

# Fiber Trends: What 2021 Promises For the Broadband Industry

The 2021 broadband plans of incumbent telcos, independents, cable operators and electric co-ops will have a ripple effect on consumers and businesses.

By Sean Buckley / *Broadband Communities*

**A**s the new year begins, **BROADBAND COMMUNITIES** is asking industry colleagues what will drive the broadband industry in 2021. If anything is clear about the past year, the COVID-19 pandemic highlighted that broadband has gone from being a luxury to a necessity for remote learning and remote work.

Key to that is a fiber-based symmetrical connection. Whether service is from an incumbent telco, a cable company, a municipality or an electric cooperative, fiber has a ripple effect: It gives consumers higher speeds and can serve as an economic development tool to attract and retain businesses.

RVA LLC noted that as of 2020, more than 54 million U.S. homes have been passed with fiber, growing 10 percent over the previous year. FTTH passes 50.6 million unique homes in the United States. Mike Render, president of RVA LLC, noted that growth declined slightly in 2020 because AT&T met the 14-million mark as part of its DIRECTV acquisition.

“In 2020, deployments were down a bit because larger providers, particularly AT&T, hit their targets for meeting their FCC commitment and paused,” he said.

Nevertheless, New Street Research forecasts that fiber-to-the-home (FTTH) deployments by the top eight largest providers will ramp up in 2021 and beyond (see Figure 3).

“We now think that [homes passed] could increase by 20 million to 60 million over

the next decade if the telecom companies successfully execute on their plans,” said Jonathan Chaplin, equity analyst for New Street Research, in a research note. “This would take FTTH availability from 25 percent to 35 percent of households – we assume growth in occupied households of about 1 percent.” Render predicts that the potential number of homes that could be passed by FTTH will be even larger when taking into account that a host of emerging players are building out service to more homes. “There are more than 1,000 other providers in the United States alone – some small, some medium, some large – that add up to more than 10 million,” Render said. “Tier-3 telcos, private competitive providers both large and small, municipal providers, rural electric telcos, and cable MSOs are building out some FTTH.”

## TIER-1 TELCOS ADVANCE THE FIBER BALL

AT&T, Verizon and Lumen (CenturyLink) – companies that collectively account for most U.S. FTTH deployments – will lead FTTH growth.

AT&T’s FTTH strategy is paying off: It had 273,000 AT&T Fiber net adds in the fourth



John Stephens  
CFO, AT&T

## Fiber Broadband Now Passes Nearly 54 Million U.S. Homes RVA Provider Study 2020

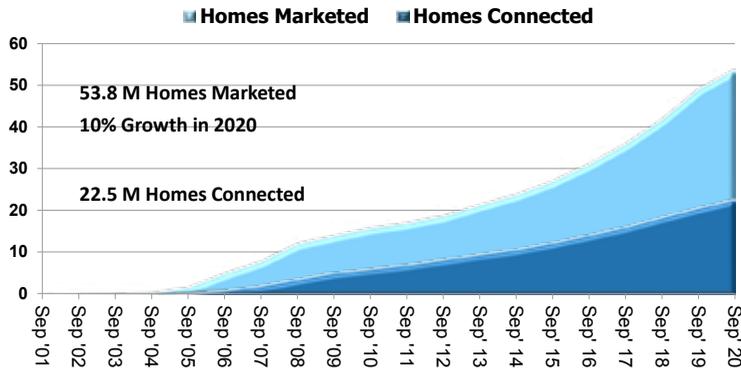


Figure 1. RVA LLC reports that as of 2020, more than 54 million U.S. homes were passed with fiber, growing 10 percent over the previous year.

quarter and more than 1 million for the full year. John Stephens, CFO of AT&T, told investors during the company's fourth-quarter earnings call that FTTH penetration rates are rising.

"We had our best AT&T Fiber fourth-quarter net adds, even with more challenges associated with the pandemic, and penetration continues to grow," he said. "It's now at 34 percent."

