Six Community Broadband Networks Demonstrate Diversity of Approaches to Connectivity Challenges

by Christopher Mitchell, Sean Gonsalves, Jericho Casper

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BENTON INSTITUTE for BROADBAND & SOCIETY

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Introduction

Hundreds of local communities have invested in broadband solutions to improve internet access for local businesses and residents. The vast majority of these communities are in overlooked and underinvested areas, where the business case for broadband buildout is difficult. Nonetheless, most of these networks have been able to meet their goals, making better broadband service more available and more affordable while generating enough revenue to break even and deliver key benefits to the community.

Communities have been building their own communications networks since before the internet was commonly available in the 1990s. Long before broadband, more than 100 communities had built their own cable television systems. Some of these towns had grown tired of waiting for private investment; others purchased failed private networks in their areas; still others simply felt they could do a better job than the companies commonly operating cable systems.

There are at least 600 wired municipal telecommunications networks today.

The first community broadband network was actually an add-on to the cable television operation in Glasgow, Kentucky, in the early 1990s. Over the following 30 years, the number and variety of municipal telecommunications networks have dramatically increased to at least 600 wired and countless wireless networks today.

Throughout this history of municipalities providing telecommunications services to local residents and businesses, powerful private companies have tried to limit local authority with state restrictions and even proposed national preemption laws. The number of states that deliberately discouraged or banned municipal broadband peaked at 19 and now sits at 17 after Arkansas and Washington repealed their limits in 2021.

In discussing his administration's plans for broadband, President Joe Biden noted that municipal and cooperative networks should be favored because these providers face less pressure to turn profits and are more committed to serving entire communities. The Biden administration sees value in creating competition in underbuilt markets dominated by monopoly providers and recognizes that community-owned networks tend to drive down prices for high-speed internet service—even for those subscribers who choose to stick with the large incumbent providers. It's an approach that former president Barack Obama spoke in favor of but whose enactment was stymied by a reluctant Congress.

MuniNetworks.org—the Institute for Local Self-Reliance clearinghouse of information about local government broadband policy—has published thousands of stories about municipal networks and conducted hundreds of interviews with those who have built, operated, or worked in the ecosystem. But for someone trying to get a sense of the range of municipal broadband approaches, there is no single document that encapsulates the variety of models.

This collection is a preview for a much larger compendium of community-led broadband case studies that will be released later this summer. The full report, while including explorations of some of the networks that have struggled, concentrates on the vast majority of community-led broadband networks which have succeeded, providing robust service where it had not been available before or providing competition for incumbent cable and telephone companies.

Glossary

Cable Node —a collection of homes that share a local cable connection within a neighborhood. More homes on a node typically means more potential network congestion.

Dark Fiber —leftover strands from fiber networks, which are often built with many more strands than are immediately required by the network owner; these strands are often leased to others.

Fiber-to-the-Home (FTTH) —a technology that uses fiber-optic cables to connect actual homes and businesses, resulting in the highest-quality network experience.

Incumbent —an ISP that has operated in a given market for many years, most often a legacy cable or telephone company.

Municipal Network —a network owned by a local government that may be operated by the local government or leased to one or more partner internet service providers (ISPs).

Open Access —a single network that allows multiple independent ISPs to compete against one another for subscribers. There are a variety of open-access models that use different technologies and rules that can impact how many likely competitors will use the network.

Alabama

In July 2021, BroadbandNow ranked Alabama 38th out of 50 states in broadband connectivity. Although the Federal Communications Commission's data is known to overstate broadband deployment, there is no other source of data in most states. According to an ILSR analysis of the most recent FCC broadband deployment report (based on December 2019 data), 9 percent of Alabama households do not have access to broadband with speeds of at least 25/3 megabits per second (Mbps); 18 percent of households do not have access to broadband with speeds of 100/20 Mbps; and 64 percent of households cannot access broadband with symmetrical speeds of 100 Mbps. Nearly 40 percent of those lacking access to at least 25/3 Mbps are covered by providers that have been awarded FCC subsidies to improve access via the Connect America Fund Phase II Auctions and the Rural Digital Opportunity Fund.

