



Fiber Forward

2024 EDITION 4

**Capital Projects Fund's
Broadband Gift**

PAGE 48

**First State Runs for
First in Broadband**

PAGE 51

**Diagramming
FBA's Path with
JIMMY TODD**

PAGE 25





The next PON evolution: **50G PON**

50G PON isn't just a stepping stone – it's a revolutionary leap toward the next generation of broadband access.

- Seamless coexistence of 50G PON, XGS-PON and GPON on a single port
- Streamlined delivery of residential, business and backhaul services over one fiber
- Add ultra-fast services at 10Gbit/s, 20Gbit/s or higher without impacting existing subscribers



adtran.com

**Empower your network with 50G PON.
Partner with Adtran to future-proof
your broadband infrastructure.**

IMMCO INC

EST.
1992

we're more
than on
the map.
we make it.

More than 4 million FFTP passings designed!



iBISS Testimonial

FIBER DESIGN

- 5G, Fiber, HFC, and Copper
- 3 Million+ FFTP
- 1,000+ Network Professionals
- 30+ Years
- National & Global Clients

SOFTWARE

- Flagship Software, iBISS
- Customizable
- Accelerated Rollout
- Tracks Builds
- Lowers Construction Costs

PERMITS

- Right-of-Way Permitting
- Mitigate bottlenecks
- Draft Documentation
- Manage Workflow
- Geospatial Data Accuracy



INFO@IMMCOINC.COM



Bringing Value to Those Building
the **BROADBAND HIGHWAY**

**CENTRIX™ SYSTEM
HIGH-DENSITY
FIBER
DISTRIBUTION
SOLUTIONS**

**PRODUCTS
& SERVICES**

25,000+ Stocked Products

800+ Diverse Suppliers

99.9% Accurate Delivery

Supply Chain Management

CORNING

BROWSE



PRODUCTS

Value of a Distributor | ptsupply.com | 800-238-7514

Power & Tel is a Distributor of communication products & services enabling connectivity wherever people work, learn, and play.



2024

The Launchpad for 100% Fiber



LETTER FROM THE PRESIDENT & CEO

Gary Bolton, FBA President & CEO

As of mid-October 2024, 55 out of 56 states and territories have approved BEAD Volume II proposals and I anticipate that NTIA will approve the last state (Texas) by the time you read this or shortly afterwards. Certainly, there will be other hurdles to overcome as we move forward, but the nation is on a solid path to 100% fiber for all.

Some states are already on the verge of 100% connectivity. Delaware, the First State, is determined to cross that threshold before anyone else, as you'll read in "First State Runs for First in Broadband." But it isn't alone. "Maryland and Virginia's Paths to 100% Broadband Access," details the progress of Delaware's next-door neighbors.

While much of our effort and discussion has been around BEAD, I must reluctantly thank the pandemic for shining a bright light on the desperate need for robust broadband and for providing a long-needed jumpstart in closing the digital divide and providing urgency in connecting the unconnected across the country. Who would have thought that the organization in charge of printing our money would have provided one of the most effective broadband infrastructure programs in the nation's history? "Treasury's CPF Success" talks with CPF Director Joseph Wendler and Pew to understand the impact of this program.

Looking to the future, you'll learn that Philadelphia is looking at how it will handle the city's fiber for the next

20 to 30 years in "East Coast Capital Fiber" along with Washington, D.C.'s fiber network delivering fiber to the District government, its citizens, and also providing connectivity to federal agencies.

For one family in Oklahoma, the future is now. "50G PON Demonstrated in Sac and Fox Nation" documents the first 50G PON connection delivered on a tribal nation on a rural cooperative fiber network without any special engineering of the physical plant, but a straightforward plug and play experience. Installing future-proof fiber today means we aren't going to leave anyone behind tomorrow as new opportunities emerge through the availability of high-speed low-latency broadband.

The future is now for many wireless ISPs (WISPs) as they embrace and adopt fiber. "The WISP Transition to Fiber" reveals at least 30% of WISPA's membership have deployed fiber and the reasons why fiber provides a healthy growth path for them even as they have already had fiber delivering broadband to the towers in their networks.

While the fiber industry is on the right side of history, there is a movement underway to open the door to what NTIA defines as "unreliable broadband" (aka Low Earth Orbit Satellite and unlicensed wireless). Some states ended up on the lean side of the BEAD funding allocation and are looking for cheap way to check boxes for the hardest


to reach unserved areas. It is very convenient for state broadband offices to punt these locations to Starlink and claim they are served. My rule of thumb is that any home that is served with commercial power should be able to get fiber. We should not quit on rural America because it's hard and inconvenient as these are the Americans that need robust broadband infrastructure the most.

We have been extremely fortunate at the Fiber Broadband Association to have such a hard-working board and volunteer leadership team. Leading our board this year is Jimmy Todd, CEO Nextech. You might know Jimmy best from his "Easy Rider" entrance, in full motorcycle leathers on the "Big Dawg" chopper at our annual conference in July. While Jimmy can look intimidating in his cowboy boots, porkchop sideburns, towering over you at 6' 3," he is a gentle giant and so highly engaged in the organization.

In addition to chairing the board, Jimmy is the co-chair of our precision agriculture committee, and he is passionate about rural broadband, farming, and economic development. Jimmy has traveled around the world with me this past year, meeting with global broadband leaders, in an effort to advance our industry and develop best practices. "Diagramming FBA's Path with Jimmy Todd" provides key insights into the departing chair's work ethic along with

key issues that will affect the future of service providers. His continuing efforts in raising awareness and building information on precision agriculture will have an impact for years to come.

One of our ISP members that I am most impressed with is Ritter. At our Little Rock Fiber Connect Workshop in April, Victor Esposito (CTO), Raynessia Chandler (Support Services), Katie Hall (Construction Communications), Josh Worley (OSP Planning), and Tony McKay (Field Operations), walked our audience through their detailed deployment and customer acquisition process and it was evident on why they delight their customers given their seamless internal and external communication process. I hope you enjoy the article, "Ritter's RightFiber at the Right Time."

I am so proud of *Fiber Forward* magazine as our goal is to provide world-class editorial content, that will enable you to keep a tight pulse on our industry and future. This issue is our best yet. 

Sincerely,




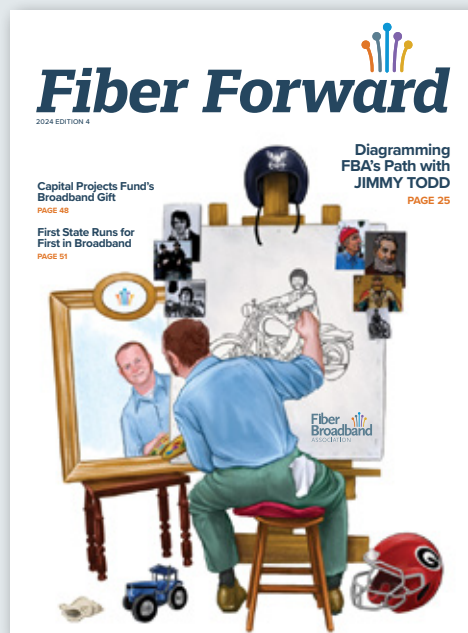
About the Cover

The internal debate about which Norman Rockwell cover to pay homage to with this issue was as fierce as FBA's outgoing chairman Jimmy Todd's strong impression at Fiber Connect 2024. By vote, we settled on Rockwell's Triple Self Portrait that appeared on *The Saturday Evening Post's* February 13, 1960, cover. It also appeared on the Norman Rockwell Anniversary Issue in May/June 1994.

The original illustration by Rockwell includes self-portraits of Rembrandt, Vincent van Gogh, Albrecht Dürer, and Picasso, all masters of introspection, pinned to the canvas. For our cover, we decided to include images that lean into the glorious mutton chops Jimmy sported for most of the year so we have included images of Elvis and The Blues Brothers; a few folks we know our chairman admires, including Jacques Cousteau, whose pipe is a nod to Rockwell's in the original, Rocky Balboa, who could go in the mutton chops category as well, and King Arthur.

Because we are who we are, we included Alexander Graham Bell, inventor of the telephone and Edward Butler who invented the Butler Petrol Cycle in 1884 – the world's first motorcycle. The tractor at our chairman's left foot celebrates his work on the FCC's Precision Agriculture Task Force and FBA's own committee development. At Jimmy's right foot is the helmet of his alma mater, the University of Georgia and on the motorcycle helpful perched on top of the easel is a Navy emblem, celebrating his service in the U.S. Navy.

This cover was created by Raleigh-based Illustrator Alice Holleman (www.AliceHolleman.com). 



*It's a big country.
Someone's got to connect it.*



Ask us about
our BABA
compliant
solutions

*Our PEACOC® high density fiber panels and
innovative OSP terminals deliver unmatched
performance and reliability.***

Let's get this done.



GoFoton
www.gofoton.com

***Go!Foton Best-in-Class fiber connectivity solutions available in red/white/blue areas only.*



Let's Connect America TOGETHER

As we round out our product portfolio to become BEAD compliant, we want you to know that we are working every day to ensure the products you require meet BABA requirements.

Keep up with our progress at [AFLglobal.com/ConnectingAmerica](https://aflglobal.com/ConnectingAmerica)



Fiber Forward

2024 EDITION 4

FBA PRESIDENT & CEO
Gary Bolton

PUBLISHER
Connect2 Communications, Inc.

EDITOR-IN-CHIEF
Doug Mohny

CONTRIBUTING WRITERS
Gary Bolton
FBA President and CEO

Marissa Mitrovich
FBA Vice President of Public Policy

ADVERTISING SALES DIRECTOR
Lucy Green

DESIGNER
Rick Skippon

Join Fiber Broadband Association Today!
www.fiberbroadband.org

Mark Your Calendars
for Fiber Connect 2025!
June 1-4, 2025
Nashville, TN



Subscribe to the Fiber For Breakfast
podcast on your favorite podcast platform.

Table of Contents

05	Letter from the President & CEO
06	About the Cover
10	Ritter's RightFiber at the Right Time
11	Editor's Moment
13	USDA's Continued Infrastructure Investments in Rural America
14	Finding More Monetization Opportunities in the Connected Home
17	50G PON Demonstrated in Sac and Fox Nation
18	IXP Proliferation Needed for Rural Broadband Sustainability
21	East Coast Fiber
25	Diagramming FBA's Path with Jimmy Todd
29	FBA Regional Fiber Connect Workshop Photo Gallery
39	Tri-County Electric Cooperative Splices Broadband
36	Fiber Broadband Boosts Income, Investment, and Business Investment in Rural America
34	FBA and Industry Q3 Progress Strong
41	Industry Event Calendar
43	The WISP Migration to Fiber
46	Public Policy Outlook
48	The Capital Projects Fund's Broadband Gift
51	First State Runs for First in Broadband
52	FBA 2024-2025 Events
54	Maryland and Virginia's Paths to 100% Broadband Access
56	Fiber Forward Editorial Calendar





Ritter's RightFiber at the Right Time

By Doug Mohney, Editor-in-Chief

Northwest Arkansas has undergone an economic boon in recent years, anchored by legendary Fortune #1 company Walmart and companions Tyson Foods (#85) and J.B. Hunt Transportation Services (#316). It's an area where Ritter Communications finds itself well-positioned to serve today through their recent fiber expansion and launch of RightFiber residential services. But, the privately-held company wants to make sure people understand it is as equally dedicated to all of the small towns and mid-sized communities it serves across its five-state territory.

"We're always growing," said Heath Simpson, CEO, Ritter Communications. "We really enjoy connecting unserved and underserved communities. We're always looking for communities that fit our target profile, if you will. It's somewhere that the ILEC and the cable company has overlooked. It's a community that's not a Tier 1 or NFL city. It's typically a smaller town, small town America."

Ritter Communications traces its history back to 1906, when the Ritter family started up a phone company in Marked Tree, Arkansas, located in the northeast part of the state. About a dozen years ago, the company started expanding its physical infrastructure.

"My predecessor saw the value of fiber and started building fiber networks in selected areas," said Simpson. "Capital was tight. Capital availability is always a limitation for all of us in fiber. In 2019, the family, being very forward thinking, brought in Grain Management, a private equity partner firm headquartered in Washington, D.C., that's focused solely in the telecom space."

Ritter sold a majority stake to Grain, which brought in capital and debt financing to "accelerate" the company's fiber investments, enabling it to build fiber across dozens of unserved and underserved communities in the mid-South

as well as the ability to offer full-scale enterprise services to the businesses in the region.

The company has grown to serve 155 communities across the states of Arkansas, Tennessee, Kentucky, Missouri, and Texas, with 5,600 miles of its own fiber "and a bit more every day," said Simpson. Creating its RightFiber offering meant examining what it could offer to households in terms of simplifying the customer experience and make it easy for customers to interact with them.

"We just didn't launch fiber to the home, we reimagined what home internet service should be," said Simpson. "If you are a customer of the typical incumbent, you get your bill, it has a bunch of add-ons, of taxes and fees and surcharges and whatnot. We said let's just do away with all that nonsense. If we tell somebody the bill is 60 bucks, let's make it 60 bucks."

RightFiber launched with 1 Gbps service in 2021 with take rates that were "well above what we expected" and now offers 2 Gbps and 5 Gbps service tiers. The company currently passes over 100,000 homes with its greenfield fiber builds and passes another 60,000 homes with its legacy HFC cable company.

Further expansions are in process, with an edge-out strategy based upon where RightFiber's network is and finding out which communities want alternatives to their existing service provider. "We go into these areas where the incumbents just kind of rested on their laurels and have not upgraded or have not invested in the network," said Simpson. "We'll usually meet with mayors or economic development folks, and talk with them, understand what the needs of their communities are. When we find those communities, we go there. We are looking at adjacent states as well. We have some great opportunities in a couple of nearby states we're not quite ready to announce, but very soon." 



EDITOR'S MOMENT

The Future is Coming Faster Than We Think

By Doug Mohnney, Editor-in-Chief

Dear Readers:

As I go through my notes to close out this issue of *Fiber Forward*, the echoes of past conversations help inform the present if I can slow down long enough to listen.

When I was a young(er) lad back in the mid-1990s, I remember someone from a large service provider who is long retired say, "I don't know what you're ever going to do with more than 100 Mbps in your household." Today, major service providers offer multi-gigabit services and are gaining benefits in areas that I never would have imagined. For example, in a September 9, 2024, press release, AT&T noted that its mobility (cell phone) business performs better *where it offers fiber*. AT&T's postpaid phone subscribers share is about *500 base points higher* where the company offers AT&T Fiber versus its average subscriber share nationwide.

AT&T's synergies of wireless and fiber maybe shouldn't be a surprise, since bundling together multiple services has been a thing since the OG introduction of the voice, video, and internet "triple play" bundle decades ago. The twin business values of increasing ARPU (Average Revenue Per User) and owning the customer.

T-Mobile's money moves to get into fiber to the home is another area of déjà vu all over again. In many respects, it was inevitable due to the blessing and curse of RF spectrum. The first wireless customer, be it cellular or LEO satellite, gets a great experience because they don't have to share the airwaves. Add a couple of hundred customers and performance goes down, latency goes up. Fiber becomes the clear off-ramp for overloaded spectrum. Don't be shocked if, in the not-too-distant future, people start looking at where SpaceX Starlink is charging "congestion fees" and translating the data into fiber opportunities.

Does anyone remember "One Laptop Per Child (OLPC)?" Two decades ago, it asserted providing children in

developing countries with low-cost computers would improve their education and their lives. Today, OLPC is only remembered through a Wikipedia page and a book chronicling its failure. Among the factors leading to its demise were a lack of knowledge on the part of the users on how to take full advantage of the technology, the need for scaffolding and mentoring from teachers, and a sustained community effort.

Contrast that with the findings of the CORI study, which you'll find discussed in this issue. Success was enabled by partnerships with local government, anchor institutions, and the local service provider to provide training, education, and programs to help households and businesses maximize their use of connectivity.

Today's OLPC ideal is the LEO satellite dish. In the hands of emergency responders, LEO satellite is a godsend, but simply dropping a dish on the doorstep of every unserved household without larger community engagement and education isn't going to be effective. It will, of course, certainly be cheaper and cover more people, just like the misguided efforts to stretch DSL and 25/3 for as long as possible.

Fiber's continued success across the country is not just through the medium and the technological benefits it brings in terms of low-latency and future-proofing, but the discussions, engagement, and long-term planning it has brought to the table about the wellbeing of communities large and small. Municipalities and their stakeholders have had to have thoughtful conversations on where they are, their vulnerable populations, and where they want to go. Let's recognize that those discussions have been catalyzed by the need for fiber.

Until next issue,

Doug Mohnney





Adams Cable Equipment

RESELL • REUSE • RECOVER • RECYCLE



Adams Cable Equipment stands at the forefront as a premier distributor of CPE and OSP equipment, catering to a global clientele. Our expertise lies in delivering top-tier materials, encompassing Fiber, Conduit, Vaults, Routers, and beyond.

Renowned for our unwavering reliability and commitment to innovation, Adams Cable Equipment seamlessly supports customers across every stage, from head-end operations to the intricacies of customer premises, ensuring a comprehensive solution from start to finish.