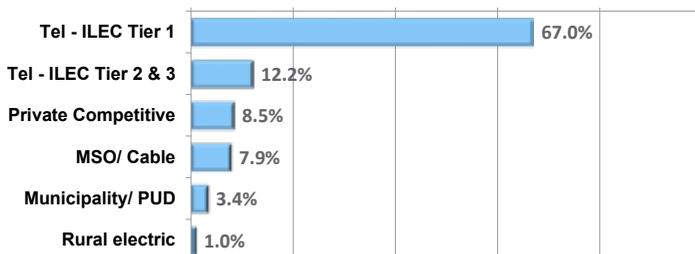
JPMorgan said in a report that to maintain growth, AT&T needs to double its fiber footprint over the next five years by increasing fiber spending,

starting this year, from \$2 billion to \$4 billion.

John Stankey, CEO of AT&T, told investors during the fourth-quarter earnings call that "we'll be building somewhere around 2 million fiber residential locations in that neighborhood."

Chaplin agreed that AT&T could ramp up deployments if it gets a desired payback. He said that AT&T is committed to 1 million a year but may accelerate in 2022 if it gets the returns it hopes for in the markets where it has deployed.

## Diverse Types Of Fiber Providers Are Adding To The Total U.S. Cumulative Homes-Marketed By Provider Types RVA Provider Study 2020



TYPE	2020 GROWTH	DRIVERS
Rural Electric	Very high	Serving customers, Grid network operations, Protecting business, Subsidy
Tel - ILEC Tier 2 & 3	High	Finishing build, Serving customers, Protecting business, Subsidy
MSO/Cable	Medium	Overbuild (Altice and smaller players), Greenfields, Offloading heavy users
Private Competitive	Medium	Protect business (WISPs), Financial opportunity, Pushing industry (Google)
Municipality/PUD/ Related Utility	Medium	Economic development and retention/ Smart City/ 5G
Tel - ILEC Tier 1	Low/ Planning more	Now clear that fiber protects the core business

Figure 2. Tier-1 telcos (AT&T, Verizon, Frontier and Lumen) account for 67 percent of the FTTH build, but Tier-2 and Tier-3 telcos have been very strong and added to the total FTTH market reach.

Lumen and Verizon continue to be active. Verizon is focused on touting 5G, but is still growing Fios, adding 95,000 Fios internet subscribers in the fourth quarter.

"Total Fios internet net additions of 95,000 was the best fourth quarter we've had since 2014 and reflected strong demand for our gigabit offering," said



Matt Ellis  
CFO, Verizon

Matt Ellis, CFO of Verizon, during the earnings call.

New Street Research forecast that "Verizon will continue to grow fiber homes passed by [more than] 400,000 homes per year."

As it sheds low-speed DSL customers, Lumen added 46,000 new 1 Gbps fiber Quantum Fiber broadband subscribers in the third quarter. Though it lost a total of 75,000 broadband subscribers – a factor related to losing 95,000 20 Mbps and below subscribers and 42,000 20–99 Mbps subscribers – it gained 62,000 100 Mbps subscribers.

"We win customers where we invest in fiber, simplify the experience and use micro-targeting in selecting the areas we serve," said Jeff Storey, CEO of Lumen, during its third quarter earnings call.



Jeff Storey  
CEO, Lumen

Chaplin said, "We assume Lumen will expand sales within the 10 new markets it is targeting, which contain about 10 million homes."

### TIER-2, TIER-3 TELCOS STEP UP

Though not building at the same scale as Tier-1 and rural and regional telcos, wireless internet service providers (WISPs) and electric cooperatives are driving FTTH growth in less populated markets.

Verizon and AT&T reportedly account for more than 30 million of the homes passed by fiber; however, there are more than 8 million homes passed by smaller, mostly rural telecom companies.

Render said that diverse types of fiber providers are adding to the total FTTH market reach. “While 67 percent of the FTTH build has been Tier-1 telcos – AT&T, Verizon, Frontier and Lumen – Tier-2 and Tier-3 telcos have been very strong,” he said.

Chaplin agreed about Tier-2 and Tier-3 rural carriers’ role.

“Verizon and AT&T account for more than 30 million of the homes passed by fiber; however, there are more than 8 million homes passed by smaller, mostly rural telecom companies that we tend to overlook,” Chaplin said. “Roughly half of the homes passed by smaller carriers were deployed by them, while the other half were built by Verizon as part of the initial Fios project and sold to them.”

