting to major networks.

Several states, including California, Massachusetts and northwest Colorado, have created middle-mile programs.

The National Telecommunications and Information Administration (NTIA) created the Enabling Middle Mile Broadband Infrastructure Program, which funds this vital part of the U.S.'s high-speed network. The program's $1 billion in funding will reduce the cost of bringing high-speed internet to unserved and underserved communities.

ELECTRIC CO-OPS, VENDORS GET ACTIVE

During the "Middle Mile Innovation" panel at Fiber Connect 2022, panelists found plenty of growing interest in middle-mile networks.

Cisco, which has long been a supplier of routers and optical equipment, is seeing new opportunities. "We're seeing a lot of private-equity interest in the middle mile," said Robin Olds,

Robin Olds

business development manager at Cisco. "Private equity is looking to invest and offering equity to build it out."

In addition to private-equity firms funding middle-mile networks, a growing number of rural-based telcos and electric cooperatives are active. Seven States Power Corporation is building a 3,700-mile middle-mile fiber network interconnecting local power companies (LPCs) across the Tennessee Valley. Seven States recently announced that the project is on track and moving toward the launch of its second phase.

According to Seven States, the middle-mile network will enable electric grid modernization and facilitate broadband services deployments to unserved and underserved communities. The network is being built for two purposes: connecting power companies and enabling broadband services deployments.

The NTIA's Enabling Middle Mile Broadband Infrastructure Program will provide $1 billion to reduce the cost of bringing high-speed internet to unserved and underserved communities.

"We're in the design phase right now," said Clint Wilson, senior vice president of engineering and market innovation for Seven States. "About next year, we'll enter the construction phase."

Similarly, Central Rural Electric Cooperative, an electric distribution cooperative that serves more than 20,000 meters in seven central Oklahoma counties, is getting involved in the middle mile. The cooperative has created Centranet, a wholly owned subsidiary of Central that will build a new FTTH network.

"The good news is that most electric cooperatives can extend the last-mile network to create a larger agreement," said Sachin Gupta, director of business development for the Central Rural Electric Cooperative.

Sachin Gupta

In Arkansas, the newly announced Diamond State Networks, a new middle-mile wholesale broadband provider, unites member cooperatives' fiber networks throughout the state. "Two of the electric cooperatives on the Diamond State network in Arkansas are members of Oklahoma's Broadband Coalition," Gupta said.

Cisco is seeing new opportunities in right-sizing its router and optical switching gear for the rural market. "We're trying to change the economics of the internet, whether it be a telco, cable operator, WISP, or electric cooperative," Olds said. "We're taking the same type of solutions that we provide to a Tier-1 operator and commoditizing down with our software and bringing them to a Tier-3 or Tier-4 telco or electric co-op to reduce the cost."

In addition, Cisco has invested $20 million to develop its Rural Broadband Innovation Center. The facility was coordinated and funded through the Cisco Country Digital Acceleration (CDA) Program and is one of more than 1,000 active or completed projects in 40 countries that encourage innovation.

A rural provider can come to the center and look at the ways various solutions work together in a lab environment that emulates the behavior and requirements of a real-world network.

"We can bring customers, partners and consultants in to show them what we're doing around our solutions and bring in last-mile technologies that may not exist yet," Olds said. "We can show how last-mile technologies can interoperate with anything from fixed wireless to PON."

MANAGING SUPPLY CHAIN, PHYSICAL ISSUES

As service providers and electric cooperatives move forward with their middle-mile plans, the reality of dealing with supply chain issues continues to loom large, even for companies as large as Cisco.

"We believe that [the supply chain] will free up soon," said Olds. "It's a critical issue for all our customers."

Given the deadlines the U.S. government has put on providers to get funding, Cisco has joined other vendors to advocate for its customers on the supply chain issue. "We have even gone as far as partnering with other manufacturers to provide a letter to the government to make it aware of all the challenges we have right now," Olds said.

But the supply chain is just one issue. For Seven States, getting funding together is even more difficult. It has developed a plan to share resources with 153 local power companies.

"Funding is an issue," Wilson said. "We're addressing that by sharing the risk between Seven States and the local power companies, which will build and own the fiber infrastructure."

Seven States is also dealing with physical land issues. "We're building out this network, and we have two areas that cross a national forest," Wilson said. "There are no power lines in these areas, so we'll have to be creative and work through a couple of options for that."

Product Showcase

During the Fiber Connect show, several vendors highlighted new products. Here is a summary of some new innovations.