HDPE CONDUIT

- Custom line print available
- UL-651A listed available on SDR13.5, SCH40, SCH80
- 2-Way & 3-Way segmented reel options available
- Pure virgin resin (Superior Quality)

FIBER OPTIC CABLE

- ADSS
- Armored & Non-Armored OSP
- Flat Drop Toneable & Non-Toneable
- Indoor/Outdoor Plenum Rated
- Micro Fiber
- Ribbon

VAULTS / HANDHOLES

- | | |
|--------------------|-----------|
| • Flower Pots | • Tier 8 |
| • Pedestrian Grade | • Tier 15 |
| • Tier 5 | • Tier 22 |
| | • H-20 |

HARDWARE

- | | |
|------------------------|------------------|
| • Pole Line Hardware | • Tools |
| • Aerial Drop Hardware | • Wall Anchors |
| • Drop Attachments | • Ground Anchors |
| • Grounding Hardware | • Fasteners |
| • Banding | |

CABLE

- | | |
|------------------|----------------------|
| • Lashing Wire | • Twisted Pair Cable |
| • Strand | • Grounding Wire |
| • Coax Cable | • Tracer Wire |
| • Hardline Cable | |

PULL TAPE:

- Empty
- 1130#
- 1250#
- 1800#
- 2500#
- Toneable

COLOR STRIPING:

- | | |
|----------|----------|
| • Orange | • Red |
| • Blue | • Gray |
| • Black | • White |
| • Green | • Custom |

PIPE:

- SDR9
- SDR11
- SDR13.5
- SCH40
- SCH80

IPS:

- 0.75" • 2.0"
- 1.0" • 2.5"
- 1.25" • 3.0"
- 1.50" • 4.0"



CALL US TODAY! 913.888.5100

9700 WIDMER ROAD | LENEXA, KS | 66215 | WWW.ADAMSCABLEEQUIPMENT.COM



USDA's Continued Infrastructure Investments in Rural America

By Doug Mohney

While the U.S. Department of Agriculture (USDA) started investing in rural America through the Rural Electrification Administration, as needs and technology have changed, so too has the organization and mission. Today's Rural Utility Service (RUS) now provides infrastructure funding for water and broadband as well as electricity.

"Water, we do somewhere in the neighborhood of a billion and a half dollars' worth of mostly loans, some grants every year," said Andy Berke, Administrator, Rural Utilities Service, USDA on an October 9, 2024, *Fiber for Breakfast* webinar. "Those go almost exclusively to municipalities, because they're the ones in the water business. These are for very small communities with tremendous amounts of needs to either upgrade their water system or often to fix what they have, including decentralized water, people who have septic system."

Electrical investments remain the largest focus of RUS, with the agency loaning an average of about \$5 billion per year to electrical cooperatives, but the portfolio has expanded under the Biden-Harris Administration to add forgivable loans and grants for clean energy projects with an announcement in September 2024 of more than \$7.3 billion in financing for rural electric cooperatives, leveraging private investments of more than \$29 billion.

"When we fund rural electrical cooperatives, they're often building out fiber through their [electric] network, which has a lot of effects," said Berke. "Could be for direct provision of broadband. It could be the middle mile piece for others, or to lease fiber to others. A lot of funding we see on the electric side, people are trying to figure out how that interacts with the telecom side as well. We see that interaction at play every day."

To date, RUS has conducted four rounds of the Rural Development Broadband ReConnect Loan and Grant Program, designed to furnish loans and grants to provide funds for the construction, improvement, or acquisition of facilities and equipment needed to provide broadband services in eligible rural area, and expects to announce the first recipients of the fifth ReConnect in the fall of 2024.

"In this administration, we've given out a little bit under \$4 billion dollars [for broadband], that will connect about 627,000 people," said Berke. "We are connecting people every day. We also have a smaller initiative called Community Connect, which is in the \$5 million dollar [grant




Andy Berke, Administrator, Rural Utilities Service, USDA, seen here speaking at Fiber Connect 2022 when he was Special Representative for Broadband at the National Telecommunications and Information Administration (NTIA).
Source: Doug Mohney.

award] range. Those will also be coming sometime in the next few weeks."

Berke noted that investing in infrastructure is an ongoing process for the nation as new technologies come to the fore, not a one-and-done task. People in rural communities are depending on USDA RUS ReConnect funding to deliver reliable internet for their livelihoods and safety. Berke cited an example of a woman in Decatur, Mississippi, who was going to lose her job as a remote worker managing a health care facility because her legacy copper connection was too unreliable.

"When she got high-speed internet through fiber at her home, it literally saved her job," said Berke. "We did rural electrification 90 years ago, and we're still doing billions of dollars worth of [infrastructure] work every year. These things don't end. We still have customers who are in need, who are going to be in need who, whether it's for precision ag[riculture] or other things, are going to need to keep moving forward. We fund the hardest to reach connections in our country."

Within that context, alternative technologies being considered by other programs providing "unreliable broadband," such as low Earth orbit satellites or unlimited wireless don't measure up. "If you read our regulations, if you read our mandate, which I know you have, you'll see that if people have internet that is less than 25/3, if they have unreliable internet, we're going to make sure that that they are reached by our funding. We're going to keep making sure that people who need this [fiber] resource have it," Berke stated. 

Finding More Monetization Opportunities in the Connected Home

By Doug Mohney

Digital home services present a significant revenue opportunity for North American service providers. The digital home market, including digital gaming, is anticipated to be worth \$632 billion by 2028, growing at a compound annual growth rate (CAGR) of 3% since 2023, according to Omdia research.

“Fixed broadband remains the biggest market in the sector, and will be worth \$128 billion by 2028, growing by 4% CAGR,” said Alzbeta Fellenbaum, Principal Analyst, 5G and Broadband, Pricing and Strategy, Omdia, during an October 2, 2024, Fiber for Breakfast webinar. “The next is online video, which will surpass pay TV by 2028 and will be worth \$89 billion with a five-year CAGR of 5% and lastly, Smart Home Services will grow at the fastest pace at 20% between 2023 and 2028.”

Over the next five years, while the North American market is “quite saturated and developed,” said Fellenbaum, both subscriptions and revenue growth

are expected to be quite significant, with subscriptions expected to grow from 144 million in 2023 to 160 million in 2028. Fiber and fixed wireless access are going to be the fastest growing access technologies according to Omdia projections, with a forecast of residential broadband penetration to reach 97% of households, growing from 92% over the next five years. Average advertised speeds that these households will subscribe to will grow from 588 Mbps in 2023 to nearly tripling over five years to 1.4 Gbps in 2028.

Exploring the increase in broadband speeds further, households subscribing to speeds higher than one gigabit is expected to grow rapidly in North America, said Fellenbaum, growing from 53 million in 2024 to 79 million by 2028, with gigabit households expected to account for

over half the connected households in the region. But she indicated there could be problems as speeds continue to increase across the market.

“We see an increasing number of service providers now offering broadband plans with multi-gigabit and 10 gigabit services, either on the download or symmetrical,” said Fellenbaum. “This is being still done primarily as a means of differentiation in the increasingly competitive gigabit market. But this practice, if not done right, can actually harm the market and lead to cannibalization of the high premiums that these multiple [gigabit] and 10 gigabit offers should be associated with. If service providers are not careful, they will get dragged into a promotional frenzy that can see them

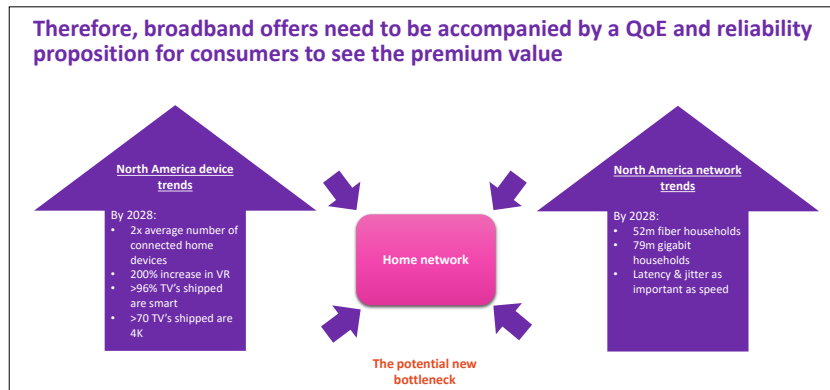
offering premium speeds for only marginal price increases, and that’s something that we see across the world.”

The speed versus price downward spiral is a global trend, with service providers across 70 countries over the last five years

unable to drive ARPU in line with the speed increases.

On average, the global speed offer has increased by more than 950% but the actual ARPU reduced by 26%. Even in markets like the United States and Canada, where broadband ARPU has grown over the last five years, there’s been disproportion growth. In the U.S., speeds grew over 500% but ARPU grew by only 20%, largely because of the service provider focus on broadband speed and price.

“What can service providers do to break out of this spiral and not get drawn into the promotional frenzy?” said Fellenbaum. “We recommend focusing more on quality of service and experience. We can see from our latest consumer research that we’ve done over the summer of this year, that while broadband speed is still important for consumers in North America, they value more a highly



Source: Omdia

reliable and consistent quality connection which is available to them everywhere in their home by a good reliable network and comes with efficient and high-quality customer support if things do go wrong.”

By focusing on providing and marketing an overall superior quality of broadband service that meets all of these requirements, service providers will be able to capture greater market share and also convince many customers to pay more. The primary place where service providers can do all of this is in the home network, which is called upon to support increasing numbers of devices, along with “bandwidth hungry” applications running on those devices and placing a strain on the network.

“If neglected, the home network can become a real pain point, which will not be entirely solved by

fiber deployments, because fiber actually targets bandwidth issues up to the point of the home,” said Fellenbaum. “If the home network is not properly managed, it will become the bottleneck and the issue for service providers, because they will still get blamed for services and devices not working properly in in the home.”

Service providers need to pay attention to the home network Quality of Experience (QoE) by not only offering the latest Wi-Fi hardware but offering smart management software on top of it to help monitor traffic on the local network and sometimes even prevent and troubleshoot issues before customers notice them. Implementing smart Wi-Fi management platforms can lead to major improvements in service provider operational performance, including up to 60% reduction in setup calls, reduction in customer support calls by up to 30%, and fewer on-site technician visits to diagnose problems, down by up to 30%. The reduction in support calls and onsite visits leads to higher NPS scores, can also


positively impact the churn reduction by 12% to 30%, and also leads to ARPU increasing.”

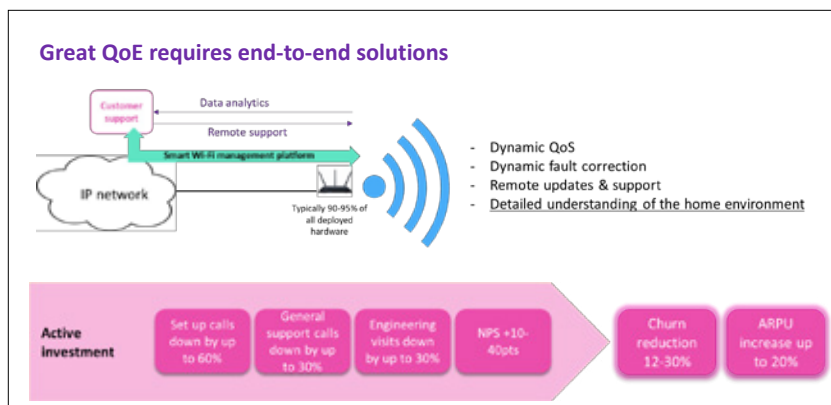
Emphasizing on QoE can provide opportunities to driving further incremental revenues through applications such as mesh networking in the home, technology support for networking issues and devices, and advanced cybersecurity and parental controls which can be either

bundled into a premium package or offered a la carte for the customer to purchase as they desire.

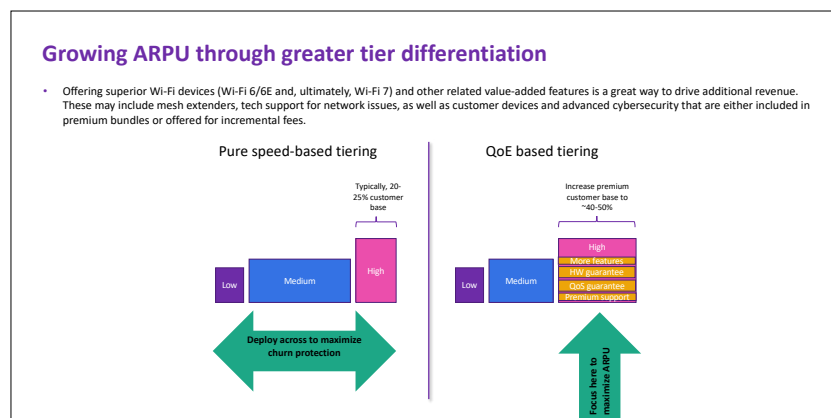
Another strategy is to target services and speeds based upon specific customer needs, rather than generically offering more speeds and more features. “Rather than just focusing on pure speed, offering targeting users based on their user preference, based on what they do, based on their personas can

help as well,” said Fellenbaum. “We can talk about offering lower latency for gamers, dedicated Wi-Fi traffic streams for homeworkers that prioritize their [video] calls when needed. Families will appreciate parental control and more cybersecurity for their kids. If there is someone who’s an online entertainment buff who wants the latest, the highest quality of video, that can also be tailored and prioritized. For social media users, upload speed boosts are another way of monetizing and offering a value-added service.”

Regardless of the new offerings, services need to be tailored and explained to customers in a way that makes sense for their lives and provides added value that they will be able to be willing to pay, since users will pay for things that matter to them, especially if it improves their QoE. Offering these improvements make customers feel seen and heard, and therefore more likely to choose one service provider over another and to pay more for services that can improve their online experiences. 



Source: Omdia



Source: Omdia



Unleash the power of Broadband

With Great Connectivity Comes Great Opportunity

Not all heroes wear capes. Some answer the call by delivering critical services to their communities – like the network operators who are bringing broadband connectivity to rural America. Broadband access makes state-of-the-art healthcare, world class education, and high-paying job opportunities available to people wherever they live.

From GPON, to XGS to 25G PON and beyond, Nokia solutions lead the U.S. broadband market. We're here to help you connect your community, inspire your customers and shape your future!



**Check out our
Buy America-compliant
solutions Today!
Build America, Buy Nokia**





50G PON Demonstrated In Sac and Fox Nation

By Doug Mohney

Source: Nokia.

Fiber's ability to economically deliver ever-increasing broadband speeds anywhere in the country over existing plant continues, with Oklahoma service provider Centranet becoming the first service provider to connect a pilot 50G connection in a Tribal nation. The first live commercial trial of 50G PON in a rural setting on indigenous lands may appear symbolic today but has practical applications in closing the digital divide and unlocking new productivity in rural and tribal communities.

"We pursued this grant to enhance the availability and the viability for our tribal members to access fiber optic opportunities, not just now, but in the future," said Randle Carter, Principal Chief, Sac and Fox Nation in the October 8, 2024, press release announcing the technology demonstration.

A subsidiary of Central Rural Electric Cooperative launched in 2020, Centranet has deployed 3,300 miles of fiber across north-central Oklahoma in the past three years. Its service area covers approximately 2,000 square miles and includes parts of seven counties in Oklahoma, delivering electricity to more than 20,000 meters with more than 4,000 miles of electrical line.

"Bringing high-speed broadband to the Sac and Fox Nation, as well as other tribes and underserved areas has been a priority for us," said Mark Prather, President of Fiber and Technology, Centranet. "This project is about more than just technology—it's about ensuring that everyone in our community has the tools and opportunities they need to thrive in today's digital world."

The live trial uses Nokia's Lightspan MF fiber solution, a future-proof platform designed to support 10, 25, and 50 Gbps PON speeds today and 100 Gbps speeds when they become available. Nokia launched its 25G symmetrical PON solution four years ago, detailing a roadmap to 50G

and 100G PON speeds as technologies matured and become affordable for the marketplace.

High-speed PON demonstrations have been booming over the past year. In April, Nokia showcased 10G, 25G, 50G, and 100G speeds in Australia on NBN's network, showing how service providers can mix and match broadband speeds over existing production networks. Closer to home, Nokia and GFiber announced live network trials of 50G speeds across its network at the beginning of July, followed by Frontier and Nokia announcing 100G PON speeds at the end of that month.

"We wanted to show rural electric coops and rural operators in general are at the top of the game," said Sachin Gupta, Centranet's Vice President of Business & Technology Strategies. "We do leading edge technology." The demonstration utilized existing fiber without any changes to the physical plant and drop-in electronics at the central office and customer CPE.

While 50Gbps sounds colossal in today's environment, Gupta noted that bandwidth per person growth projections range between 1 to 10 Gbps per person in the next few years, so a household of four people would conceivably need 40 Gbps. On the business side of the equation, 5G services already specify 20 Gbps peak download rates while a mid-sized farm leveraging precision agriculture technology could easily generate terabytes of data per day for analysis and automated vehicle monitoring.

"We did not know our highway systems would be used by Amazon to deliver products to people's houses when we built it," Gupta said. "If we did not have the highways, Amazon would not be one of the largest distributors of physical products in the world. We do not know what the applications of the technology will be in four years, but these applications will be driven by the infrastructure we lay down today."



IXP Proliferation Needed for Rural Broadband Sustainability

By Doug Mohney

With Department of Treasury Capital Project Fund (CPF) monies coming to their end and NTIA BEAD funding starting to enter the pipeline, high-speed low-latency fiber connectivity for every household in the country is tantalizingly within reach. Bringing multigigabit speeds to rural America today with a clear, future-proof path to 100 Gbps in the future will take hard work, but what happens after the physical fiber is installed and houses are connected?

Even today, rural service providers are wrestling with the expense of paying for more internet transport bandwidth than their urban counterparts, a problem that will only grow as usage continues to ramp upward in the years ahead.

“In Oklahoma today, I’m paying around 10 cents per megabit,” said Sachin Gupta, Vice President, Business and Technology Strategies, Central Rural Electric

Cooperative and Chair of the FBA Middle Mile

Committee. “Requirements for bandwidth are only going to grow. People who subscribe to a 1 Gbps connection aren’t downgrading to 100 Mbps. As we provide faster and faster connections, the requirements for bandwidth increase exponentially. It’s not sustainable at 10 cents per megabit. I can sustain it at a five cents per megabit and I’d like to get it down to two cents.”