Consolidated Communications, Frontier Communications, Shentel, TDS Telecom and Windstream have put together plans to expand their FTTH

territories. These Tier-2 providers will be joined by a host of Tier-3 telcos, municipalities and electric cooperatives.

“The eight largest FTTH providers will pass least another 20 million homes over the course of the next decade.” Chaplin said. “Most of the incremental build will come from the smaller telcos, including Consolidated, Frontier, Lumen, TDS and others.”

Consolidated set an aggressive FTTH plan for northern New England and other regions, leveraging its own capital and a \$425 million investment from Searchlight Capital Partners. It plans to extend fiber services to 1.4 million consumers and small businesses.

“We are embarking on a multiyear investment initiative [in which] we will upgrade [more than] 1 million addressable homes with fiber, enabling us to provide service across all three customer channels and deliver revenue growth,” said Bob Udell, CEO of

Consolidated Communications, during the third-quarter earnings call.

Another Tier-2 telco ramping up FTTH is Frontier. As it moves through the Chapter 11 restructuring process, Frontier hatched a 60,000-home pilot FTTH plan.

As part of its 2021 FTTH reinvestment initiative, Frontier has begun engineering for brownfield FTTH builds, which will upgrade its existing copper network in select regions.

Frontier also is eligible to get more than \$370 million of FCC Rural Digital Opportunity Fund (RDOF) funding over 10 years across California, Florida, Texas, Connecticut, West Virginia, Illinois, New York and Pennsylvania. Through its self-funding modernization plan, Frontier has a long-term target (within 10 years) to pass more than 2.9 million homes with fiber.

Bernie Han, Frontier’s outgoing president and CEO, said during the third-quarter earnings call that the FTTH service is attracting new subscribers.

“While we are converting existing copper customers to fiber, most of our early gains are coming from winning new customers,” Han said. “We plan to use the learnings from this pilot program to better implement our larger-scale build beginning in 2021 and beyond as we convert more infrastructure to fiber.”

Chaplin said, “We have assumed Frontier builds to the low end of their range in our base case, but if they targeted the high end, there could be another 6 million FTTH homes passed.”

Other Tier-2 telcos, including Shentel and TDS Telecom, are no less aggressive.

Shentel’s Glo Fiber initiative is focused on building out Virginia’s Shenandoah Valley. It passed about 9,200 new residential and small business locations, with a total of 20,600 addresses constructed and 22,300 passed overall.

## NEW FTTH DEPLOYMENTS ANNOUNCED

*Households in millions, 2020-2030*

AT&T	3.9
Verizon	2.8
Lumen Technologies	6.8
Frontier Communications	2.5-9.0
Windstream	1.5
Consolidated Communications	1.4
Ziply Fiber	1.2
TDS Telecom	0.1
<b>Total</b>	<b>20.1-26.6</b>

Source: New Street Research, Company Data

Figure 3. FTTH will pass at least another 20 million homes over the course of the next decade.

By the end of 2020, Shentel planned to pass about 27,300 new target homes. By securing new Glo Fiber franchises in the cities of Frederick, Maryland, and Charles Town, West Virginia, it added more than 15,000 new targets. Shentel also added three additional markets: Martinsburg, West Virginia; Lancaster Township, Pennsylvania;

and Blacksburg, Virginia, which include approximately 13,500 additional targets.

“Glo Fiber has approved franchise target passings of approximately 117,000 with the strong funnel of additional markets and our Edge Out strategy heading into the fourth quarter,” said Jim Volk, CFO of

Shentel, during the company’s third-quarter earnings call.

TDS Telecom, which is building out fiber in its existing footprint and in other territories as a CLEC, serves 280,000, or 34 percent, of its wireline service addresses with fiber. In its CLEC markets, TDS is seeing FTTH take rates between 30 to 40 percent.

## FTTH BUILDS BUOY BUSINESS SERVICES GROWTH

As service providers roll out FTTH, the networks can serve other purposes, such as providing wireless backhaul and business services.