RENDER EXPANDS CONSTRUCTION, MAINTENANCE PLATFORM

As the broadband industry prepares to support more than 10 million FTTH connections by 2023, not all activity is related to large, one-time fiber deployments. Increasingly, network operators and construction contractors are looking to solve adjacent construction challenges with the same field productivity and downstream efficiencies. To accommodate these issues, Render has expanded its Network Construction Platform to include three solutions: Render Scale, Render Connect and Render Redline – designed to reduce the time and effort required to manage all sizes and types of network builds.

The platform's new capabilities can streamline construction beyond large-scale deployment, including
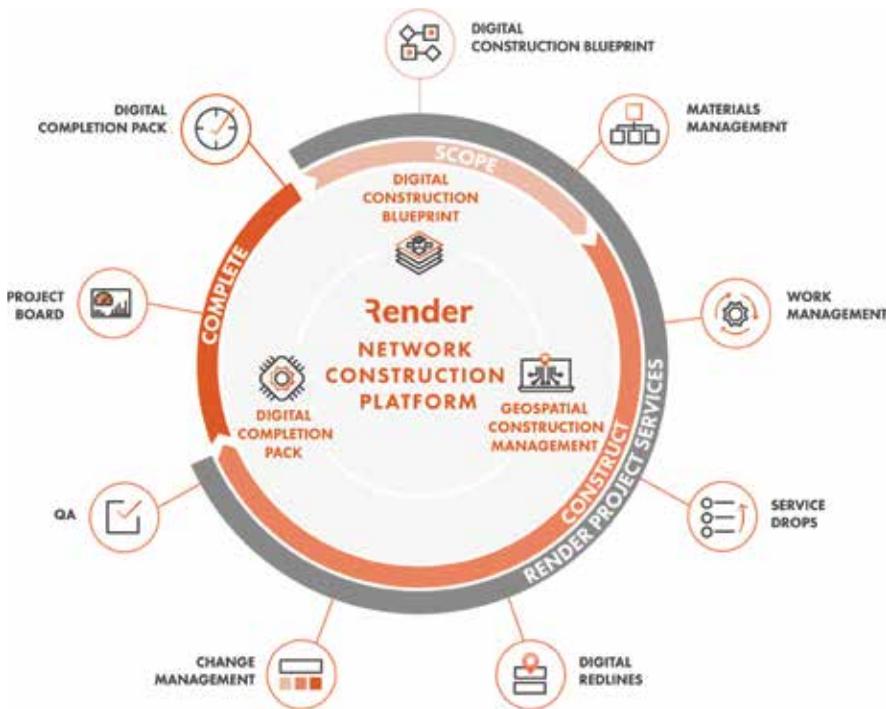
stand-alone GIS redline changes, small or high-volume network maintenance works, and customer drops:

Render Scale: A geospatial construction solution for managing large-scale deployment. Render's Digital Construction Blueprint transforms network designs into a task-level GIS scope, harnessing the power of automation and machine learning to achieve industry-leading outcomes.

Render Connect: This platform helps manage small or high-volume builds with highly efficient digital construction processes and protect margins with faster scoping and

turnover of assets for customer connections and ongoing operations and maintenance work.

Render Redline: As a light-touch redline change solution, it helps construction teams simplify their redline change process with real-time GIS data capture and management.

OFS UNVEILS SHERPA ADSS CABLE MANAGEMENT SYSTEM

Offering a reduction in fiber network installation times and costs for municipalities and electric co-ops, OFS introduced its Sherpa ADSS (all-electric, self-supporting) Cable
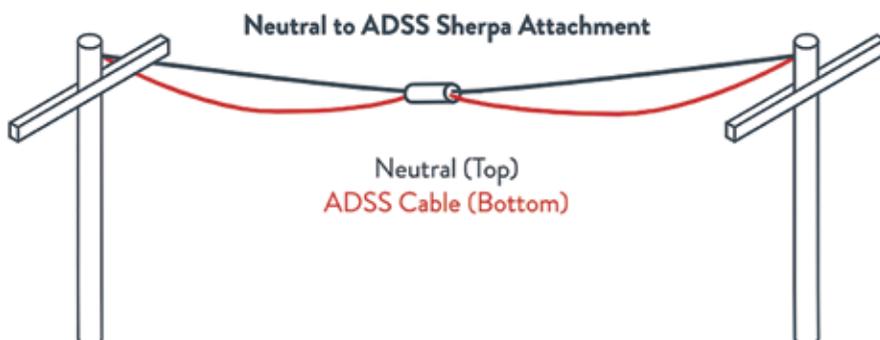
Management System. Sherpa is a patent-pending, dielectric system enabling the attachment of drop cables to ADSS trunk cables or ADSS trunk cables to electrical neutrals. As fiber network builders expand in rural areas and municipalities around the country, many have selected ADSS cable as the primary deployment method because of its reliability and speed of installation. Until this point, ADSS cables have not been used to manage drop cables. A different version of the Sherpa system can be used to attach ADSS cables to electrical neutrals in areas where maintaining ground clearance can be a challenge.