Alabama is one of 17 states that limit competition with barriers on municipal networks. After years of the state refusing to allow the city of Opelika to offer broadband services outside of its city limits, Opelika had to privatize its fiber network in the hopes of improving the region's economic development.

Alabama is also home to extensive efforts by rural electric cooperatives to improve internet access, with a total of nine active rural electric cooperative broadband projects. Examples include freedom FIBER, operated by Tombigbee Electric Cooperative, and the North Alabama Electric Cooperative, among others.

Huntsville is one of several communities which own a municipal broadband system in Alabama. Others include the city of Sylacauga which offers wireless internet access across the community and fiber-to-the-home service to a substantial number of households. Scottsboro also offers internet access over an older cable network for residential service and has fiber-optic service available to businesses.

Huntsville

Huntsville, known as "Rocket City," is the anchor of a metro population with nearly 500,000 people, an inordinate number of PhDs, and an impressive fiber network. Huntsville Utilities, owned by the city of Huntsville, serves Madison County with electricity, natural gas, and water. In 2016, the utility deployed a fiber network that served mostly those within the city's boundaries.

Huntsville Utilities has adopted an uncommon approach, constructing a fiber network to nearly every residence and business in the city but not directly connecting the properties. Broadband internet access service providers can lease that fiber and attach customers to it, in a business model that is quite similar to open access but retains more barriers to entry than are typical with open access networks.

The first broadband internet access service provider to take advantage of Huntsville's approach was Google Fiber, which has built a reputation for trying interesting arrangements like this and a conduit partnership in West Des Moines, Iowa. Google's lease pays for a substantial portion of the cost of Huntsville's network deployment, but not all of it. From the perspective of Huntsville Utilities, it gets a lot of help in paying for a citywide fiber network that it can use for many purposes, from internal monitoring of its various utilities to smart city applications. Springfield, Missouri, has since adopted this model, whereby Lumen (previously CenturyLink) competes against Mediacom, the cable incumbent, and AT&T, the telephone incumbent.

Community-led broadband networks are often assumed to be needed in areas that lack decent internet access. But Huntsville had cable and DSL and a small amount of fiber broadband service in some areas prior to the Huntsville Utilities effort. The issue was a lack of competition in the market to ensure reasonable rates, reliability, good customer service, and future investment. When announcing the network, Mayor Tommy Battle focused on the future, saying, "If Huntsville is to remain a technological leader in this hyper-connected global world, we must be able to offer broadband access that can accommodate the growing demands of business, research institutions, entrepreneurs, residents, and public safety."

As the city starts to take advantage of the completed network, with the pains of building it behind them, we asked whether it has been worth it. Stacy Cantrell, vice president of engineering at Huntsville Utilities, says, "We would do this again. This has been good for Huntsville Utilities; it's good for Huntsville and the area. We're going to continue to see more and more benefit from this now that the build is substantially complete."

BroadbandNow rates Huntsville as the most connected city in the entire state.

More information:

- Exploring the Huntsville Fiber Model—Episode 191 of the Community Broadband Bits Podcast *(Institute for Local Self-Reliance)*

- Dark Fiber Will Bring Value to Huntsville for Decades to Come—Episode 433 of the Community Broadband Bits Podcast *(Institute for Local Self-Reliance)*

Arkansas

At the end of 2020, BroadbandNow ranked Arkansas 48th out of 50 states in broadband connectivity, but the state improved to 41st by May 2021. Although the Federal Communications Commission's data is known to overstate broadband deployment, there is no other source of data in most states. According to an ILSR analysis of the most recent FCC broadband deployment report (based on December 2019 data), 10 percent of Arkansas' approximately 3 million people do not have access to broadband with speeds of at least 25/3 Mbps; 16 percent of households do not have access to broadband with speeds of 100/20 Mbps; and a whopping 90 percent of households cannot access broadband with symmetrical speeds of 100 Mbps. However, 100 percent of the areas in Arkansas without access to at least 25/3 are covered by providers that have been awarded FCC subsidies to improve access via the Connect America Fund Phase II Auctions and the Rural Digital Opportunity Fund.