Mike Render, president of RVA, said during the recent Fiber Broadband Association webinar that business services produce a large amount of bandwidth for the fiber they deploy.

“Fiber providers pass almost 4 million businesses and connect about 1.5 million,” he said. “This is important to the bottom line of the Tier-1 providers, which get more than three times the revenue per customer, especially because they are serving large enterprise customers.”

AT&T sees fiber creating a “three-for-one” revenue opportunity.

“I think about the fiber being part of my core transport network and serving business customers and connecting to large business customers and small business customers, and then I think of it as an opportunity to connect the homes,” said AT&T CFO John

Stephens during the Morgan Stanley European Media, Tech and Telecom Conference. “So, I have a three-for-one in this integrated carrier environment that really gives me a different opportunity than others.”

Smaller providers, and even municipalities that run their own broadband networks, also are seeing the value in using a fiber network to serve multiple purposes.

Chattanooga’s Electric Plant Board’s (EPB) fiber network not only provides better residential broadband, but also benefits businesses and the electric grid.

Dr. Bento Lobo, First Tennessee Bank Distinguished Professor of Finance at the University of Tennessee-Chattanooga, found that 9,500 jobs were created over the past 10 years since EPB launched its fiber network in Chattanooga.

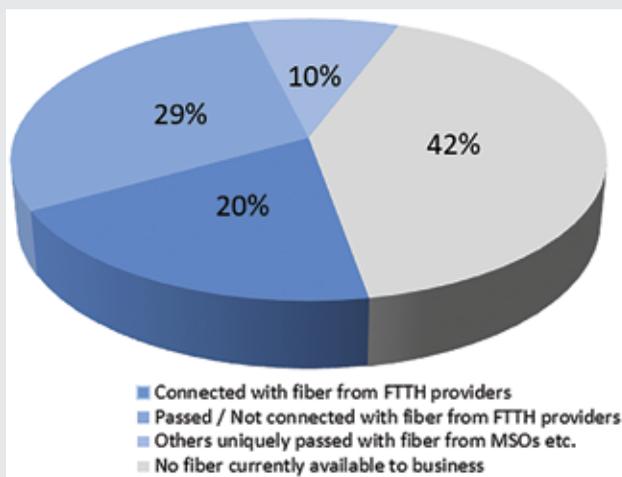
“The fiber infrastructure impacted local economic development in the form of business investments, new startups, real estate development, and taxes to the extent of \$1.4 billion,” Lobo said. “As much as \$141 million of downtown real estate development can be attributed to this fiber infrastructure.”

Other communities, such as Wyandotte, Michigan, see a similar impact. Located in southeastern Michigan, Wyandotte operates Wyandotte Municipal Services, providing electric power through a municipal power plant, water service, and cable-based internet.

Wyandotte plans to overbuild its cable network with fiber, giving nearly 13,000 homes and more than 700 commercial buildings access to 10 Gbps of internet, IP video and smart-home services.

Paul LaManes, Wyandotte general manager, says the city’s plan calls for building out a medical campus that would run through Wyandotte and parallel to the Detroit River.

“There are a lot of larger buildings being built on brownfield land that housed doctors’ offices that are part of the hospital, so this project is critical and is part of the city’s strategic economic development plan for the city,” he says. “There are several parties in the city that are going to be using what we are doing to attract development and redevelopment in the city.”



More than half of U.S. businesses now have fiber available. Business services produce a lot of bandwidth for the fiber they deploy.

Source: RVA LLC

“Our current fiber plans include roughly 320,000 service addresses that will be built over a multiyear period,” said Vicki Villacrez, senior vice president of finance and CFO of TDS, during the company’s third-quarter earnings call. “We have completed construction of 40,000 fiber addresses in addition to the 40,000 addresses we turned up in 2019 related to this program.”



Vicki Villacrez, Senior VP-Finance and CFO, TDS Telecom

Kinetic by Windstream added 53,000 broadband customers, putting it well on track to meet its 2020 goal of 60,000 net adds.

Jeff Small, president of Kinetic by Windstream, said in a release that the company launched a “\$2 billion initiative to continue growing our fiber footprint and gigabit internet service.”