Any ISP outside of a large urban area pays more to move data for several reasons, including the smaller number of subscribers — colloquially known as “eyeballs” — it has compared to larger Tier 1 providers, the shortage of access to high-speed connections compared to metro centers, and the relative distance to move, or backhaul, that traffic from the ISP into the urban area so it can be moved around to its ultimate destination in the cloud,

along with sending data from the cloud back to the ISP and its users as needed.

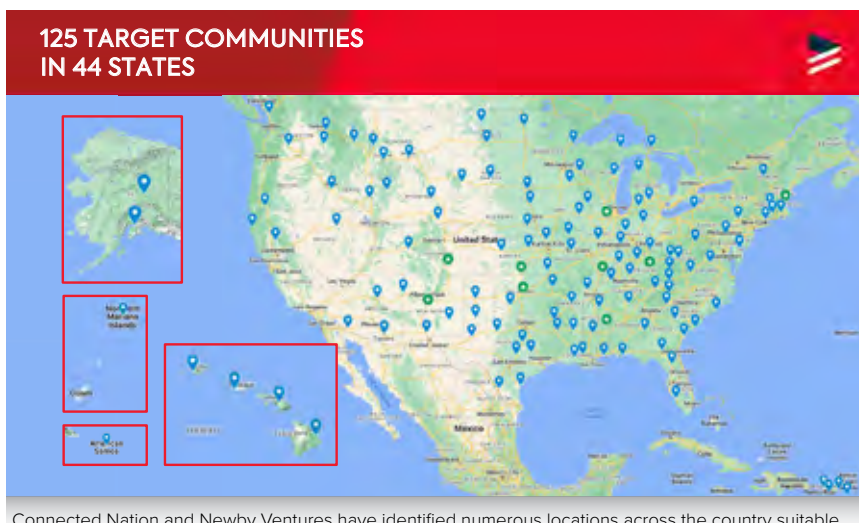
The bulk of the internet traffic of the world today is exchanged between service providers and large cloud-anchored businesses such as Amazon, Apple, Facebook, Google, and Microsoft through Internet eXchange Points (IXPs), physical locations where service providers connect to each other to move their packets around. If you don’t have a direct connection into an IXP, you have to pay someone upstream who has that connection and the gear to move that data on your behalf.

If there’s no local IXP, as is the case with many mid-sized cities and rural areas, traffic must be moved to the nearest exchange point, adding expense and latency as well as creating a potential path for service interruption due to physical or cyber mishap.

“As an example, Google does not

have a Point of Presence in the entire state of Oklahoma,” said Gupta, where Centranet, Central Rural Electric Cooperative’s ISP, resides. “The closest place where I can meet Google is in Dallas. I have requested caching services from them, but you have to be big and have to have a certain amount of bandwidth per month for them to supply the hardware. They’d like me to peer with them, but I don’t have the middle-mile physical infrastructure to meet them in Dallas. I have to buy transport and get nickel and dimed to death.”

Others agree with Gupta’s assessment and see dire consequences for newly built rural and tribal service providers down the road. “There are 14 states in the U.S. that don’t have a single Internet Exchange, so they’re basically third-world nations from an Internet access standpoint,” said Hunter Newby, CEO of Newby



Connected Nation and Newby Ventures have identified numerous locations across the country suitable for local IXPs to reduce latency and backhaul costs. **Source:** Connected Nation.



Hunter Newby, creator of the first IXP in New York City, says many more of the critical infrastructure points are needed to lower backhaul costs around the country. **Source:** Newby Ventures.

“There are 14 states in the U.S. that don’t have a single Internet Exchange, so they’re basically third-world nations from an Internet access standpoint.”

Ventures and the co-founder Telx, the first carrier-neutral interconnection facility at 60 Hudson St in New York City. “In those 14 states, data must be backhauled to a neighboring state with an Internet Exchange to reach the global Internet. The lack of IXPs is holding back the [local] economy, jobs, and education. It’s also holding back inference and generative AI because of the latency.”

Newby continued, “These fiber-to-the-home RLECs, and other smaller service providers, are currently pursuing grant funds for capital expenditures to build fiber, but the grants cannot fund operating expenses. Their biggest problem is that when they deliver the customer a gig to the home on a monthly flat-rate plan, the customer uses all of it. When you start adding up what they have to buy from some backhaul provider to get to the Internet, pretty soon they are in financial distress, and eventually, that could lead to insolvency. Their backhaul bill is like recurring debt that they can’t restructure. It is always there—every month—and may only increase. As one RLEC CFO told me, ‘For every grant dollar we take, we go out of business faster.’”

Newby knows more than a little bit about the Internet and IXPs, having led the strategy behind Telx, New York City’s first carrier-neutral interconnection facility, in downtown New York City in the late 1990s and growing it into a nationwide business that was purchased for \$1.9 billion in 2015. He now runs a portfolio of connectivity businesses, including a joint venture with nonprofit Connected Nation to build IXPs in regional hub communities outside of large urban centers.

Building more IXPs across the country to aggregate service provider traffic locally provides the ability to get substantially better rates by fostering increased backhaul and wholesale IP transit competition, while simultaneously lowering latency for users in the same local geographic area by localizing content delivery network (CDN) caches and cloud services. This localization lessens or eliminates the need for local network traffic to “trombone” back and forth several hundred miles to a large city, allowing local traffic to stay local and reducing the amount of transport bandwidth required—thereby reducing the monthly backhaul bill.

Newby and Connected Nation’s joint venture, called Connected Nation Internet Exchange Points, LLC (CNIXP), aims to address this national issue. CNIXP has identified 125 target communities across 44 states and four U.S. territories that would benefit from the creation of new IXPs. Newby views this task as both an infrastructure necessity and a significant real estate opportunity.

“We are out building new meet points, smaller modular versions,” said Newby. “You’ve got to bring the eyeball traffic to that point, you’ve got to reduce latency, and the only way to do that is to create a neutral point where cloud, content, gaming and now AI can all come together and meet competitive last-mile, transport, and IP transit providers. It can’t be a broom closet; it can’t be in the basement of a library or a school. That approach isn’t secure and doesn’t scale. It has to be in a professionally managed, highly-secure building that is designed for this purpose—with a business and operating model that supports the growth and scale that everybody already expects and relies upon today from the major city IXPs.”

The first IXP being constructed by CNIXP, dubbed its “Alpha” Site in Connected Nation presentations, will be at Wichita State University (WSU) in Kansas. The carrier-neutral facility will be built on 1.3 acres of land donated by WSU under a no-cost 40-year lease with funding provided by a \$5 million grant awarded by the Kansas Office of Broadband Development. Connected Nation and Newby believe anchor universities make the ideal hosts and partners for IXP development due to their neutrality, the cloud and content data traffic they generate, and their historic role collaborating with businesses for research and economic growth. Wichita is viewed as a prime location for the project because the area suffers from high backhaul costs while it supports a large population and has a thriving high-technology sector. “Wichita is a market of 398,000 people and a regional population of nearly 648,000 people,” said Brent Legg, Connected Nation’s Executive Vice President, Connected Nation and IXP program lead. “And yet Wichita as a city is fully dependent [from an Internet connectivity perspective] upon IXP facilities in Kansas City and Denver. All internet traffic is essentially

(cont. on page 57)

Your **Reliable and Available** Broadband Partner

PANDUIT®

Panduit is everywhere you want to go



Get end-to-end, design to
execution solutions



Map and label jumpers and
cables easily with *RapidID™*
Network Mapping System



Save space with
well-engineered components

Cabinets

Racks

Panels

Pathways

Wire Ducts

Enclosures

Cable Routing

Aerial
Securing

Bundling

Steel
Strapping

Pole
Attachments

Labels and
Printers

Grounding
and Bonding

Connectivity
Systems

Fiber Optic
Cable

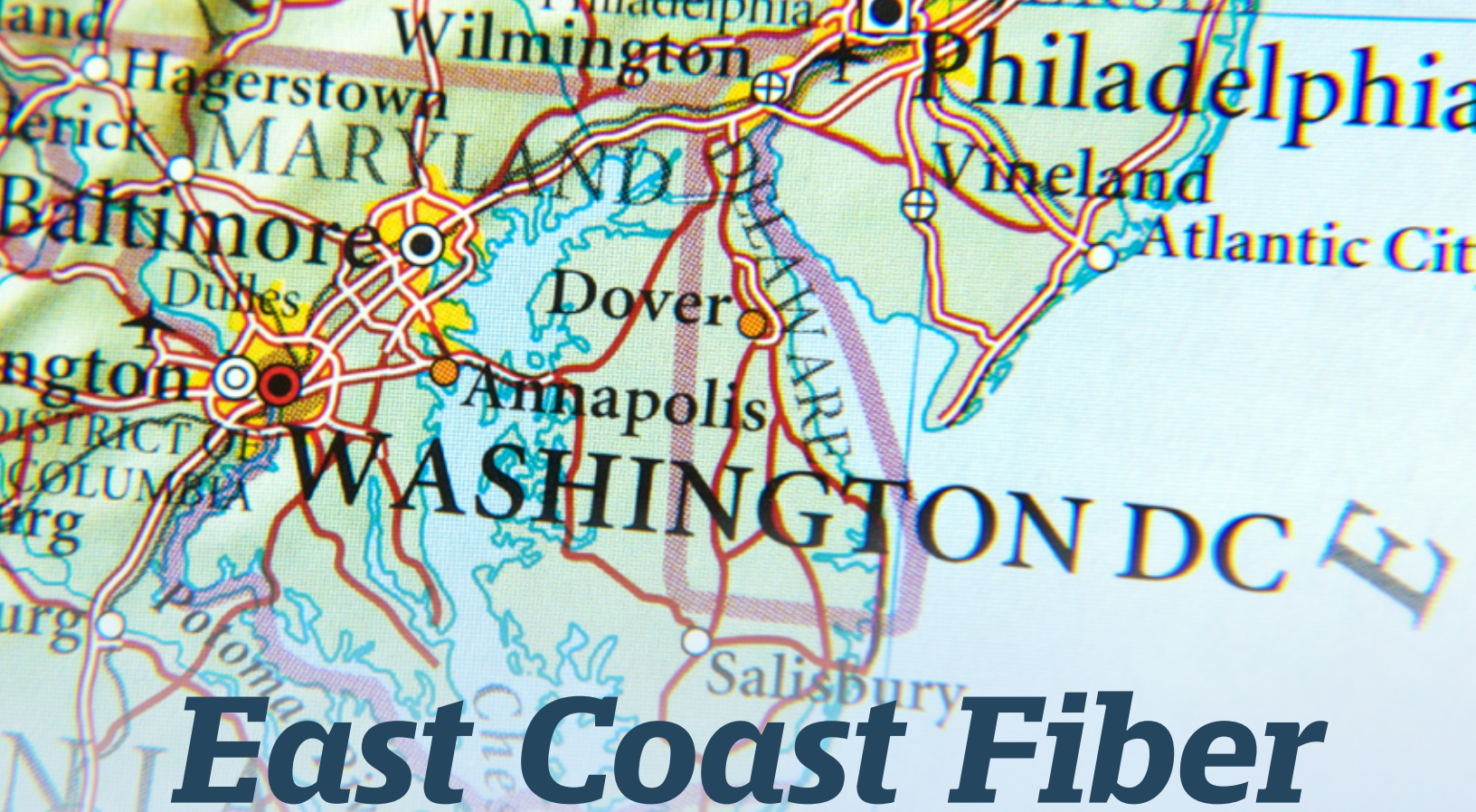
Media
Conversion

Together We Can **Bridge the Digital Divide**



Discover Panduit
Broadband Solutions

www.panduit.com/broadband



East Coast Fiber

By Doug Mohney

The City of Philadelphia and Washington, D.C. are rivals in sports but share a deep history along with a modern love of fiber. Philadelphia was the birthplace of the Declaration of Independence and the U.S. Constitution and served as the first capital of the United States of America from 1790 until 1800, when construction of the new national capital was completed, and the government moved to what is now known as Washington, D.C.

Back in colonial times, travel between the two cities would take several days by horse or carriage to travel the roughly 150 miles. Today's 21st Century travelers can make the journey in roughly 2.5 hours on a good day in their horseless vehicles, but accidents, sporting events, and other activities can introduce delays on local roads in both major metropolitan areas. Fortunately, fiber provides city managers with the ability to monitor and manage traffic, along with providing numerous other services to their respective governments.

Fiber Forward talked to city officials in Philly and D.C. about fiber in their respective metro networks, the value it brings to government operations, and how they plan to expand fiber in the future.

The City of Brotherly Love

As one of the oldest cities in America and the sixth largest by population, Philadelphia has 17 four-year universities and colleges, and hosts five Fortune 500 corporate headquarters, according to Wikipedia, along with the Philadelphia stock exchange and numerous venture capital

firms. The combination of economic success and history provides it with a wealth of physical connectivity.

"Philadelphia and a lot of other major older metropolitan regions are in a very similar boat," said Juliet Fink-Yates, Broadband and Digital Equity Manager, City of Philadelphia. "We have numerous fiber providers. If you look at our broadband fabric, you're going to find that there are no unserved areas. We have fiber everywhere. What I think is unique to urban municipalities, not just Philadelphia, is that it's not known where all this fiber [physically] is, how the traffic is managed, and where it goes. It's not something that we can see clearly, because there are a lot of private networks. Fink-Yates said there are only around 300 or so locations in the city that remain unserved or underserved.

Affordability is at top of mind in closing the city's digital divide, with the shutdown of the Affordability Connectivity Program (ACP) having a significant impact during its existence. "We had 183,000 resident households that had signed up for that benefit," said Fink-Yates. "That's a huge number. That's slightly over half the number of residents eligible for ACP, but in a little over a year, that uptake was extraordinary, and I think it's because people knew that this was something valuable."

The City of Philadelphia's digital navigators have seen the impact of ACP's removal, with some households moving to lower tiers of broadband access and others struggling to keep their subscriptions. "An area really important to understand is that people go in and out of service," said Fink-



Source: Microsoft Copilot AI.

Yates. “What we want to do, like any utility, is to think about how we can make sure that [broadband] service doesn’t get cut off, so vulnerable [households] can maintain service.”

At-risk households face a considerable challenge today if they fall behind on their bills. “What we see is if you have a limited number of providers, once you go into debt with one and your service gets cut off, it’s extremely difficult to get the service back,” said Fink-Yates. “You have trouble paying off that debt, and it really limits your affordability options.”

From an enterprise perspective, the city has a combination of fiber it owns and leases through service providers. It does not own any dark fiber, with the vast majority of the fiber network that the city owns run through one department. “The Department of Streets runs the vast majority of the city’s fiber network,” said Fink-Yates. “It can only be used by that department because of federal funding for traffic needs.”

The city is in the process of evaluating its fiber needs for the next 20 to 30 years and will be reviewing options to support the city’s current and future IT needs, including public safety management and connectivity for city buildings. Connectivity for the School District of Philadelphia and the city library system are separately managed and operated by those organizations, leaving it with a relatively simplified management structure compared to other municipalities who incorporate multiple organizations into their IT plans.

“As different use case scenarios arise, we are exploring ways to procure or install additional city-owned infrastructure while still being financially responsible compared to other options,” said Fink-Yates. “We’re looking at whether it still makes sense to purchase and own our own fiber in certain instances or



Source: Microsoft Copilot AI.

whether the managed service lease model is, at the end of the day, what the city of Philadelphia needs to do. This is an ongoing conversation.”

Philly has put out an RFP to explore what it would cost to build out and own its own fiber backbone and is currently reviewing consultants to evaluate various options. The existing availability of multiple enterprise fiber providers offering managed services in the city vs. the cost and disruption of building dedicated facilities from scratch make it a complex decision, especially since the city wants a future-proof solution for several decades.

“We’re actively trying to explore the best-case scenario for Philadelphia,” said Fink-Yates. “We are trying to figure out what the right solution is to make sure that Philadelphia is a thriving city that can bring economic opportunity over the next 20 to 30 years. What is that going to look like and how do we prepare for that?”

Public-private partnerships may be a part of the plan to expand city fiber, having recently struck a deal with Verizon in the renewal of its franchise agreement to provide lit and dark fiber into the city’s 180 recreation centers.

“The city is always interested in thinking through with both current ISPs that are in the city or new entities that are interested in working with the city about how we can connect our citizens and our businesses at high speeds and reasonable costs,” said Fink-Yates. “The end goal is fast service at reasonable prices that folks can afford, because if you don’t have that as part of a package, then your residents are at a disadvantage. We have constant conversations with our counterpoints at the ISPs about making the process easier, about lifting certain restrictions that make it difficult for folks to get access to internet in the home.”



Source: Microsoft Copilot AI.



Source: Microsoft Copilot AI.

The Nation's Capital

Washington D.C.'s unique status relative to the rest of the country is best framed in the slogan prominently stamped on the city's license plates, "Taxation Without Representation." It doesn't have voting representation in Congress while its residents pay federal taxes. The District government has the responsibilities of a state for the citizens that live there, including things like providing driver's licenses and vehicle registration.

DC-Net's highly robust fiber infrastructure provides a full range of network and telecommunications services to the District of Columbia government, reaching over 600 locations across the city, including public safety, public schools, parks and community centers, Department of Motor Vehicle sites, public housing sites, District-owned hospitals and clinics, and government administrative offices. Some federal agencies also use the network for their needs.