Arkansas broadband deployment has largely been dependent on national providers like AT&T, CenturyLink, and Windstream who appear uninterested in building networks to reach the state's low-population-density, rural areas. Despite receiving billions of dollars from the federal government for broadband improvements, the companies have done the bare minimum (and perhaps not even that).

State senators such as Republican Breanne Davis noticed and introduced legislation to encourage more investment in community networks to light a fire under the national companies. The big companies responded with more lobbying than investment, significantly diluting the bill. Arkansas had some of the strongest prohibitions on local internet choice, but the legislature enacted a bill in 2019 that allowed communities receiving a broadband grant to largely opt out of the restrictions. In 2021, a much stronger bill seems to have removed all the barriers to municipal networks in the state, though courts will have to interpret the new language.

The state has a much brighter future with several exciting community-led broadband networks including a lot of new investment from rural electric cooperatives. Aside from the network profiled below, the city of Paragould has long operated a cable network that has been upgraded to fiber-to-the-home. At least eight rural electric cooperatives appear to be moving forward with fiber projects, including Ozarks Electric Cooperative, which gained some brief fame with a fascinating fiber-to-the-school-bus project to help families during the pandemic.

Conway

Conway, with some 66,000 residents and 24,000 households, sits north of Little Rock. Its utility company, Conway Corp, has been the city's electric utility for the past 90 years, offering cable and internet access since 1997. More than half of area businesses are Conway Corp telecommunications subscribers, as are nearly 3 out of 4 households.

As with most cable networks built at that time, each "node" served 500 households on average, but the utility has invested in more nodes to improve broadband quality and now averages 95 households per node. Additional upgrades have been underway since 2019 and will finish in 2021 to further improve speeds.

Importantly, Conway Corp had the capacity needed to manage the increased usage during the COVID-19 outbreak. Tracking upstream usage patterns, Chief Technology Officer Jason Hansen said

Conway's network had sufficient capacity to handle the sudden surges of bandwidth during the pandemic.

that Conway Corp began to see an uptick on March 2, 2020, as pandemic quarantine protocols took hold across the community. Before that, average maximum upstream network usage had clocked in at 1.6 Gbps (gigabits per second). But from March 2 to March 15, upstream usage increased 25 percent to 2 Gbps and shot up to 2.6 Gbps by mid-April. The core network experienced a 63 percent increase in upstream usage between February and mid-April; and yet, at no time during the ongoing pandemic has the network been unable to handle the surges of bandwidth demand up- and downstream.

"We have continued to innovate and make sure we were prepared for the next technology. And while a global pandemic was not a scenario imagined, we were dedicated to being one step ahead of network utilization and potential surges in the network," Hansen said. "We are focused on providing a customer experience second to none. Our goal has been to ensure subscribers can work from home, learn from home, and be entertained during this challenging time."

"The next step in our network's evolution is an all-fiber network," Hansen added, explaining that all new subdivision construction in Conway is being connected to the utility's emerging fiber network. The first house is expected to come online in 2021, with a total of 1,200 new fiber connections expected to be made before mid-2022.

The household connections are in addition to the fiber connections to Conway's community anchor institutions, including 17 schools, three colleges, and two medical facilities (Baptist Health Conway and Conway Regional Health System)—and 90 commercial customers. The "Downtown Data District" is about six to eight blocks wide and offers fiber to businesses, with a hookup taking 45 to 60 days.

More Information:

- Staying Ahead of the Curve in Conway, Arkansas *(Institute for Local Self-Reliance)*

- How Broadband Became a Municipal Utility in Conway, Arkansas—Episode 457 of the Community Broadband Bits Podcast *(Institute for Local Self-Reliance)*

Florida

In mid-2021, BroadbandNow ranked Florida fifth out of 50 states in broadband connectivity, but there is still no shortage of people in Florida looking for better broadband access. Although the Federal Communications Commission's data is known to overstate broadband deployment, there is no other source of data in most states. According to an ILSR analysis of the most recent FCC broadband deployment report (based on December 2019 data), only 2 percent of Florida's 21.5 million people do not have access to broadband with speeds of at least 25/3 Mbps; 5 percent of households do not have access to broadband with speeds of 100/20 Mbps; however 56 percent of households cannot access broadband with symmetrical speeds of 100 Mbps.