Chaplin said these service providers face challenges in serving rural areas because they don’t offer the immediate returns that come from larger urban and suburban markets.

“We would caution that plans announced by struggling or recently restructured wireline companies should be viewed differently from plans announced by Verizon in 2006 and AT&T in 2016,” he said. “They are entering markets that are for the most part less attractive than markets entered previously and lack the track record or the resources of those companies.”

## TELCOS’ NON-FIBER LOSSES MOUNT

By using their nearly ubiquitous HFC plant to deliver up to 1 and 2 Gbps, cable operators enjoy a lead over telcos in non-FTTH areas. According to Leichtman Research Group (LRG), the largest cable companies added about 1.32 million subscribers for the third consecutive quarter.

Comcast was a standout, adding 633,000 new subscribers, which LRG said, “were more than in any quarter in the past 15 years.” Charter and Mediacom also had sizeable gains during the quarter, adding 537,000 and 29,000 customers, respectively.

However, the top telcos added about 210,000 subscribers in the third quarter.

Chaplin said telcos’ copper-based DSL losses are continuing to widen as more families work and conduct school at home. “Telcos are losing non-fiber broadband subscribers at a pace of close to 2 million a year,” he said, adding that the losses are “accelerating at a fairly alarming rate.”

But even in areas where telcos have launched FTTH, cable remains a formidable competitor. Altice has seen higher broadband penetration than Charter and Comcast despite competing with Verizon Fios in New York. Likewise, Charter reported broadband subscriber growth as AT&T deploys fiber in its footprint.

## RETIRING DSL

When AT&T announced it would no longer accept new DSL customers, it gave cable another opportunity to take market share in markets where AT&T does not offer FTTH. The telco justified its decision because it offers consumers higher-speed FTTH and fixed wireless.

“We are focused on enhancing our network with more advanced, higher-speed technologies [such as] fiber and wireless, which consumers are demanding,” AT&T said in a statement. “We’re beginning to phase out outdated services [such as] DSL, and new orders for the service will no longer be supported after October 1.”

AT&T added that “current DSL customers will be able to continue their existing service, or where possible, upgrade to our 100 percent fiber network.”

Doug Dawson, president of CCG Consulting, said in a blog post that AT&T’s move is a blow to consumers in places where only cable is present. Customers might see higher prices, poor network performance and repair delays.

“Unless some other ISP is building fiber, you no longer have a choice of broadband provider – it’s the cable company or nobody,” he said. “When AT&T announced that it is no longer connecting DSL customers as of

October 1, it ceded its historic telephone properties to its cable company competitors.”

Dawson suspects AT&T won’t be the only provider to retire DSL. “AT&T is the first big telco to announce the end of DSL support, but it won’t be the last,” he said. “I find it hard to think that Verizon won’t soon follow now that AT&T has taken a public stance. CenturyLink management has made it clear that it would love to get out of the copper business.”

Though Verizon hasn’t signaled plans to shut off DSL, it has replaced copper with fiber in some areas. For instance, in an FCC filing, Verizon said it will “retire the copper facilities at specified addresses in the fourteen (14) Washington, D.C. wire centers.”

Meanwhile, Lumen separated the traditional copper network business into the CenturyLink brand. Industry watchers say this could better position the company to sell the struggling copper assets.

Lumen hired financial advisers to help it decide on any asset sale. “We’ve been open to looking at assets like our consumer business,” said Lumen CEO Jeff Storey during the company’s first-quarter 2019 earnings call. “We have now engaged advisers to assist us in that review.”

Though telcos set an aggressive FTTH plan, Chaplin said cable has “plenty of time to respond to the competitive threat.”

“Before the new deployments have gained much traction, Altice should have completed [its] own FTTH deployment; DOCSIS 4 deployments should be well underway, and the three public cable companies should have a fully developed wireless offering with their own networks deployed,” he said.

## CABLE PUSHES HFC’S BOUNDARIES

As they look to secure their broadband lead, cable MSOs have coalesced around a transition path that enables gigabit delivery over existing HFC.