“ We have to support both local and federal government, as well as what we call D.C. community anchor institutions, which would include nonprofits, charter schools, health clinics. ”

– Henry Lofton Jr., Deputy Chief Technology Officer,
Office of the Chief Technology Officer (OCTO),
Government of the District of Columbia

“We have to support both local and federal government, as well as what we call D.C. community anchor institutions, which would include nonprofits, charter schools, health clinics,” said Henry Lofton Jr., Deputy Chief Technology Officer, Office of the Chief Technology Officer (OCTO), Government of the District of Columbia. “Mayor Bowser has consistently invested in digital leadership and achieving equity when it comes to leveraging the public infrastructure with both federal and the District's dollars. The good thing is we have DC-Net. It is the District's ISP, owned and operated by the District to continually meet the needs of the District, as well as some of the nonprofits and others that we support.”

Composed of over 600 miles of fiber, almost all of which it owns, DC-Net offers community users speeds up to 10 Gbps at pricing that can be 30% below the cost of commercial options. Federal customers have the ability to purchase fractional and full wavelength services at speeds up to 100 Gbps, according to the agency's website. OCTO uses a combination of in-house and contractors to support and repair the network, with most of its design work conducted in-house.

“There's a good number of federal agencies that we support, as well as local and those anchor institutions,” said Lofton. “We use it for public safety management,

(cont. on page 58)

GENEW SMART OPTICAL NETWORK LIGHTING THE CONNECTED FUTURE

GX3500-S Series Chassis OLT

GTN6800-D
Series OLSGTN6800-C/U Series
OTN Access

GX3500-S Series Chassis OLT

Unified Element Management System

The unified, centralized and large-capacity element management system(EMS) adopts a micro-service architecture, which can be deployed on physical or cloud platforms and expanded easily.

Unified Platforms for Different PON Cards

Provide GPON, XG-PON, XGS-PON and Combo PON cards with different rates, and support smoothly migrating to 50G PON.

Full Series Products

Provide a full series of OLT products with different switch capacities and different sizes (2U, 7U and 11U), to meet various application scenarios of customers.

EasyPoN Technology

Combo PON cards support EasyPoN Technology. Only replacing the transceivers can realize seamlessly evolution from GPON to 10G PON.

GTN6800-D Series OLS

GTN6800-D Open Line System (OLS) is a new generation DCI product, which is specially designed for Metro and long-distance DCI applications. It integrates DWDM technology, sub rate multiplexing, and wavelength conversion technology, and expands to 19.2Tbps/25.6Tbps transmission capacity in a single fiber. The GTN6800-D product is an excellent solution to the large bandwidth interconnection in data center.

GTN6800-C/U Series OTN Access

GTN6800 series OTN access equipments consists of GTN6800-C1, GTN6800-C2 and GTN6800-U5, which can be used in Metro Access and Metro Aggregation optical transport network. It is a comprehensive access platform that supports PDH, SDH, and ETH services access and different service protection method, including LAG, MSP, VC-SNCP, ODU-SNCP, OSU-SNC, etc.

Genew Technologies Co.Ltd,established in 2005,is a global system provider for end-to-end communication solutions and telecom infrastructures.Customers cover telecom operators,service providers,industrial and governmental organizations. Genew is quoted in the Shanghai Stock Exchange STAR Market(Stock Code: 688418.SS).





Diagramming FBA's Path with Jimmy Todd

By Doug Mohney

Fiber Broadband Association (FBA) Chairman of the Board Jimmy Todd is not one to stand on formality, sitting down with *Fiber Forward* on a Microsoft Teams call wearing a Georgia Bulldogs baseball cap and a Five Finger Death Punch concert T-shirt, with his signature mutton chops currently shaved off as a gift to his wife, "Miss Shirley."

His motorcycle entrance at Fiber Connect 2024 is the stuff of legends, but there's deep substance and thought behind the colorful presentation. Todd has been CEO and General Manager of Nex-Tech for over a decade, and currently serves on the boards of the Kansas Fiber Network, NRTC, Nex-Tech Wireless and WTA, as well as being an FBA board member since December 2021.

In addition to being elected FBA Chair, last year he also co-founded FBA's Precision Agriculture Committee. Also on his resume are stints with the U.S. Navy and the Oregon Army National Guard/US Army, an MBA from the University of Portland, and a four-year run on the FCC's Precision Agriculture Task Force. A good part of his focus over the past three years has, of course, been on FBA and its growing importance to society at large.

"I'm extremely pleased with where FBA is and where we've come in recent years," said Todd. "The growth and the influence of the organization has been exponential. It's been exciting to be a part of it, because fiber is something that, quite honestly, everybody needs to have. It touches every aspect of our lives, whether it's education, health care, commerce, and, of course, what's near and dear to my heart: the potential for Precision Ag[riculture] and rural connectivity."

COVID underlined how important fiber broadband is for households and society, said Todd, delivering the ability for remote work, education at home while schools were closed, and telemedicine for urban and rural communities alike. At the same time, FBA has stepped up as the worth and versatility of fiber has continued to grow.



“You look at the initiatives [President and CEO] Gary [Bolton] has recently started in the past couple of years, such as our focus on workforce education,” Todd stated. “The OptIC Path™ curriculum is reaching more states every month. Our advocacy efforts and presence on Capitol Hill thanks to FBA Vice President of Public Policy Marissa Mitrovich has helped us achieve in the past two years. Those are things that, quite honestly, have been amazing results in a short amount of time and being able to be involved and be a part of that has been a wonderful experience.”

Todd expects FBA to continue to educate people on the value that fiber brings to communities and the nation as BEAD funding advances and networks start to come online, with the medium’s strengths clear to him since he has worked with just about every other broadband technology over the years.

“For my company [Nex-Tech] and many others, we’ve been building fiber with every flavor of grant, Universal Service Fund support, you name it,” he said. “BEAD is an unparalleled amount of funding to get broadband to every American. I love the fact that when it came out, there was a fiber preference. I’ve been in the industry for a long time, I’ve done every flavor of internet connectivity, from dial-up on copper to hybrid fiber coax to fixed wireless to satellite. When comes down to it, there is no comparison to the quality of a fiber connection and the operational cost of supporting a fiber network is significantly lower than any of the other technologies and the ability to scale the network.”

Todd’s company Nex-Tech won an American Recovery and Reinvestment Act (ARRA) loan/grant opportunity during the Obama Administration to build out a mixture of fiber and fixed wireless connectivity to farms and communities in northwest

Kansas, using wireless to reach areas beyond the reach of the core fiber runs. Discussions of opening BEAD to “alternative technologies” are concerning to Todd, because he’s seen how they fail to deliver when compared to fiber in the real world.

“We built out a lot of area with fiber, but there were locations outside of that where we used fixed wireless,” said Todd. “At the time, the fixed wireless equipment we used was state-of-the-art. Within five years, it was already falling behind what it could manage and scale towards. In less than 10 years, that equipment was considered substandard. We did the best we could to get those folks connected, but it shows the limitations of wireless and the power of fiber for the long run.

“I’ve been a huge advocate that our rural areas need fiber just as our urban areas do,” Todd continued. “At the end of the day, we need to get fiber to every home, every house that’s got electricity, we can with fiber. That’s what we need across America. I’m concerned that we might see a lot of federal funding go towards these alternative methodologies and technologies to get people connected. We’re going to have to continue working with decisionmakers and Congress to ensure that fiber continues to be the preference.”

Connecting the Farm

Precision agriculture is one of Jimmy’s premier interests, stemming from his experience in Kansas connecting his neighbors and their farms that led to a four-year stint working with the Federal Communications Commission’s Precision Agriculture task force on the deployment working group. Todd expects the FBA’s Precision Ag committee to publish its first white paper on the topic sometime next year, using input from



THE MOTORCYCLE RIDE TO NASHVILLE



Getting a suitable chopper, found and then moved from Kansas to Tennessee and into the Gaylord for Fiber Connect was a non-trivial logistical challenge, said Todd. **Source:** Doug Mohnney.

The seeds for Jimmy's engine-growling entrance into Fiber Connect 2024 were planted the year before in Orlando.

"If you remember JJ's [Joseph Jones] Chairman's presentation at Fiber Connect [2023], it was just amazing," said Todd. "He set the bar in the cosmos. It was so good, I wanted to stand up, salute the flag, and yell 'Let's go build fiber!' When I became Chairman in January [2024], Gary [Bolton] and I both agreed that JJ had an out-of-the-park presentation. Gary said, 'I want you to flip the script a little bit. Everyone knows you ride a motorcycle.' As soon as he mentioned motorcycle, I said, 'I'm in, that sounds like fun.'"

Bolton's request to ride into Fiber Connect 2024 provided Todd, an avid biker, with the opportunity to obtain his dream chopper, something in Georgia Bulldog red and black colors with a lot of chrome. After securing the all-important blessing of Miss Shirley, Jimmy found a suitable bike in South Florida that he procured and had shipped to his home in rural northwest Kansas.

But Todd's effort to conduct a 90-second ride in and out of the Gaylord ballrooms had only begun. He had to work through a packed travel schedule immediately before and after Fiber Connect and coordinate the logistics of positioning his new chopper in the city. "My company's strategic planning meeting was immediately before Fiber Connect and I wouldn't be able to ride the bike there and back," said Todd. "I rode the chopper

from Kansas to Nashville a couple of weeks before the event. It was 975 miles one way, 12 hours the first day, 9 the second. I will tell you what, riding a chopper cross country will kick your a--."

Storing the vehicle in Nashville at a friend's place was easy, but getting the Gaylord to give permission to drive it around inside was another story, requiring Jimmy to jump through "ridiculous hoops" and required putting the hotel on his personal motorcycle insurance policy for the day. He also had to wrestle with a dead battery the morning of his ride, jump starting it at 6 AM, riding it inside to a staging area, and putting the battery on a charger, hoping that it would be good to go by the time he had to be on stage.

"For an hour and a half, I'm like, 'Please charge. Please charge,' said Todd. Right before eight o'clock, I got there and the battery tender was nice and green, that's a good sign. At the introduction, they start playing, 'Born to be Wild.' I unhook it from the battery tender, and it starts up. I'm like, 'Yeah,' so I pull out right up front and get off the bike, do the presentation.

"As I'm walking down to the bike, I'm praying, 'Please start again, please start again.' I push the start button and it's trying to get that extra push to turn the motor over and it kicks over. I gas the engine, pop it into gear, and I took off. Thank goodness, Lord, you didn't make me have to push this thing off after this cool intro and fun presentation. We were able to get it done and it was a lot of fun to do."

rural service providers, farmers, ranchers, and academia that have been recruited to join the committee.

"There's going to be a last acre network that is dependent upon fiber in the last mile to really make it work," said Todd. "In the early days of precision ag, satellite was the only option because you didn't have cellular coverage in rural areas. As the amount of data continues to grow, you're going to see different applications that require a ton of bandwidth. We know you're not going to get fiber to a drone or to a sensor in a field, but fiber facilitates that future."

Larger farms and ranches will rely on wireless connectivity for the last acre and may have to build towers to extend wireless further and farther across farmland and ranches, with fiber to the towers and a private LTE or 5G network providing connectivity beyond the fiber to vehicles, sensors, and outlying infrastructure. Data collected from the fields and ranch land that is currently processed on a batch basis will increasingly be analyzed in real time, enabling on-the-fly monitoring of crops and applying the precise amount of water, fertilizer, and other crop treatments to optimize yields.

"Dr. Hendrik Hamann, Chief Science Officer of IBM Research, one of the speakers at the Regional Fiber Connect event in Des Moines, Iowa, said 90% of all the data that has been generated from agriculture has been done in the past two years," Todd said. "We've been farming for centuries and in the past two years the amount of data that has been collected from the farm, from the ranch, has blown up and will continue growing as the technology increases."

Todd sees a future where edge computing will join last-mile fiber connectivity for faster and more efficient farm management, providing better resource management of the soil and crop inputs as the United States continues to feed its citizens and a good portion of the world.


Looking to the Future

Rural operators such as Nex-Tech, as well as tribal governments, have expressed concerns about long-term sustainable funding for existing and new networks in their higher-cost areas, a topic of significance for the departing FBA Chair.

"Outside of FBA, I've been working on [Universal Service Fund] contribution and distribution reform for seven and a half years," said Todd. "Sustainability, in the operational sense, I do think is important because it takes people and resources to maintain and operate networks. It's scary, because when you start talking about opening up USF for retooling, people get nervous about what that looks like in the future, especially those of us who have been USF recipients for decades. But at the end of the day, it's already supporting broadband networks."

Todd speculated that USF growth is likely and will be necessary for ongoing support in high-cost rural areas, but it would be hard to speculate what a revised program would look like since the fund was originally designed to support telephone networks with voice at the core as a part of the 1996 Telecommunications Act, not high-speed broadband.

"When you look at a telephone network and a broadband network on paper, it looks [very] similar, lines and dots and boxes of whatever," said Todd. "But those lines used to be toll routes coming into an exchange and the phone line going from the CO to an end user. The boxes in the CO are now routers and data switches, not phone voice switches. Toll lines are now middle mile backhaul to a major metropolitan area. You've got connectivity that continues to grow along that middle mile as well as that access network that reaches all the end users. The amount of change that takes place because of the growth of data [on broadband networks] is significantly different than what we ever saw in the telephone world. To support this, the USF distribution needs to be revamped to ensure that it encompasses some of those elements."

As he leaves the Chair, Jimmy sees fiber's future prospects as bright. "We're in an exciting time," said Todd. "We only see continued advancements. Gary has talked several times about quantum networks, quantum technology, fiber optic sensing capabilities, applications beyond communications that fiber networks can facilitate. These are exciting future opportunities. Once we get everybody connected across the U.S., FBA is going to be in a unique position to help bring awareness to these new technologies, as they continue to evolve and become more realistic, and help educate and spread awareness of the future of fiber well beyond connectivity." 

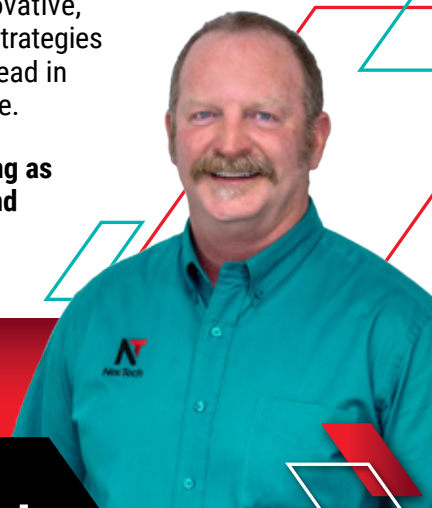
LEADING THE WAY:

Helping Broadband Providers Outpace the Competition

We're not just evolving—we're shaping the future of our industry. Nex-Tech Creative is a catalyst for broadband providers, delivering innovative, growth-driven marketing strategies that propel our clients ahead in the competitive landscape.

Thanks, Jimmy, for serving as a leader in the industry and driving our team to do the same for our clients.

Jimmy Todd
CEO & General Manager



Nex-Tech
CREATIVE

nex-tech.com/telcomarketing



FBA Regional Fiber Connect Workshop Photo Gallery



The Honourable Nate Glubish, Minister of Technology and Innovation, Alberta, opened the Calgary Regional Fiber Connect Workshop with a keynote on broadband investment strategy.



FBA's Marissa Mitrovich holds a Fireside Chat in Des Moines with Chris Hall, Federal Program Officer, Iowa, Office of Internet Connectivity and Growth, NTIA.



Leila Wright, Executive Director, Telecommunications, Canadian Radio-television and Telecommunications Commission delivered a keynote in Calgary that reviewed broadband funding goals.



FBA's Gary Bolton and Jimmy Todd were officially welcomed to Calgary with a White Hatter Ceremony. The tradition exchanges a white cowboy hat for one simple pledge to spread Calgary hospitality to "all folks and critters who cross my trail hereafter."



In Des Moines, IBM Research Chief Science Officer Dr. Hendrik Hamann presented a keynote about fiber broadband's role in precision agriculture.



FBA Board Vice Chair Kim McKinley led a panel in Calgary focused on a strategic partnership to create a Quantum City. Panelists included experts from Quantum City, Quantized Technologies Inc., and TELUS.



FBA President and CEO Gary Bolton held a fireside chat in Calgary with Canada Telecommunications Association President and CEO Robert Ghiz.



FBA President and CEO Gary Bolton is an official Calgary White Hatter.



Iowa State Representative Ray Sorensen delivers the afternoon keynote in Des Moines, focused on fueling Iowa's High-Capacity Economy.



Greg Loebe, DOM DoIT Grant Support. Department of Management, Division of Information Technology (formerly OCIO) explores Iowa's broadband priorities at the Des Moines event.



FBA Board Chair Jimmy Todd moderated a panel in Calgary on how fiber impacts economics and opportunities. Panelists included Westman Communications Group and POMEGRAN INC.



Des Moines attendees prepare to network in the Expo Hall.



TELUS' Shazia Sobani and Harry Marketing's Bob Knight have a fireside chat in Calgary about the impacts fiber has on communities.



Gary Bolton welcomes the crowd to the Des Moines Regional Fiber Connect Workshop.



FBA Board Member Scott Jackson tries to rev up the crowd for a lunch break at the Des Moines event.



Calgary panelists from Sichuun, the Indigenous Connectivity Institute, Broadband Communications North, and AFL Telecommunications talked about fiber broadband's impact on Indigenous Communities.



Webster-Calhoun Telephone Association's Marcie Boerner and Danville Mutual Telephone Company's Tim Fencel join a panel in Des Moines to explore finding first-time fiber broadband subscribers.



SIGN UP TO SERVE

**WE WANT YOU
TO HELP TEACH
FUTURE FIBER TECHNICIANS**

Calling all skilled and knowledgeable fiber visionaries - the fiber broadband industry needs your expertise, passion, and willingness to give your time and knowledge.

In return, you'll be part of creating a new skilled labor force that will change the future of our country.