Florida has a variety of community network approaches, even though the state has discouraged the

practice since it passed legislation in 2005 to hinder local investments. Florida's law is not as extreme as North Carolina's or Nebraska's, which make such community network investments effectively impossible, but Florida has discouraged communities from making needed investments, in part because of ambiguity in the law. For instance, local governments must have a plan to be profitable within four years, but they are not required to shut down the network if they do not achieve that arbitrary standard.

Florida's community networks run the gamut of approaches. Some only connect municipal facilities without offering service to businesses and residents. Martin County saved millions of dollars by building its own network for internal needs rather than leasing less-reliable lines from the cable monopoly. Palm Coast built an open-access fiber network to connect its own facilities and some businesses, but the city seemed to lose enthusiasm for expanding it after the first few years. Gainesville has brought local internet choice to dozens of apartment and condominium complexes via GATOR NET. Many other communities across Florida, including Tallahassee, Jacksonville, Lakeland, and Palm Beach, have offered dark fiber to help providers lower their cost to serve customers.

Ocala

Located 70 miles north of Orlando, Ocala is a community of 60,000 people. Ocala's journey started around 1995, when its municipal electric utility was using copper-based technology to monitor the health of its equipment. By self-provisioning broadband for the city rather than leasing lines from a cable or telephone company, the utility estimated it saved $1 million per year in the early 2000s.

The utility funded the network capital costs with a $4 million interdepartmental loan from its electricity utility reserve funds. Network expansion was funded with telecommunications revenues. While private companies like Embarq (now Lumen, but until recently CenturyLink) were charging $400 for a 1.5 Mbps T1 line, Ocala's municipal network offered 10 Mbps for that price.

Ocala didn't just dive into anything—it studied options and made investments only when it was comfortable with the potential risks and rewards.

The city didn't just dive into anything—it studied options and made investments only when it was comfortable with the potential risks and rewards. A major break came when Ocala's network won a bid to connect 49 schools in surrounding Marion County. The network expanded from connecting those schools to serving other anchor institutions and then four neighborhoods. By mid-2020, the network served 1,800 customers and generated more than enough revenue to pay all its bills while also putting 10 percent of net revenue back into the city's general fund.

Additional benefits to the community included leasing dark fiber to radiologists and connected clinics to improve the quality of health care. The network helped a business incubator get started and expand into two additional buildings. The utility can remotely read all of its 58,000 meters, city parks have Wi-Fi, and traffic lights are connected to an intelligent system to manage transportation flow. Middle and high schools have 10-gigabit circuits, and the city is prepared for the worst with a 40-gigabit link to a disaster recovery center. The offering for residential service is 300 Mbps symmetrical internet access for $60 per month.

In 2021, Ocala was recognized by the Smart Cities North America Awards for its fiber network in the category of Digital Equity and Accessibility.

Georgia

BroadbandNow ranked Georgia 12th out of 50 states in broadband in mid-2021. Although the Federal Communications Commission's data is known to overstate broadband deployment, there is no other source of data in most states. The FCC claims that 4 percent of the more than 10 million residents do not have access to broadband with speeds of at least 25/3 Mbps. According to an ILSR analysis of the most recent FCC broadband deployment report (based on December 2019 data), 9 percent of households do not have access to broadband with speeds of 100/20 Mbps; and 44 percent of households cannot access broadband with symmetrical speeds of 100 Mbps. However, Georgia was the first state to build a robust map of broadband access after giving up on the data available from the FCC. That more accurate map suggested that 10 percent of Georgia lacked broadband rather than 4 percent. Georgia was also one of the harder-hit states when AT&T decided to abandon its slow DSL service across many states in 2020.

Georgia is home to many community fiber networks. Most of the networks are focused on limited deployments to improve access for businesses and ensure that they have the capacity and reliability to remain competitive without having to leave the community. Unlike nearby states, Georgia has refused to create specific barriers to municipal networks—but not for lack of trying on the part of cable and telephone lobbyists.