While FTTH is being deployed in greenfield developments, cable operators are leveraging DOCSIS 3.1 and emerging DOCSIS 4. DOCSIS 3.1 increases prior HFC network capacity by more than 50 percent. Likewise, DOCSIS 4.0 technology supports up to 10 Gbps downstream capacity and up to 6 Gbps upstream capacity, allowing for multi-gigabit services over existing HFC networks.

Charter, for one, sees the potential to enhance network speeds.

“We’re continuously increasing the capacity in our core and hubs, and augmenting the network to improve speeds and performance,” said Tom Rutledge, CEO of Charter, during its third-quarter earnings call. “In the near term, we have a large opportunity to improve throughput and latency by continuing to use already-deployed DOCSIS 3.1 technology. By allocating more plant spectrum to DOCSIS 3.1 IP services, we have the ability to offer symmetrical gigabit-plus speeds.”

Rutledge added that DOCSIS 4.0 will give it enough room for 10G speeds. “The DOCSIS 4.0 specification allows for multiple paths through 10-gig and higher speeds, including Full Duplex DOCSIS and Extended Spectrum DOCSIS,” he said.

Similarly, Mediacom, in partnership with CableLabs and NCTA, conducted its 10G smart-home field trials in Ames, Iowa.

“Similar to our rapid deployment of 1-gig across our national network in 2017, the beauty of 10G is that it’s extremely scalable within our existing network infrastructure,” said JR Walden, Mediacom CTO, in a release.

## CABLE COULD EYE FTTH

While DOCSIS gets cable higher speeds, will cable consider an FTTH path? This question arises as more consumers and businesses demand symmetrical bandwidth – a challenge for existing HFC plant that has been largely asymmetrical.

Chaplin said there are two strategies: Altice is deploying FTTH in the Cablevision footprint, and others are focusing on using DOCSIS 3.1, 4.0 and full duplex capabilities to deploy higher-speed services on their existing cable plant.

“At some point in 10 to 20 years, cable infrastructure will bring fiber to the home or fiber so close to the home that we’ll call it fiber to the home,” he said. “With all of the electronics in the last few hundred meters having been removed, the path toward that will be pretty gradual.”

He added that the near-term scenario will focus on DOCSIS 3.1 and 4.0. “The cable industry is fairly confident it will get to 10G symmetrical over the course of the next three to four years,” Chaplin said. “If getting DOCSIS 4.0 deployed in the field takes too long, the impetus to bring fiber closer to the home might kick in, but if cable operators can push DOCSIS 4.0 and full duplex, most of them will go down that path.”

Render posed the idea that cable could use FTTH to upgrade power users.

“There’s not a lot of overbuilding yet, but many cable companies are deploying FTTH in a lot of greenfield markets,” he said. “FTTH can be used by cable companies to conduct offloading in certain places where a system is being destroyed by a heavy user in an area; they can opt to build out FTTH to that person.”

The only multiple service operator (MSO) pursuing a large-scale FTTH

strategy is Altice USA. During the third quarter, Altice USA reported that the portion of new customers taking FTTH in areas where it’s available is already at 44 percent. The company ended the third quarter with more than 16,000 customers and passed more than 900,000 homes with FTTH.

Dexter Goei, CEO of Altice USA, noted, “Sixty percent of our fiber gross adds are taking the 1-gig product, which is a higher proportion of customers taking the 1-gig on our HFC plant, representing a great monetization opportunity.”



Dexter Goei,  
President, Altice

Regional cable operators will also have an FTTH role. The National Cable Television Cooperative (NCTC), which represents 700 smaller cable and broadband operators, sees an eventual path for smaller operators.

Rob Smith, senior director of procurement for the NCTC, says FTTH enables cable operators to lower maintenance costs initially for greenfield deployments.

“As those members’ cable plants age, they are looking at greenfield areas to deploy technology that will give them the features they need without worrying about constant network upgrades,” he said. “Some of our members want to consider fiber to the home since it’s relatively future-proof.”

In brownfield areas, cable is considering a similar path.

“Other cable operators are deploying FTTH in brownfield areas to play a defensive role,” Smith said. “When a disruptor like a WISP or an overbuilder comes into their territory, they will determine if PON is the right move.” ❖

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