Sachin Jayapalan, Partner, Value Creation, PwC Canada, presented an early keynote at the Calgary workshop.



A panel of experts from Adtran, DYCOM, UTOPIA Fiber, and Nextlink Internet discussed fiber broadband permitting challenges and strategies in Des Moines.



FBA President & CEO Gary Bolton catches up with other industry leaders in Des Moines.



Panelists in Calgary from Cambium Networks, Northwestel Inc., Algonquin Fiber, and Corning discuss how to optimize a fiber-first priority.



In Des Moines, everyone came for the content and stayed for the connections.



Panelists in Calgary discuss broadband capacity drivers, including edge, cloud, AI, IoT, Quantum, and ML.

WHEN **SPEED** IS ON THE LINE



GUZZLER[®]MT
Clean. Fast. Connected.



When it comes to laying fiber cable, a clean trench means speed, efficiency and a better bottom line.

The Guzzler MT is the ideal productivity solution. This highly efficient **Microtrenching Vacuum Unit** increases the speed of fiber optic installations by quickly cleaning trenches for the deployment of FTTH, CCTV, smart grid and electric networks.

BOTTOM LINE:

With faster operating speeds and cleaner trenches, installers can lay more feet per day.

Visit **GUZZLER.COM**



Tri-County Electric Cooperative Splices Broadband

By Doug Mohney

Established in 1940, Tri-County Electric Cooperative delivers electricity to the Florida counties of Jefferson, Madison, and Taylor. By 1948, the co-op had 1,877 members, paying an average bill of \$6.13. Today, nearly all its 18,000 meters have fiber, with the rest expected to be connected by the end of the year.

"We committed to serving 100% of our members," said Julius Hackett, Chief Executive Officer, Tri-County Electric Cooperative. "We've taken this project on without consideration to just serving high-density areas. We and our board were committed that if we couldn't serve 100% of the members, we wouldn't do the project."

Tri-County started researching the feasibility of deploying fiber in 2018, conducting a feasibility study which led to network construction starting in 2022. The co-op is putting 85% of its own funds into the project, with the other 15% provided through Florida's Broadband Opportunity Program. At present, the co-op has deployed more than 1,900 miles of fiber passing 14,250 homes and expects to have 2,300 miles of fiber passing all its members' addresses when construction is scheduled to be completed at the end of October 2024.


"Our take rate is about 40%," Hackett said. "The feasibility study was based on 30%, but based on how underserved our service area was, we expected it to be at least 40%. We're offering the same type of service as you get in urban areas, 2 Gbps symmetrical." Other value-added services the co-op offers on top of broadband include a phone option, video through a DirecTV package, and managed Wi-Fi.

Hackett credits Tri-County's speed in deploying its fiber network with a partnership with Conexon Connect, a fiber

network design and construction management company, which handled both the project management in building the network and the operational side. "They handle the electronics location at our substations and the electronics that are at the home," he said.

The fiber network has provided significant benefits to the communities within Tri-County's service area, including providing connectivity to the Madison County Sheriff's Department and several schools. On the economic side, it provides connectivity to farmers in the region, as well as providing reliable high-speed, low-latency infrastructure for work-from-home and other services.

"Steinhatchee, [Florida] is an area we serve that has large tourist festivals every year," said Kaitlynn Culpepper, Community Relations Director, Tri-County Electric Cooperative. "In the past, when they had big events, they had to advertise to bring cash, because credit card machines and internet payment systems would not work at all. They couldn't use their Stripe or Apple Pay system or anything like that. With the fiber broadband that we offer, it is no longer an issue, which is huge because people have moved so far away from cash that it is burdensome not to be able to pay and buy what they wanted to with their credit card, debit card, or online transactions."

Once the fiber build is completed in October, the co-op is looking at expanding its coverage into more populated areas of the three county service territory where it doesn't offer electric service. "For some of the Duke Energy customers who are close to the fiber, we are connecting them," Hackett said, with BEAD funding providing the potential to reach more unserved Duke Energy territory in the future. 



Project management software for FTTx projects.

An industry-specific system that helps you get from A to Z in your fiber construction projects, on time within budget. Get rid of coffee-stained papers and excel sheets, start using OX Fiber to manage your roll out project!

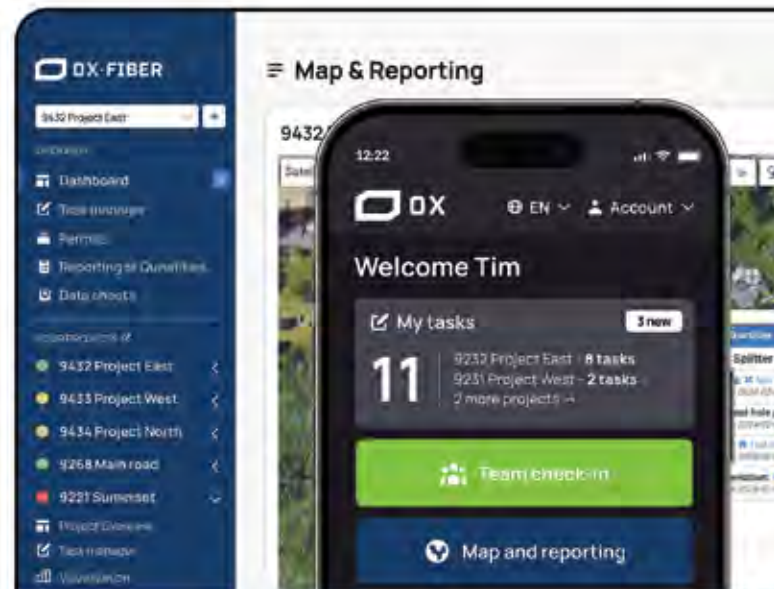
- Progress reporting
- Permit management
- Subcontractor billing
- Invoicing documentation
- Task management
- Realtime as-builts
- Geo-tagged photos
- Map visualization
- Customized dashboards
- Integrate your design system

START A 30-DAY FREE TRIAL

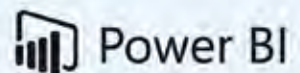


We'll on-board you and configure one of your projects.

Getting started takes less than 1-hour.



WORKS WITH ALL YOUR FAVOURITE TOOLS



BY FIBER GUYS FOR FIBER GUYS.



WWW.OCIUSX.COM



Fiber Broadband Boosts Income, Investment, and Business Investment in Rural America

Peer-reviewed economic study compared three different types of rural counties

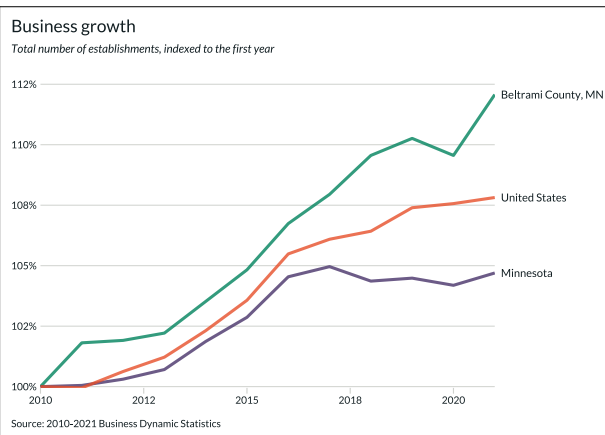
By Doug Mohney

Fiber broadband delivers economic benefits to communities, but how much of an uplift does the technology deliver to rural areas? A peer-reviewed economic study released on September 30, 2024, “Beyond Connectivity: The Role of Broadband in Rural Economic Growth and Resilience” by the nonprofit Center on Rural Innovation (CORI) provides evidence that fiber-fed broadband experiences enabled by local providers in those communities deliver a significant economic impact to better connected areas while enabling access to additional services that allow users to effectively leverage that resource. Meanwhile, comparable unserved communities experience economic stagnation with a loss of jobs, businesses, and population.

The study found that rural counties with high broadband adoption rates of over 80% have significant advantages over those with low usage, including 213% higher business growth rates, 10% higher self-employment growth rates, 44% higher GDP growth rates, and 18% higher per capita income growth rates. These factors translate to attracting and retaining more businesses, generating more startup businesses, and an environment that fosters the growth of local businesses resulting in a stronger and more dynamic local economy.

“CORI’s economic study underscores the positive impact that reliable, high-quality, fiber-based connectivity can have on the success of our families, businesses and communities,” said Gary Bolton, president and CEO, Fiber Broadband Association. “Every community — especially those in rural environments — needs access to reliable, high-speed broadband services to compete in today’s digital economy and access modern applications for health care, education, employment and more.”

The study, sponsored by Fiber Broadband Association member Calix, NTCA—The Rural Broadband Association,



Growth in the number of businesses in Beltrami County has outpaced similar counties, Minnesota, and the nation. **Source:** The Center on Rural Innovation.

and the Fiber Broadband Association, used primarily post-pandemic data from 2020-2022.

“Notably, we find evidence that existing residents are the primary beneficiaries of these economic gains (rather than new arrivals),” commented study author and economist Amanda Weinstein, Ph.D., director of research at CORI, in a press release announcing the research. “In stark contrast, areas with the lowest levels of broadband utilization have lower income growth rates and are more likely to experience business closures and population decline. These findings highlight the critical importance of both expanding broadband access and fostering its effective utilization to drive economic growth, enhance resilience, and build a more prosperous future for rural communities.”

Based in Vermont, CORI has been partnering with rural leaders to build tech economics that support scalable

Average percent change in businesses

2020-2021



Source: 2020 and 2021 Business Dynamic Statistics, 2023 FCC, 2020 American Community Survey estimates

Declining business dynamism across rural and urban areas. **Source:** The Center on Rural Innovation.

entrepreneurship and lead to more tech jobs in rural America. The non-profit has been working on how to close the rural opportunity gap since 2017, with reliable high-speed broadband availability among its top concerns.

“If you saw the divide that emerged after the 2008 recession between urban and rural places, you can trace that back almost completely to the winners and losers the tech economy as well as globalization fueled by technology and automation,” stated Matt Dunne, founder and executive director of CORI. “We believe that you can take that head on, and in the age of the internet, there should be no limit to where tech economy jobs and startups can take place. Now, of course, you need to have some fundamental pieces like broadband to be able to be on a level playing field, as well as [have] things like co-workspaces, vibrant downtowns, and then the kinds of programming that would support tech talent development so that there’s more of that talent locally, even working for non-tech kinds of organizations or helping with startups.”

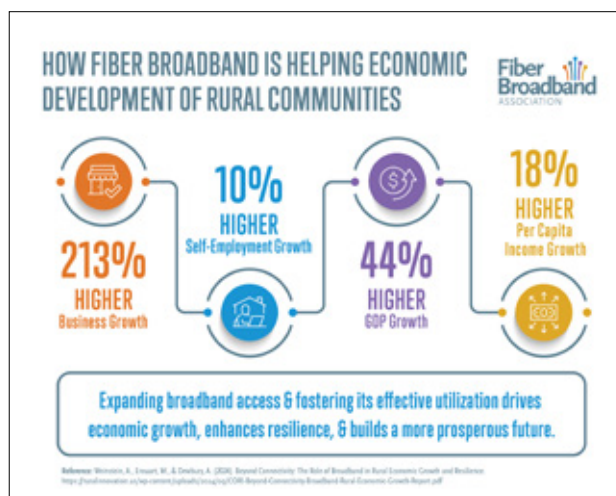
How much does high broadband adoption benefit rural counties? If you start at the most basic level of the individual, per capita income growth rates were 18% higher from 2020 to 2022 for high broadband utilization counties, amounting to an increase of nearly \$500 per person each year on average for county residents. For a household of four people, that translates to \$2,000 per year on average – a significant amount in a rural setting.

“You’ve got individual wealth creation with that income increase and then you’ve got longer term community wealth creation with those business starts,” said Dunne. “Those business starts are what really moves the needle in strengthening the local economy.”

As noted earlier, higher broadband adoption rates lead to jobs being created in two different ways. Rural counties with higher broadband use saw more businesses opening, while similar counties with low broadband utilization lost an average of three or more businesses each year. Losing businesses typically means fewer jobs for residents, leading to a noticeable population decline.

Broadband also aided individuals and businesses through remote work and collaboration. Workers didn’t have to live close to an urban center and the availability of remote work widens the pool of potential employees far beyond those available within practical commuting distance.

A 10% higher self-employment growth rate for those counties with high broadband adoption translates to significantly more business startups, since the utility significantly lowered barriers to starting a business for rural residents. Entrepreneurs are able to use broadband to get access to global markets and essential resources for operation and growth, such as banks, small business loans, and venture capital. In addition, broadband is a tool to conduct market research, leverage e-commerce platforms, and deploy digital market strategies to expand their customer base.



Source: Fiber Broadband Association.

The cliché of a virtuous cycle may not quite apply, but certainly high broadband use generating higher per capita growth rates, higher business growth rates, and higher –self-employment growth rates led to higher GDP growth rates, which creates a stronger and more dynamic economy that in turn fosters local businesses and innovation.

It wasn’t just the medium of fiber and physical connectivity that led to increased success, but all the involved parties in the community working to get the most out of the resource for the benefit of the community, such as the efforts co-operatives are making to educate their members and businesses about the benefits of broadband.

“We saw all these outlier communities and places where the broadband and fiber seem to have a really outsized impact,” said Weinstein. “The broadband service providers were not only contributing big investments in fiber and broadband, but they went further to actually create partnerships in the community that would help incubate those business startups. They had additional services, products, and programs that they provided to help businesses. They had additional partnerships with the community and places like the Chamber of Commerce, and worked with the [local] university to create that incubator.”

One service provider featured in the report that is delivering outsized community impact is Paul Bunyan Communications in Beltrami County, Minnesota. Paul Bunyan supports initiatives such as the firm’s GigaZone Gaming Championship and TechXpo, and Greater Bemidji’s LaunchPad, a business incubator.

“They have the largest eSports championship in any rural community in the country,” said Weinstein. “It’s exposing a lot of kids to these technologies, and they are pairing it with a technology expo, where new tech companies are there to showcase what they do. As the technology gets integrated with young people, broadband adoption rates for households go up because they’re helping expose the adults in their home to this technology - they’re not using their allowance to pay for broadband at home – it’s their parents.”



You can
always use
a friend

who will listen and
show up when you
need them.

Meet Vitex.

Your at-the-ready optics supplier.

Regarded for active listening, relied upon when unconventional thinking and problem-solving is needed, we're your on-hand counsel to help you right optical network woes and make YOU the hero.



Scan the QR code
or visit us at
Vitex[tech.com](https://vitex.tech)





FBA and Industry Q3 Progress Strong

By Gary Bolton, President and CEO, Fiber Broadband Association

There are numerous accomplishments and milestones for the fiber industry to celebrate as we close out 2024 and prepare for the boom in fiber construction over the next five years. The National Telecommunications and Information Administration's (NTIA) approval of initial proposals for the states' \$42.45B of Broadband Equity, Access and Deployment (BEAD) grant program has recently transitioned into a flood of approvals, with 55 of 56 Volume II approvals.

Approved states and territories are now in the process of opening their funding application windows, and we should see the first awards by the end of 2024. Every state broadband director I have spoken with is working toward putting their offices in position for its fiber deployment construction programs to be underway as soon as the ground thaws next spring.

But there's more than money to be handed out in the months and years ahead. The Fiber Broadband Association is on a continuing mission to identify issues and examine problems within our industry and to provide information and solutions. Knowledge is power and we want to provide more power to our members and the industry at large to get the word out on the value of fiber and ways to more effectively deploy it more rapidly and cost-efficiently.

FBA, in conjunction with the Benton Institute for Broadband & Society, Georgetown Law School Institute for Technology Law & Policy, the American Association for Public Broadband, Brightspeed, and GFiber, published a strategic paper in Q3 titled "Permitting Success: Closing the Digital Divide Through Local Broadband Permitting." This paper, which is a result of the FBA Permitting Summit held in the spring, will help local governments and Internet Service Providers (ISPs) navigate broadband network construction challenges and maximize investments in broadband connectivity for all Americans.

Other studies and whitepapers FBA released in the quarter included:

- **"Broadband Market Workforce Needs,"** FBA, Power & Communications Contractors Association (PCCA), and Continuum Capital. This study identifies the broadband workforce requirements, by job codes, for the contiguous 48 states in aggregate and is broken out by state.
- **"Fiber Broadband Deployment Is Paramount To Achieving Zero Carbon Footprint,"** FBA Sustainability Working Group. This study finds that Fiber-To-The-Home

reduces carbon footprint by 93% when compared to DOCSIS 4.0 HFC networks.

- **"Accelerating Utility Locates,"** FBA Deployment Specialist Working Group. This whitepaper provides best practices to eliminate delays and to streamline construction workflows for time efficiency.
- **"Gigabit Fiber Can Add \$326B to US GDP,"** FBA Technology Committee and RVA LLC Market Research & Consulting (RVA). This study finds that subscribing to Gigabit+ service will contribute \$326B to the nation in productivity gains.
- **"Fiber 101 Series: Application Considerations for Aerial Fiber Drops, Aerial Fiber Deployment Messenger Strand and Lashing Wire,"** FBA Technology Committee. This series is a collection of concise technical briefs designed to demystify and clarify technical fiber topics.

Accelerated Growth

In the third quarter, the Fiber Broadband Association's growth continued to accelerate. As of August 31, 2024, our revenue was \$1.38M favorable to budget, while expenses came in \$794K below budget.

Our ongoing strong financial performance is a result of membership growth, record attendance at our annual Fiber Connect 2024 conference held in Nashville at the end of July, the ongoing success of our Regional Fiber Connect Workshop Series, investments, and non-conference sponsorships. FBA added 35 net new member companies, including two new tribal members, bringing our North American membership to over 560 companies, including 39 Tribal Nations.