GO! FOTON ENHANCES PEACOC PLATFORM AND NEMO PATCH PANEL

Go! Foton introduced several advanced extensions to PEACOC, the company's platform with enhanced access for compact optical connectors. Leveraging Go! Foton's spreadable adapter technology, PEACOC,

Neutral to ADSS Sherpa Attachment

Neutral (Top)
ADSS Cable (Bottom)

OFS introduced its Sherpa ADSS (all-electric, self-supporting) Cable Management System

Go! Foton introduced several advanced extensions to PEACOC.

and its offshoots, such as NEMO, can accommodate a wide range of inside and outside installations. The product line includes several new enhancements. NEMO, Go! Foton's bulkhead-style patch panel offers an option to support value-added applications, including fanout and MPO breakout cables, integrated passive modules, and fusion splicing using a newly engineered chassis with a sliding drawer. The PEACOC fiber management platform includes an enhanced, lower-cost chassis. PEACOC also features a new all-front-facing PEACOC cassette that demonstrates the ease of access for even higher fiber count deployments. Go! Foton demoed its PEACOC 40-channel DWDM cassette, allowing effective integration of up to six 40-channel DWDM devices in a single 1RU chassis.

PLP EXPANDS FIBER CONNECTOR, ADSS OFFERINGS

PLP highlighted its COYOTE fiber optic product line and expanded set of FIBERLIGN ADSS hardware solutions during the Fiber Connect show. The company unveiled four new fiber connectivity solutions to manage fiber cabling more effectively: COYOTE PedBox, COYOTE Universal Organizers, COYOTE MPC3 and MPC6, and the COYOTE DEN. Likewise, PLP now offers a new suite of ADSS product offerings for service providers: FIBERLIGN Multi-Drop Brackets (Side and Direct Mount); FIBERLIGN Flat Multi-Drop Solutions, SLACKLOOP Compact Vertical Cable Storage, FIBERLIGN Aluminum Support (New Design), and the SLACKLOOP 18" Plastic Cable Storage System. ❖

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INDUSTRY PERSPECTIVES

"The more transparent you are, the more trust you will build with your community."

– Chad Crager, Broadband Executive Director, City of Fort Collins

"Fiber is future-proof if you build it right."

– Pete Hoffswell, Broadband Services Superintendent, Holland, Michigan, Board of Public Works

"Fiber to the home is not just for homes. Fiber passes every street and building. You can connect businesses and 5G cell sites and provide wholesale services to other providers"

– Stefaan Vanhastel, CTO, Nokia Fixed Network

"Over the past 25 years, much money has been put into broadband, but often it has not gone to the right places."

– Paul Breakman, Vice President of Cooperative Business Solutions, Business and Technology Strategies, NRECA

"We're making a big push into MDUs."

– Mike Wolf, Director of Network Planning, altafiber

"What's encouraging is that state broadband offices are encouraging partnerships."

– Amol Naik, Senior Vice President of Public Policy, Government Affairs and Community Engagement, Ting Internet

"We're looking at transitioning from being an internet company to a data company."

– Cameron Kilton, CTO, Nextlink

"We're going to see open access coming of age."

– Pete Hoffswell, Broadband Services Superintendent, Holland, Michigan Board of Public Works

"Fiber has been in our vocabulary for some time, and this new federal funding has put a fire under it."

– Matt Polka, CEO, ACA Connects

"There's an expectation that broadband is always going to be on and available."

– Paul Breakman, Vice President of Cooperative Business Solutions, Business and Technology Strategies, NRECA

"Hopefully, the broadband speed discussion is in the rearview mirror."

– Gary Bolton, CEO, Fiber Broadband Association

"Building trust and responsibility with each other will be essential."

– Godfrey Enjady, President, National Tribal Telecommunication Association

"I don't know how any of us can do our jobs at the state level if we don't want partnerships."

– Tamarah Holmes, Director, Virginia's Office of Broadband