Our Biggest Event Yet— and the World's Biggest?

Fiber Connect 2024, our flagship in-person event set a new attendance record with nearly 5,000 registrants. Some attendees suggested it is now the largest broadband event in the world. Fully living up to its theme, "Accelerating Our Fiber Future," FC24 delivered 275 expert speakers, 75 sessions, two pre-conference educational tracks, seven main conference educational tracks, 43 breakout sessions, a series of five "Ted Talk" style Operator Light Talks, The C-Suite Forum, Fiber Meet Ups, Technology Deep Dives with the Broadband Forum, the return of our Proof-of-Concept demos, The State Broadband Summit, Broadband Policy Symposium, Overbuilder Toolkit, Women in Fiber

Luncheon, Award Luncheon, and 281 exhibitors in our biggest Expo Hall yet with 50,000 sq ft of exhibits.

At an opening keynote, Assistant Secretary of Commerce for Communications and Information and NTIA Administrator Alan Davidson reaffirmed the BEAD program's fiber preference and promised our audience that it would have all the state BEAD initial proposals "largely" approved by the end of summer. We are thrilled to see NTIA is living up to that promise.

Advocating for Our Industry

Fiber Broadband Association's Public Policy Committee continued its strong work in the third quarter. Some of the key highlights during this time include:

FBA D.C. Fly-In

- On July 10, 2024, the FBA held a fly-in in Washington, D.C., meeting with 21 bi-partisan, bi-cameral congressional offices to reinforce FBA members' top fiber-related public priorities. 30 FBA member companies participated in this event.

Des Moines State Capitol – Workforce Development

- On September 11, 2024, FBA public policy committee members met with state legislators and broadband leaders to discuss FBA members' fiber-related public policy and workforce development priorities.

FBA Comments Filed

- FBA submitted comments on NTIA's proposed guidance on Alternative Technology Guidance for BEAD.

Workforce Development

FBA's Optical Telecom Installer Certification (OpTIC Path™) program continues to gain nationwide traction, adding schools in three additional states during the quarter. The OpTIC Path program is now underway in 15 states. We have graduated 574 students and are on track to graduate a total of 1,085 fiber optic technicians by the end of the year. We are also pleased to report that 87% of our graduates are veterans.

FBA LATAM

The LATAM Chapter delivered its third Fiber Connect LATAM in Panama City, Panama, on October 1-2, 2024. The FBA LATAM Chapter continues to gain traction and is providing a positive contribution to the organization.

Fiber Council Global Alliance (FCGA)

FBA Chair Jimmy Todd and I attended the FCGA Global Summit in Kuala Lumpur from September 4-6. The event strongly focused on sharing best practices from each region as we work toward ensuring every home and business across the globe is connected with fiber. The highlight of the event was the deep dive discussion on the AI-driven growth and demand for fiber and other critical resources for hyperscalers. AI is truly a paradigm shift for

the internet, driving the need for lower latency and more broadband capacity across all network segments, not just within the data center. Fiber will be a key part of enabling AI's growth and use in the years to come.


Recapping FBA's Q3 Accomplishments

As we close the third quarter, the following is our progress against our Q3 2024 goals:

- Capacity attendance at FBA's Regional Fiber Connect events, with Iowa (precision agriculture) being our highest-rated event of the year so far.
- Record turnout at Fiber Connect 2024 in Nashville, with 25% growth year-over-year.
- Successful D.C. Fly-In with 30 FBA member companies meeting with 21 Congressional offices.
- Continue to ramp and scale our OpTIC Path fiber technician training program nationwide as we progress toward 1,085 graduates by year-end.
- Develop a Canadian presence as we prepare for our Regional Fiber Connect Workshop in Calgary, Alberta, on October 8, 2024.
- Continued strong growth in membership, dedicated focus on key areas such as the needs of Tribal members, uniting the industry, and investing in our volunteer leadership.

Going into the final quarter of 2024, I am very excited about our events in Panama, Calgary, Albuquerque (Tribal focus), and most importantly, our 2024 Premier Members Meeting at the Cheeca Lodge in Islamorada, Florida, from December 8-10.

So far, 2024 has been the strongest year in FBA history, but I feel we are just getting started. I am highly encouraged by our workforce development progress and momentum, the strength of our board and committee/working group leadership, and the velocity and quality of our research, whitepapers, and best practices. I could not be prouder of the FBA staff, our strategic partners, and the heavy lifting and engagement by our board and volunteer leadership. Our chairman, Jimmy Todd, CEO of Nex-Tech, has traveled with me around the world to advance fiber and our members' top priorities.

Plans for our Association, members, industry, and the communities we serve are well underway for 2025, and I'm excited for what our future holds. We continue to make material progress toward our mission and the opportunity to connect every American with fiber by the end of the decade. When Fiber Leads, The Future Follows. 



FBA 2024-2025 Events

2024 Premier Member Meeting

December 9-10, 2024
Islamorada, Fla.

Regional Fiber Connect Workshop

February 11, 2025
San Antonio, Texas

Fiber Connect 2025

June 1-4, 2025
Nashville, Tenn.

Regional Fiber Connect Workshop

July 2025
Anchorage, Alaska

Regional Fiber Connect Workshop

August 19, 2025
Toronto, Ontario

Regional Fiber Connect Workshop

September 16, 2025
Spokane, Wash.

Regional Fiber Connect Workshop

October 2025
Scottsdale, Ariz.

Look for more 2025 Regional Fiber Connect Workshops to be announced soon, coming to cities in nearly every corner and region of North America.

To receive event updates, visit
fiberbroadband.org/2025-regional-fiber-connect.

Don't let this happen to you!



Tii Safe Line Power Systems

Backwards compatible for
the existing line power user

- ⚡ Safe power delivery using standard Telecom cable in your existing network
- ⚡ Class 4 Fault Managed Power System
- ⚡ Inherently safe, protects workers from deadly shocks
- ⚡ Delivers high power over long distances

For more information, contact

FMPSsales@tiitech.com



tii technologies

www.tiitech.com | 888.844.4720



DURALite®



LIGHTER



GREENER



SAFER

TIER 15 & 22 RATING.
LIGHTER WEIGHT.
SAFER CREW. **Handled.**

From safer job sites to simpler installation to a lighter carbon footprint, Duralite® enclosures are engineered to handle anything. Get ready for up to 75% less weight than polymer concrete and zero compromise.



Learn more about better performance.





The WISP Migration to Fiber

By Doug Mohnhey

Around 30% of WISPA's service provider membership, such as Kwikom, is now deploying fiber to the home. **Source:** Kwikom.

While it seems counterintuitive, a significant amount of Wireless Internet Service Providers (WISPs) are making the leap to fiber, replacing existing last-mile technologies in their networks to provide connectivity from core to customer using fiber from end-to-end. It's a shift that the premiere association for wireless service providers is unafraid to discuss.

"We estimate probably 30% of our members employ fiber to the home in some manner," said Mike Wendy, Director of Communication for WISPA, the Wireless Internet Service Provider Association. "They all have some fiber exposure anyway because of the nature of the internet, from the [Central Office] or [Point of Presence] to the tower or elevated vertical structure to the radios. That's always been there and been the basic operating [network structure] for years. But now, more and more are seeing as technology becomes more ubiquitous, cheaper, and more powerful and easier to operate, they are moving into the fiber business where it makes sense."

Founded in 2004, WISPA defines a WISP on its website as "an internet service provider that utilizes wireless, fiber optic, or other technologies to distribute broadband or related Internet Protocol-derived services." Wendy said the organization has about 750 or so operator members in its ranks and perhaps maybe 1500 true WISPs across the country in total with up to an estimated 10 million people served wireless industry wide.

"WISPs are kind of a moving target," said Wendy. "I think the 'W' could just as well mean 'wow,' 'wonderful,' or 'wired.' It depends on the WISP themselves and the circumstances, maturity, and financial resources each one has. They've always been sort of evolutionary and maverick in their nature, using whatever tool they can to connect people. They're largely in rural, under resourced, and Tribal areas."

Today's WISP could use satellites, unlicensed spectrum, different types of licensed spectrum including LTE, cable, and fiber or a mixture of all of those technologies to connect its customers. Wendy said most WISPs on its roster are independent companies with generally fewer than 10 employees with the bulk of its members having under 1,000 subscribers.

"About 50% of our members are under 1,000 subscribers," said Wendy. "We have a number of very large ones, like Rise Broadband which serves between 200,000 and 250,000 subscribers at the top end of our membership. Dish is a member as well."

While 30% of WISPA members have deployed fiber-to-the-home, Wendy seemed to be skeptical that percentage would dramatically increase. "You can't reach every area in America with aerial or conduit," said Wendy. "If you never had to deal with a cable, it wouldn't be a bad day. The connectivity that's deploying now and has evolved over the past 20 years is robust, reliable, and gigabit and higher capable."

Click! It's done!

Meet the **FIP-200 Connector Checker™**



Purpose-built for activating broadband services.



A handy, essential tool that is **easy to carry** and **easy to use**.



The **FIP-200** allows any technician to check connectors **in one click**.



Learn more at
EXFO.com/FIP-200

EXFO

The wireless “bias,” as Wendy described it, will prevail for a number of years, with economics and deployment speed in its favor. “It’s about a tenth of the cost to get to someone via wireless versus wired alternatives,” said Wendy. “It’s the time savings too. We’re looking at a period of weeks to months as opposed to months to years to build wired networks. WISPA providers are businessmen, working with largely private investment to get a good ROI in a way that makes customer happy too.”

On the other hand, more and more WISPA members are running fiber, with one operator in College Station, Texas, spending 50 cents of every dollar on fiber deployment with his customer base evenly split between wireless and fiber. Each operator will make their own decisions as to what last-mile technology they deploy based upon the economics and resources available.

To gain the latest perspective of wireless ISPs deploying fiber, Fiber Forward spoke to Kansas-based KwiKom, a service provider holding membership in both FBA and WISPA. The company started off as a wireless ISP in 2007 and merged with a competitor WISP in 2010. It started deploying fiber in 2016 to meet the growing demand for more bandwidth across its service areas.

“We always believed fixed wireless would probably be a technology deployed around rural areas, but we did recognize very early on that the demand was going to continue to grow in town, and the best technology to [accommodate] it at that time was fiber,” said Zachery Peres, KwiKom’s founder. “It still is. What I like about fiber is its adaptability to evolving and new technology - all from a strand of glass! It doesn’t have the physical limitations present in the technologies of copper and coax plants. This drove us to invest in fiber - a reliable, future-proof solution for our rural markets we were already servicing with fixed wireless. It was a very easy decision for us to make. One that has seemed to be a more difficult one for ILECs and cable companies in the same markets.”

Two years ago, KwiKom embraced and extended its future with fiber by merging with WANRack, also a Kansas-based firm, with its strengths in engineering, constructing, and maintaining fiber networks across the country. With the merger came expansion financing from CBRE Investment Management.

KwiKom has deployed around 380 miles of fiber so far this year and expects to pass 40,000 homes by the end of the year. While the company wouldn’t discuss how many customers it has in its fiber markets, it indicated it had “double digit” penetration after launch in all of its markets with continuing uptake over time. “It’s a lot of pent-up demand that we are satisfying,” said Trenton Travis, Marketing Director, KwiKom.

But fixed wireless has been very good for KwiKom, enabling it to build a customer base and, just as important, building



Even the fastest wireless tech needs fiber at the tower to achieve speeds of 100 Mbps or more. **Source:** Kwikom.

rapport, trust, and a brand that enabled it to deploy and grow its fiber business. “In the fixed wireless space, we became the dominant provider in eastern and central Kansas through Southeast Nebraska, far-Western Missouri,” said Peres.

Before merging with WANRack and gaining access to CBRE capital, KwiKom’s growth was fueled by loyal customers and the revenue they contributed, month after month, year after year. “We wholeheartedly reinvested our fixed wireless success into building out fiber, as well as continuing to upgrade our wireless infrastructure to support people outside of the areas where it wasn’t feasible to build fiber,” said Peres. “We came from a grassroots build-up effort and fixed wireless business and applied that to fiber. We went out and bought our own construction machinery. We built all these networks in-house, underground and aerial. We still have in-state, full-time, in-house [field] crews.”

Among KwiKom’s fiber successes Peres and Travis pointed to was its recently completed build in Cherryville, Kansas. Bringing fiber to Cherryville enabled a programmer from Los Angeles to return there to work from home and tend to an ailing parent. “It was very hard to do [that move] because the lack of technology in Cherryville,” said Travis “Now it’s there, he can still do his job and take care of his family.”



Public Policy Outlook

PERMITTING SUCCESS STRATEGIES FOR ISPS AND LOCAL GOVERNMENTS

By Marissa Mitrovich,
FBA Vice President of Public Policy

As states gear up to allocate Broadband Equity, Access, and Deployment (BEAD) money, the challenges of permitting are top-of-mind for all parties involved in the process. On September 4, the Fiber Broadband Association (FBA) joined a group of leading broadband organizations in publishing a strategic paper titled “Permitting Success: Closing the Digital Divide Through Local Broadband Permitting.”

The paper’s findings were identified during a collaborative national summit on local permitting processes convened by The Benton Institute for Broadband & Society, in partnership with the Georgetown Law Institute for Technology Law & Policy, the American Association for Public Broadband, FBA, Brightspeed, and GFiber, organized to identify pathways forward that will help to ensure that local governments and Internet Service Providers (ISPs) can reduce broadband network construction challenges and recommend solutions for increasing the speed of permitting. We believe the recommendations in this paper will help local governments and ISPs navigate broadband network construction challenges and maximize investments in broadband connectivity for all Americans.

Participants in the Permitting Success paper were also recently featured on FBA’s Fiber for Breakfast to discuss the significance of the recommendations.

“We invited all thirty of the nation’s leading permitting experts, local permitting experts, to Georgetown, and these experts represented all the stakeholders that we think are important to the permitting process,” said Drew Garner, Director of Policy Engagement, Benton Institute for Broadband & Society. “We had local governments represented. We had public-private landowners represented. We had federal agencies represented, state offices represented, and then nonprofit experts.”

From the day-long discussions, three key findings emerged from the assembled group: interactions and partnerships should increase between the ISP and local government, how to improve the permitting process itself, and the need for additional resources.

“The most universal theme and area of consensus across our members was that for local broadband offices to manage the upcoming wave of BEAD applications, they’re going to need a consummate increase in resources because it takes work and resources to permit,” noted Garner.

Participants in the roundtable shared their experiences and desires to improve permitting across the country. The City of Mesa’s town council decided that good internet connectivity wasn’t enough and that it was time for a change. “We wanted internet connectivity at Mesa, and so we really set out to see what we could do as a city, as a regulatory body, to entice companies to come in,” said Ian Linssen, Assistant to the City Manager, City of Mesa. One of the big components is the permitting process. It’s ensuring that there’s a transparent process that folks know what to expect when they’re working with us and that they have certainty on turnaround times.”

FBA is committed to working with our membership, the participants who contributed to these recommendations and stakeholders beyond this event to continue to solve for more efficient permitting processes.

FBA visits the Capitol in Des Moines, Iowa

On September 11, a group of FBA members met with Iowa legislators and broadband leaders to discuss the importance of recruiting, training, and hiring a workforce now. We had productive conversations and the state leaders we met with, who acknowledge that as grant funding rolls out, states will need to be prepared to deploy fiber broadband with a trained workforce.

Fiber First Policies Pay Off

FBA sponsored, along with NTCA and Calix, research conducted and released by the Center for Rural Innovation that reveals that fiber-fed broadband experiences enabled by local providers in rural communities significantly boost income, entrepreneurship, and business investment. “Beyond Connectivity: The Role of Broadband in Rural Economic Growth and Resilience” compares economic data from three types of rural communities: underserved communities, communities with access to basic broadband services, and communities served by smaller fiber broadband providers offering access to experiences that go beyond fast internet. Locations studied include Beltrami County, Minn., Gallatin County, Mont., and Bulloch County, Ga.

Quarterly Policy Issue Overview

Broadband Equity, Access, and Deployment (BEAD) Grants Approvals

At the publication of this issue of Fiber Forward, 51 states and territories have received National Telecommunications and Information Administration (NTIA) approval of their BEAD proposals. FBA continues to be encouraged by this progress and advocates to ensure states and territories implement policies that will allow for maximized participation in the BEAD program.

Alternative Technologies

On September 10, 2024, FBA submitted comments in response to NTIA’s proposed guidance on “alternative technology” projects for the BEAD Program. In its comments, FBA reiterated its view that fiber builds must continue to be the top priority for BEAD funding. Any guidance from NTIA on the utilization of BEAD funds for an alternative technology must adhere to the objective of prioritizing fiber connectivity and otherwise deploying reliable broadband access nationwide and should make clear that alternative technologies are a last resort for BEAD funding. FBA also suggested that NTIA should reconsider whether LEO satellite broadband is a viable alternative technology for the BEAD program. Allowing funds to be used for a less than reliable method of connectivity will only allow for the digital divide to remain stagnant, when the funds are clearly intended to remedy missteps that have kept communities behind for so many years. Please reach out to the public policy committee to review our full submission.

FBA also submitted a Letter for the Record, September 24, 2024, for the hearing on “Communications And Technology Subcommittee Hearing: From Introduction To Implementation: A BEAD Program Progress Report,” encouraging Congress and NTIA to reconsider a technology neutrality approach to ensure grant funds are maximized to make a cost-effective investment and bring the connectivity Americans need and deserve today and well into the future.

Federal Communications Commission (FCC)

Section 706

On October 7, 2024, FBA submitted comments to the FCC in response to its annual Section 706 Notice of Inquiry “concerning the ‘availability of advanced telecommunications capability to all Americans.’” In its comments, FBA urged the FCC to adopt 1 Gbps symmetric as the benchmark for fixed broadband service, in light of market trends that demonstrate a clear shift toward a preference for gigabit-speed services. FBA further encouraged the FCC to continue to implement policies that further encourage the deployment of all-fiber networks to make advanced telecommunications capability available to all Americans.


2024 Communications Marketplace Report

On October 2, 2024, FBA submitted an ex parte in the FCC’s 2024 Communications Marketplace Report proceeding to give the Commission current and complete data about the fixed wireline communications sector following a filing by CTIA in the same docket with its 2024 Annual Wireless Industry Survey, in which CTIA suggested fixed wireline “adds” either barely increased or decreased. In the ex parte, FBA explained that while CTIA noted that about 20% of FWA subscribers are new, “fixed wireless is largely taking share from DSL and to some extent from cable’s growth.” FBA also noted that where fiber is available, it “captures the largest share of new customers and customers that churn from other providers. Where fiber is not yet available, fixed wireless has been capturing the largest share of customers that churn, and cable captures the largest share of new customers.” Fiber remains “the most robust, reliable, and scalable technology in the fixed market, and the Commission should seek to facilitate its deployment.”

Congressional Outlook

Congressional leaders continue to advocate for ACP funding. Congressional leaders recessed in late September passing a Continuing Resolution to fund the government. When they return post-election, for a lame duck session, they will have to fund the government and pass a Farm Bill. The Farm Bill includes funding for the Rural Utility Services (RUS) at the Department of Agriculture which includes funding for the ReConnect Program. There continues to be bipartisan interest in funding for the Affordable Connectivity Program (ACP), especially as states open the application process for BEAD grants, affordability is a criterion that providers must consider when applying for funding.

Fiber Broadband Association Public Policy Leadership

The FBA Public Policy Committee is led by co-chairs Chris Champion, Vice President, Government Affairs, C Spire, and Jordan Gross, Director of State Government Affairs, Lumen. Ariane Schaffer, Government & Public Policy, Google Fiber is the FBA Board Liaison. If your company is interested in joining the public policy committee, please email mmitrovich@fiberbroadband.org to join. 



The Capital Projects Fund's Broadband Gift

By Doug Mohney

Joseph Wender, Director, Capital Projects Fund, U.S. Department of the Treasury, seen here speaking at FBA's Regional Fiber Connect in Richmond, said the fiber-forward preference for broadband was one of the few firm principles in the program. **Source:** Doug Mohney.

One of the enduring legacies of the American Rescue Plan (ARP) enacted on March 11, 2011, is the U.S. Treasury's Capital Project Fund (CPF), providing \$10 billion to states, territories, and Tribal governments "to carry out critical capital projects directly enabling work, education, and health monitoring, including remote options in response to the public health emergency," according to the legislation that brought it into being.

"The Capital Projects Fund is one of the largest and most effective broadband deployment programs we've had in our nation's history, and it just happens to be overshadowed by the massive BEAD program that's coming right on its heels," said Jake Varn, Associate Manager, Broadband Access Initiative, Pew Charitable Trusts. "It's a testament to Congress acknowledging the role that states had in closing the digital divide and benefited from the emergency provisions that the American Rescue Plan was able to operate under.

"It has a lot of inherent flexibility that was given to the Department of Treasury, a unique federal agency for this fund to be housed in. That flexibility was extended to the states, who have been able to design and lift up the community needs that they witnessed firsthand during the shutdowns and they're able to immediately respond with projects to fund last mile networks, to build new community anchor institutions, renovate libraries and community centers, and for some states, even launch digital navigator programs or device distribution programs."

State broadband officers speaking at Fiber Connect 2024 in Nashville and other industry events have testified to the value and success of CPF in providing millions of locations with high-speed internet access, setting the stage for some states to provide 100% high-speed broadband access for all households in their boundaries over the next few years once BEAD arrives.

"I have the feeling of being in a tall ship, in the crow's nest," said Jim Stritzinger, Director, South Carolina Broadband Office, South Carolina office of Regulatory Staff, at the State Broadband Officer's Roundtable at Fiber Connect 2024. "I feel like I can see land ahead and the end of the digital divide before anybody else. That's a special feeling."

Out of the \$10 billion CPF pot, states have chosen to spend \$7.8 billion toward broadband infrastructure projects providing high-speed internet access. It is estimated that those projects will connect over 2 million homes and businesses around the country, according to Joseph Wender, Director, Capital Projects Fund, U.S. Department of the Treasury, with the deadline to spend CPF funds by the end of 2026.

"We know that through the middle of this year, Q2 of 2024, states have reported that approximately half of the broadband funds have already been awarded to internet service providers, with that number continuously increasing," said Wender. "So over half of the fund is under contract with ISPs, which means a portion of it is already under construction and some projects have even been completed."

While much of the CPF investment is happening in rural areas, states also put resources towards improving broadband in urban area affordable housing developments. New York is investing \$100 million into multi-dwelling unit (MDU) buildings to connect 100,000 affordable housing rental units while Maryland (\$45 million), Massachusetts (\$22 million), and Hawaii (\$8 million) also put money into broadband MDU programs.

A fiber preference for CPF projects was an intentional decision to ensure the broadband technologies being deployed provided a lasting solution for communities and their citizens. In the immediate response to deliver broadband at the beginning of the pandemic, municipalities deployed a hodgepodge of temporary measures to provide stopgap coverage, including building Wi-Fi hotspots accessible outside of government buildings, shipping cellular hotspots directly to households with school-age children, setting up cellular sites on wheels in communities to extend coverage, and school districts parking Wi-Fi equipped buses in unserved areas.

"We want to make long-term investments to improve work, education, and health outcomes," said Wender. "The idea was to address the critical needs that were laid bare by the pandemic, the need for sufficient speed to support multiple users in the same household at the same time. The Treasury decided that to achieve the best long-term

outcomes, we would require speeds that meet or exceed symmetrical download of upload speeds of 100 megabits per second, with recipients encouraged to prioritize investments in fiber optic infrastructure where feasible. That's directly from page three of our guidance. It's in print."

CPF's fiber-forward preference was one of the few firm principles in the program, with flexibility enabling states to identify the best solutions for their communities while delivering a relatively rapid response to get needed reliable broadband infrastructure built as quickly as possible to those that needed it. "Capital Projects Fund was able to do a lot of the groundwork of closing the digital divide for some states, so that BEAD only has to bat cleanup and close the last few locations," said Varn. "If you can cover as much as possible with CPF, you only have to do a few more projects with BEAD."

The arrival of CPF also provided a dramatic shot in the arm to the organization infrastructure states were building on their own for their broadband needs. "In January 2020, before the full effects of the pandemic were realized on our shores, some 45 governors were mentioning broadband in their State of the State speeches," said Varn. "Over half the states at that point had broadband offices. I would say CPF helped jump start the development of state broadband offices, and that's particularly helpful now as we move into this new BEAD era."

Atkore
United Poly
Systems

Building Connectivity Across America

Atkore stands with you, ready to provide the conduit necessary to complete your projects on time. Our national manufacturing network means conduit where you need it, whenever you need it.



Conforms to BABA


Scan Here to Learn More



Jake Varn, Associate Manager of Pew's Broadband Access Initiative, says the U.S. Treasury's Capital Project Fund (CPF) has been one of the largest and most effective programs in the nation's history. **Source:** Pew Charitable Trusts.

As CPF comes to an end in 2026 and BEAD begins, the former program has set up many communities for future success in closing the digital divide by leveraging the latter. "BEAD has a very specific requirement for states to try to reach every unserved and underserved location with a qualified project," said Varn. "CPF has certainly helped that make sizable dents in that [requirement] for some states, modest dents in others, but has made progress across the board. If their CPF program was able to cover a sizable portion of that, it will make their job easier for BEAD."

For states that have all of their locations connected per BEAD rules, available and remaining funding can be applied to non-deployment purposes. "That could be workforce development, that could be cybersecurity, that could be digital navigators and device distribution programs," said Varn. "There's a whole world of eligible programs that falls into that category."

The one caveat that is likely to affect CPF and BEAD projects alike is the discontinuation of the Affordable Connectivity Program (ACP). "The ACP was also a requirement of CPF," said Varn. "Any CPF project a state was funding had to go to a provider that was participating in ACP. With ACP going offline, CPF will continue, but it makes the business case for the provider a little harder, because ACP was such a benefit to reducing churn and being able to attract new customers." 

VI·VI

Elevating Fiber Inspection

Faster, Simpler, Stronger, Smarter



Introducing the INX™ 760
Probe Microscope from VIAVI



Learn more at viavisolutions.com/inx760



Delaware Governor John Carney (L), Roddy Flynn, Executive Director, Delaware Broadband Office (Podium) and Delaware CIO Greg Lane (R) at press conference announcing ARPA awards. **Source:** Delaware Department of Technology and Information.

With a combination of a fast-growing population and the second-smallest area of all the states, Delaware is on track to be the first in the country to provide connectivity to all. The first state has been investing in broadband for over a decade and most of its addresses have been connected.

“Our goal is to have Delaware be the first state in the country to connect every home and business to high-speed internet within the next few years. If there is any state that can connect every home and business, it ought to be Delaware,” said Governor John Carney in an October 2023 press release. “Every family deserves high-quality internet for school, work, and entertainment.”

A combination of federal programs and state money invested over the past decade has enabled broadband expansion to all but 5,700 unserved and underserved addresses in the state as of mid-summer 2024, with BEAD funding expected to easily bring the rest across the finish line and making it the first to provide universal broadband coverage to every location.

“We have a really diverse state in terms of geography and municipal and rural areas,” said Roddy Flynn, Executive Director, Delaware Broadband Office. “Wilmington is our largest city, but suburban New Castle County, our northern most county, is a fairly dense [area] in the northern part [of the state]. Then we go down into farmlands and Kent County

with Dover, our capital. Sussex County, our southernmost county, has the beaches and is a lot of farmland.”

By percentage growth rate, Delaware ranks among the top five fastest growing states in the country, with a rate of over 5% growth since 2020, according to the World Population Review website with Sussex County the fastest growing in America. “We are one of the biggest importers of people of any state,” said Flynn. “Delaware recognized this as an exciting challenge a long time ago and has been investing in expanding high-speed internet for over 10 years.”

Delaware’s first move to improve broadband was to partner with Crown Castle in 2014 fortify the middle mile network running north to south across the state from Wilmington through Dover and Georgetown, then moving eastward to cover Rehoboth Beach and Bethany Beach. Improved middle mile made it cheaper for private investment to build out last mile connections to individual homes, businesses, and farms, continuing to steadily extend broadband across the state over time.

Supplementing private broadband investment to build broadband were state and federal programs, including an FCC RDOF award to bring connectivity to 3,100 currently unserved addresses and \$33 million in ARPA funding to reach over 6,000 locations over the past few years.

(cont. on page 53)



2025 Industry Event Calendar

Join the Fiber Broadband Association at the following industry events!

PTC'25

January 19-22, 2025 | Honolulu

NATE UNITE 2025

February 17-20, 2025 | Raleigh

FISPA Live

February 18-20, 2025 | New Orleans

NTCA RTIME

February 23-26, 2025 | San Antonio

Connected America 2025

March 11-12, 2025 | Dallas

ICA Annual Meeting & Expo

March 24-26, 2025 | Des Moines

WIA Connect(X)

May 12-14, 2025 | Chicago

Broadband Communities Summit 2025

June 23-25, 2025

George R. Brown
Convention Center, Texas

ISE Expo 2025

July 29-31, 2025 | New Orleans

SCTE TechExpo

September 29 - October 1, 2025
Washington, D.C.



BRINGING BROADBAND

TO SOUTH TEXAS ON TIME AND ON BUDGET



Scan the QR code to hear from the leadership of Pharr, Texas on their success story of building a fiber optic network to provide affordable internet to their rural community.

[Info.graybar.com/Pharr](https://info.graybar.com/Pharr)


GraybaR

1-800-GRAYBAR | [GRAYBAR.COM](https://graybar.com)

© 2024 Graybar Electric Company, Inc. All rights reserved.

(cont. from page 51)

“BEAD is going to be the thing that allows us to be the first state in the country to be fully connected to high-speed internet,” said Flynn. “We anticipate our BEAD allocation will be sufficient to a solely fiber deployment to every unserved and underserved BSL in Delaware. Fiber is our gold standard for what we’re going to be delivering to our constituents, certainly what they expect and need. We’re also hoping that even after the BEAD allocation, we’ll have built out these fiber networks that can be scaled up much more inexpensively once you’re out into every corner of the state.”

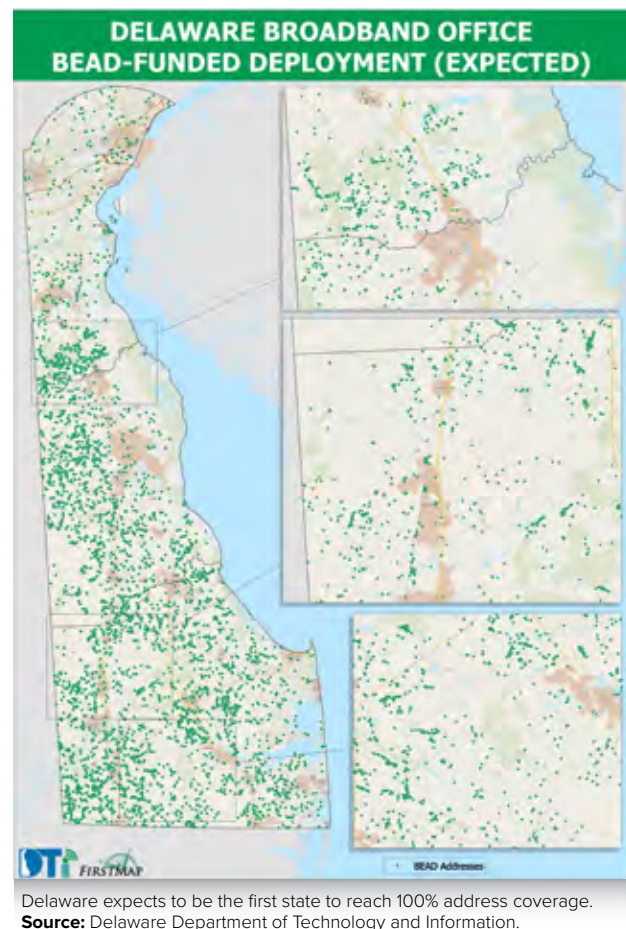
Delaware had both BEAD Volume I and II approval as well as full approval on its challenge process as of early September 2024, with the broadband office halfway through the subgrantee selection process. “We finished our pre-qualification phase,” said Flynn. “Those that are successful are currently preparing their scoring application, the actual bids that they will put together for each of the grant areas in Delaware. We anticipate our deadline for those applications is in October and we anticipate having our preliminary awards made by the end of November, and our final plan out for public comment in December. So, we’re moving very, very quickly.”

Flynn cited “great work” with the Delaware Department of Transportation and other agencies for streamlining permitting when spending ARPA funding, delivering broadband to around 6,900 unserved homes in under two and a half years. “I think BEAD will be under a very similar aggressive timeline,” said Flynn. “It’ll be more expensive, obviously, inflation, supply chain, it’ll be more money. The remaining homes in Delaware that aren’t connected are a little more remote, will have a higher investment cost, but we are gearing up fully working very closely with our state permitting agencies to move as quickly as possible. I’m confident that Delaware will be the first state to finish their BEAD investment.”

As more development continues in Kent and Sussex counties with more jobs flowing in, Flynn said the fiber network will continue to foster economic growth through in-person employment and facilitating remote work for everyone in Delaware.

But things haven’t always been smooth sailing. Flynn further detailed the challenges in building broadband across Delaware at a State Broadband Officials roundtable session with his peers from Maryland and Virginia on September 12, 2024, at Rural Fiber Expo 2024 in Annapolis, Maryland.

“We only have three counties,” said Flynn. “The biggest surprise for me has been it’s not often a huge area that doesn’t have any [broadband] access. There are one-off homes. You have a street with every home on the street has access and one that does not and that’s a huge pain in the butt. The ISP didn’t want to build down a long driveway and the homeowner couldn’t afford to take that cost to themselves. Throughout the state there are places that have been completely skipped for whatever reason.”



The Delaware State Broadband Office has had to deal with instances where homeowners don’t want to let construction crews onto their property to bring in fiber, with one case “where it almost got violent.” Flynn and his staff have tried to work with holdouts to convince them to participate, noting that their grandchildren may need access and that having fiber is a necessary utility when it comes time to sell their home.

“We’ve already had some people who turned us down under ARPA to do the drop to their house and have come back and said, ‘Can you do it now?’,” said Flynn. “We can’t go back and do it because that money is now obligated.”

Other challenges have arisen in trying to get high-speed broadband into multi-unit dwellings and mobile home communities, first in getting the properties appropriately classified as unserved or underserved and then being able to build into those areas. “At the end of the day, I don’t know if those property managers are going to let them in the building,” said Flynn. “And then we have this problem with mobile home communities, where the property manager may have their own deal with a satellite provider or an unlicensed wireless provider that just doesn’t provide good service. We can’t wire up to those homes, unless the property lets us in.”



Maryland and Virginia's Paths to 100% Broadband Access

By Doug Mohney

While Delaware, the “First State,” is positioning itself to be first in broadband, its nearby neighbors are close behind. Maryland and Virginia have both made considerable progress in connecting unserved households and expect to have all addresses within their borders connected within the next few years. Officers from both state broadband offices and Delaware’s discussed their progress and challenges in moving broadband access forward at Rural Fiber Expo 2024 on September 19, 2024, in Annapolis, Maryland.

The Free State’s Last Two Percent

Maryland had a “concept” of a state broadband office in 2019, and it being reestablished in 2021 with an emphasis on infrastructure and digital equity. Roughly \$500 million in U.S. Treasury ARPA funds enabled the state to bring its connectivity up to the current level.

“We’re about 98% connected,” said Ronnie K. Hammond, Director, Office of Statewide Broadband, Maryland Department of Housing and Community Development. “The rest consist of about 21,000 households that are unserved, 9,000 underserved. We received \$267 million [from BEAD]. That’ll get us through our unserved and to our underserved. We may not have enough for non-deployment [uses].”

Maryland expects its BEAD allocation to enable connection of all the unserved and underserved households in the state, but the last households will be among the most challenging. “We know that with these remaining 21,000 households, these are our most difficult to serve,” said Hammond. “It takes a lot of collective thinking, different approaches to reach some of these homes.”

Hammond assumed his current position in February 2024 and has been looking at a lot of state broadband leaders and what they’ve been doing, gleaned ways that Maryland can streamline its processes for reaching the rest of its unserved and underserved communities. Maryland, Virginia, and Delaware have faced many of the same tasks in reaching their last households.

“[That is] the challenge when it comes to permitting, the necessary agencies in the state, all the agencies that are involved in the process,” said Hammond. “We have DNR natural resources when it comes to our lands and waterways, and then we have the Department of Environment, MDOT SHA [Maryland Department of

Transportation, State Highway Administration], for our roadways and every single one of these agencies have different permitting processes and so this has been a big challenge for what we’re hearing from some of our ISPs.”

Hammond’s office has been meeting with ISPs throughout the course of the year to understand the challenges they are facing and discussing with Maryland’s agencies ways to streamline some of the permitting processes.

One of the biggest surprises he’s come across in his listening tours is ISPs underestimating the cost of deployment. “I can’t state how many times an ISP or jurisdiction has come back and said, ‘We’re a little behind, because we underestimated the funds we need,’” Hammond stated. “That can be a matter of capacity, a matter of workforce, can be a matter of supply chain management.”

Another issue in Maryland is lower than expected take rates for new network builds. “They’re not significantly high, but they do come in under what we anticipated,” Hammond stated. “I can’t emphasize enough the importance of community engagement and building trust when it comes to adoption and increasing take rates. We found that it is a matter of education, the importance of the internet and reliable internet at that. But also, it’s reinforcing those ISPs to make sure they offer an affordable service plan. Before they receive funding from the state, we have to make sure they have an affordable service plan. We’ve been educating those homes that they’re serving the importance of the internet and what that service plan is capable of doing for them.”

Growing Broadband in Tobacco Country

Virginia’s broadband investments started seven years ago and began as a part of the state’s recognition that its dependence upon industries such as tobacco production, textile and furniture manufacturing, and coal production needed to change. Using proceeds of the national tobacco settlement, the state’s Tobacco Region Revitalization Commission (TRRC) started allocating funding in 2017 for last-mile broadband infrastructure in unserved areas of Southern and Southwest Virginia. In addition, state tax dollars delivered through the Virginia Telecommunications Initiative (VATI) and administrated by the Virginia Department of Housing and Community Development provided another source of grant monies for broadband projects to unserved areas.



At Rural Fiber Expo 2024, state broadband officers from Delaware, Maryland, and Virginia discussed their fiber progress towards 100% access, including Dr. Tamarah Holmes, Director, Office of Broadband, Virginia Department of Housing and Community Development (center left), Roddy Flynn, Executive Director, Delaware Broadband Office (center right) and Ronnie K. Hammond, Director, Office of Statewide Broadband, Maryland Department of Housing and Community Development (Far right). **Source:** Doug Mohnney.

The state's funding was supercharged by federal COVID relief funds, with the U.S. Treasury's Capital Projects Fund and Coronavirus Relief Fund providing a \$750 million windfall to broadband connectivity efforts. BEAD will provide Virginia the amount to bring the state to 100% access in the near future.

"I believe I'm working myself out of a job so that we'll get to universal coverage, but probably not before I retire," said Dr. Tamarah Holmes, Director, Office of Broadband, Virginia Department of Housing and Community Development. "I have three years left before [retirement]. We are going to receive \$1.48 billion from [BEAD]. It is our belief that those funds will allow us to completely close the digital divide within the Commonwealth of Virginia."


As of July 2024, Virginia had deployed about \$2 billion across the state with the combination of local, state, federal, and other matching funds, delivering access to 126,000 locations with investments made starting in January 2021, with areas of the state steadily being "colored in" on a tracking map from unserved to served locations.

Among the biggest headaches broadband deployments have had to wrestle with are trying to bring connectivity across railroads and federal lands, with Holmes citing one project in southwest Virginia that took a year and a half to

get across a railway crossing to reach 60 homes. But there have been unexpected successes as well.

"Larger regional projects have been the biggest surprise," said Holmes. "No two counties are the same, no two county leaders are the same, the priorities are different," said Holmes. "I come from primarily a water and sewer drainage infrastructure background. Those aren't as complicated as broadband deployment projects because every half mile you go, there can be different issues. I'm amazed at the ingenuity and innovation of the partners that are able to do those large-scale regional projects, because they are more impactful, they tend to be a little more cost efficient when you're able to bundle high-cost areas with low-cost areas."

Virginia has also seen success in making sure that local government VATI grant applicants work together in not only building out a new network into an underserved area, but making sure the community fully understands the benefits of the service.

"It's not just a pass through," said Holmes. "You're not just there to take this money and pass it through to your ISP partner. You have an active role. We require a communications plan, not just to educate the residents on how the projects are going, but also to share with their residents why [broadband] is important and once it's there that they adopt the service." 

Grab your spot now in the upcoming *Fiber Forward* issues!

2025 Editorial Calendar

March 2025

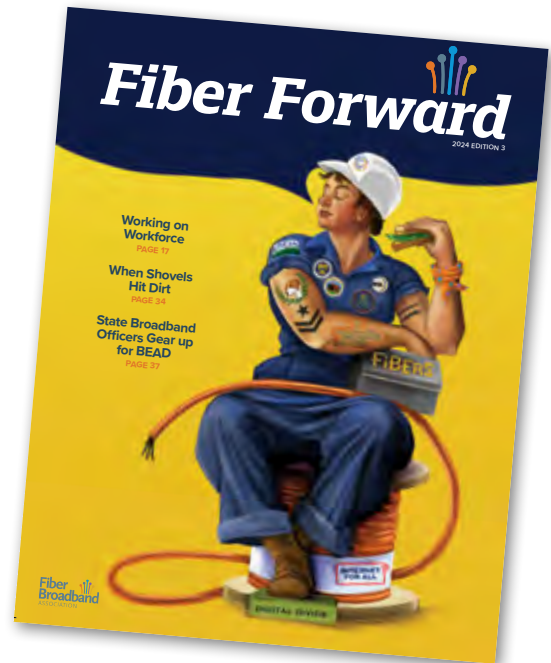
Materials due January 31, 2025

- Building faster by building better - Long-form
- Planning, permitting, locates, and performance - Deployment Specialists best practices
- High-tech software tools for building - GIS, network construction software mgmt.
- Demand drivers/broadband trends
- Tribal Broadband
- Executive Insights | Federal/State Update
Community Profiles | Innovation at Work

May 2025

Materials due March 20, 2025

- Fiber Connect 2025 – The Show Edition
- Connecting the customer - Long-form
- High-tech hardware tools for building - Ground penetration radar, LIDAR, drones
- Executive Insights | Federal/State Update
Community Profiles | Innovation at Work



Contact Lucy Green at lgreen@fiberbroadband.org for sponsorship opportunities.

Please note editorial topics may be subject to change based on future events and market shifts.



**UNINTERRUPTED
CONNECTIVITY
WITH OSP FIBER CABLES**



(cont. from page 19)

routed 200 miles east or 500 miles west. That doesn't need to be the case, and it's holding the city back."

Partnering with Wichita State University provides a starting core of 17,548 students, plus faculty, staff, and all the education and research traffic generated by the higher education institution and its partners. WSU's "Innovation Campus," a former golf course that has been redeveloped as high-tech research park, is now home to many of the major businesses in the area, including Airbus, Cargill, Koch Industries, NetApp, Spirit Aerosystems, and Textron Aviation. It is also attracting new businesses to Kansas, like Deloitte's Smart Factory, Dassault Systemes, and Hexagon—and government agencies like the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF).

Working with Connected Nation and Newby Ventures is a 21st century public-private partnership that builds upon a history of such arrangements dating back 75 years.

"Wichita State started doing public-private partnerships long before that term was popular," said Tonya Witherspoon, Associate Vice President, Workforce Development and Industry Engagement, Wichita State University. "In 1948, Clyde Cessna and Walter Beach, who founded

Cessna Aircraft Corporation and Beech Aircraft Company, respectively, came to Wichita State University and said, 'We need a wind tunnel. Neither one of us want to pay for the whole thing individually. We want to share it. Could we build it at Wichita State University, a neutral place that can hold the technology and the lab and allow us to each use it? We'll pay for it, which will provide ongoing maintenance. And then you use it to train our next aerospace engineers.' This [IXP] arrangement is no different."

With the growth surrounding Wichita State ranging from startup businesses, to established Fortune 500 companies, and the second largest private company in the US, delivering efficient high-speed low-latency internet through the IXP is expected to pay dividends for the community and its end-users, including an ongoing workforce development component.

"The University will certainly see economic benefits, but our primary focus is fulfilling our role as an anchor institution for


Kansas," said Witherspoon. "In 2021 alone, Wichita State University and WSUTech contributed over \$1.3 billion to the state's economy, so the entire state will benefit. We've built a robust applied learning program that began decades ago with the aircraft industry. Unlike traditional university models that design curricula based on what they think is needed, we collaborate directly with industries to ask, 'What do you need now?' This approach ensures we're not only advancing research but also creating a skilled workforce that provides immediate value after onboarding. We excel at this on a very high level."

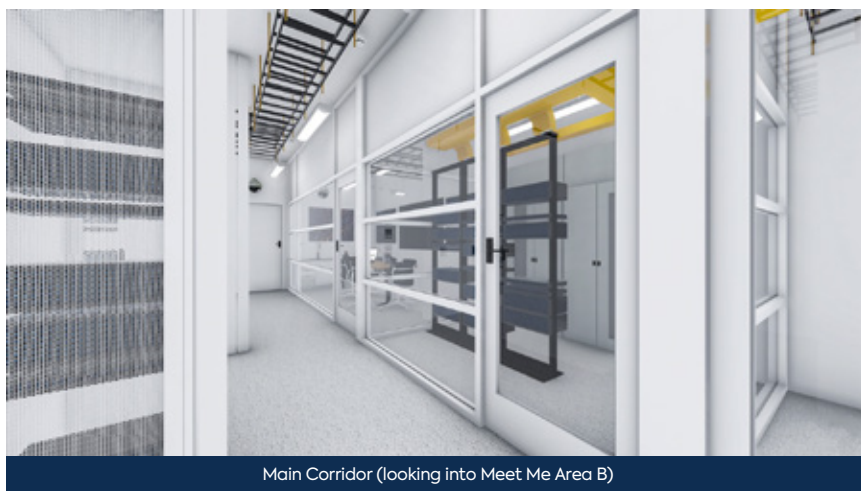
Witherspoon explains that the IXP, combined with the university's workforce education initiatives, will help create new career paths in the telecommunications field. "We're collaborating with industry to develop new programs right away," she said. "For example, we're working on a broadband technician program to address the projected need for 58,000 broadband workers nationwide, including

more than 900 in Kansas alone. We're also exploring career paths with industry partners for fiber technicians to advance as the demand for data grows."

Witherspoon believes Wichita State and WSU Tech can leverage existing programs, such as the FBA's OptIC Path™

fiber technician course, to get started. They will then focus on creating long-term career pathways in networking and data center management, using the IXP as a hands-on learning and training facility—a model that could serve as a blueprint for success nationwide.

"We believe we've got the right formula to create these interconnection ecosystems in regional hubs like Wichita that are anchored by university and ISP partners," said Legg. "If you take a look at our list of 125 target locations, there are cities like Wichita all across the U.S. that are being left behind because, from a network interconnection standpoint, they are fully dependent upon major metros that are several hundred miles away. With an impending and unprecedented federal investment in fiber infrastructure nationwide, we should also be investing a very small percentage of that money to improve how networks come together in a way that drives innovation, lowers latency, reduces backhaul costs, and fosters a more resilient Internet ecosystem. The time to act is now." 



IXPs should be purpose-built for reliability, with N+1 redundancy in power and other attributes.
Source: Connected Nation.

(cont. from page 23)

we're working on projects as it relates to traffic control with the Department of Transportation and Metropolitan Police Department. And when I mentioned those 600 plus sites, that's basic government connectivity. We also have some public Wi-Fi and community initiatives that we've launched."

Traffic is a big deal in the District, with daily commuting between the city and the surrounding suburbs affected by numerous sporting events and concerts, local parades, political rallies and protests, and a Presidential inauguration every four years, not to mention the occasional winter wildcard to strike fear into the heart of every commuter: snow.

"We're working closely with the District's Department of Transportation," said Lofton. "They're working on a modernization program to improve and in some cases automate the traffic light switching. We're working with them to modernize that infrastructure, move it off the old twisted pair. They have fiber as well, but because we have so much fiber within the District that passes a lot of those intersections, it only makes sense that we partner together and get those things on the DC-Net fiber infrastructure that OCTO operates."

DC-Net also supports some of the cameras that DoT, MPD, and Department of Public Works use to monitor intersections and neighborhoods, along with every CCTV camera the District uses to monitor its government facilities.

During the pandemic, the district launched the "Internet for All" program to ensure that families had low-cost residential services, initially leveraging the Affordable Connectivity Program then later transitioning into a partnership with DC-Net, the District of Columbia Housing Authority, and the DC Department of Human Services.

"There's a lot going on [to close the digital divide]," said Lofton. "We've learned a lot. We've done a lot in schools, in Wards 4 and 6 when it comes to housing. Lastly, in 2023, the Bowser Administration created the District State Broadband Office of Digital Equity. We've been granted \$100 million, so those funds will be used to help bridge the digital divide, focused on the unserved and underserved population and vulnerable population."

D.C. is currently working through the NTIA's challenge process under BEAD to verify broadband accessibility to the District's addresses and making sure they are served, with a priority to community organizations providing social services. "The target for us is the anchor institutions, because that's where folks tend to gather or get services," Lofton said. "If we can do things there, some of the CDE community and the nonprofits can begin to support

folks in addition to what we're doing. That's another collaborative effort."


Making sure that all of the District's residents can get access to and safely use the internet is vitally important to Mayor Bowser and her administration, given the move to a digital government and the ongoing going use of broadband to deliver services at both the local and federal levels. In D.C.'s BEAD Volume II proposal, the Bowser Administration wants to achieve 100% availability of 100 Mbps/20 Mbps in D.C. households, reach at least 95% equitable adoption of high speed internet, 95% adoption among target populations and high-priority Wards 5, 7, and 8, as well as ensure that no D.C. resident most pay more than 2% of their gross income per month for high-speed internet.

"I think we're between 65,000 to 67,000 residents that aren't connected," said Lofton. "That's for various reasons, some for affordably and in other cases not enough infrastructure. The charter of the State Broadband and Digital Equity Office is to address those gaps and see how we can partner with public and private partners to address those issues."

Meeting the challenge is not only making sure people have the connectivity and devices needed, but providing education on cybersecurity risks, especially to more vulnerable populations such as seniors who have little exposure or experience with technology. Leveraging the city's fiber connectivity to provide more access to city residents is another area of work.

"What we try to do at every fiber location is to deploy some level of wireless access," Lofton said. "Without that core resilient fiber infrastructure, that higher capacity, we couldn't expand wireless access and use various forms of distribution from the fiber. Wi-Fi has limitations. Most people will use the number of 300 feet, 500 feet range. But as you begin to expand, there are other things that can kind of interfere. You have other access points that you don't control. You have the environment itself that becomes an issue, trees and rain."

OCTO has used the combination of Wi-Fi and fiber to extend connectivity through some of the District's multi-tenant buildings and created pilots to provide some level of connectivity at places where people gather, such as at parks and business districts. It has also used Wi-Fi to support a "living lab" for IoT applications such as trash cans and parking meters.

"Without a very resilient foundation of a robust fiber network, we wouldn't be able to do the things that we're able to do," said Lofton. 



REDUCE THE RISK

If you're considering a fiber broadband deployment for your community but the risks involved are holding you back, consider EPB. Our end-to-end portfolio of solutions can help you accelerate your speed to market, increase your ROI and establish a foundation for success. We feel privileged to share our fourteen years of experience in this changing marketplace with you.

Visit epb.com/broadbandsolutions to learn more.



Enabling the Lifestyle that

Better Broadband Provides

CLEARFIELD IS PROUD TO SUPPORT BUILD AMERICA, BUY AMERICA (BABA).



Designed to Make Homes Connected More Cost-effective and Efficient Than Ever Before

The CraftSmart® Deploy Reel TAP takes the time advantages of the *FastPass™* Connect method and multiplies the benefits - reducing operating costs via a smartly designed, craft friendly box for the side of the home. Field-engineered features offer:

- Bend Radius limitation designed into arched crown of box
- Integrated, lockable fiber deploy reel
- Availability in a kitted package with everything needed to make the inside home connection

Utilizing the uniquely designed fiber deploy reel, Clearfield's *FastPass* Connect deployment method has been shown to save 30 minutes of installation labor when connecting fiber at the home. **Ask Clearfield® to tell you how.**



CLEARFIELD

Technologies that speed your fiber broadband buildout.

Learn how to simplify your deployments at SeeClearfield.com or call 800-422-2537