Nonetheless, Georgia has many local efforts to improve broadband availability, including telephone and electric cooperatives. About a dozen rural electric cooperatives have fiber broadband projects operating or in the works. Late in 2020, the Georgia Public Service Commission agreed with a plan from the state electric cooperatives to offer a dollar-per-pole access-fee schedule for six years to encourage more investment.

A group of cities in rural southwest Georgia joined together to operate a municipal cable network called Community Network Services. The network generated profits that were plowed back into the community. With some of that money, one of the cities, Thomasville, phased out its fire tax in 2012, illustrating one of the many benefits of a community broadband network.

Dalton

Of the billion-plus square feet of carpet produced in the United States each year, about 70 percent of it comes from Dalton, Georgia. That's why it is called "the Carpet Capital of the World." But it was the weaving together of a different sort of fiber that allowed the city to also lay claim to being the Peach State's Work-From-Home Capital.

InMyArea.com ranked Dalton, the Whitfield County seat, as the best city in Georgia for remote work and the nation's fifth-best midsize city in which to work from home. A major reason is Dalton Utilities' OptiLink fiber-to-the-home (FTTH) network. As Dalton Mayor David Pennington said, "It's the great things we have here like Dalton Utilities, their fiber-optic network, that let you do anything here for any employer at any time."

Carpet-capital Dalton weaved together a different sort of fiber that allowed the city to also lay claim to being the Peach State's Work-From-Home Capital.

Established in 1913, the city-owned utility company opened a telecommunications division in 1999 when it first began offering internet services to large industrial and commercial customers. Dalton Utilities launched OptiLink in 2003. The fiber network was initially built to optimize the utility's supervisory control and data acquisition (SCADA) system, which monitors and manages its utility infrastructure. Soon after, some of the larger local businesses began approaching Dalton Utilities requesting access to its fiber network. The city's largest employers were looking for the connectivity and reliability that fiber networks provide.

By 2014, Dalton Utilities was offering gigabit service to large business customers. In the ensuing years, Dalton Utilities extended the network; in November 2018, it officially launched residential symmetrical gigabit service.

Today, Dalton Utilities offers a variety of fiber-connected services, including cable television, telephone, and internet service. For internet-only service, customers have a choice of three tiers. The basic tier is a symmetrical 100 megabits per second (Mbps) connection for $44 per month; a premium 250 Mbps symmetrical connection costs $67 a month; and the ultra tier, which is a symmetrical gig speed (1000 Mbps) connection, is $85 a month. In August 2019, Dalton Utilities debuted a 10-gig residential service called 10 GIGLink™ for $350 a month.

"The US market for smart technology devices within the home is projected to reach $78.5 billion by 2024, rising from $7.05 billion in 2019," Dalton Utilities' chief technical services officer, Hank Blackwood, said when the 10-gig service was launched. "With this rise in smart technology, which offers a totally interconnected, easy-to-control environment within the home, our new service places our area squarely in the nexus of the digital revolution. While 10 gigs may be more than most need today, I can promise you Dalton will be ready for all things internet in the future."

At that time, of course, no one knew that the COVID-19 pandemic would become a reality. Dalton and its approximately 35,000 residents, thanks to the foresight of Dalton Utilities network planners, were well positioned to have access to reliable high-speed internet service at a time when such connectivity would prove to be essential.

"We're the home of a $10 billion [carpet] industry, and their front office staff is telecommuting already," Mayor Pennington said. "We have stuff set up already to support that. And no matter if your home office is in Chattanooga, Atlanta, wherever it is, we're also right on I-75."

More Information:

- Dalton, Georgia, Officially a Gig City *(Institute for Local Self-Reliance)*

- Dalton, Georgia, Ramps It Up, Offers 10 Gigabit Residential Service Tier *(Institute for Local Self-Reliance)*

- Dalton Recognized Among Best Homes for Remote Workers *(City of Dayton)*

- Dalton Utilities Rolls Out 10 Gig Residential Services *(Business Wire)*

Idaho

Idaho is ranked 39th out of 50 states in mid-2021, according to BroadbandNow. The FCC claims that an improbably low 2 percent of Idaho's roughly 1.8 million people do not have access to broadband with speeds of at least 25/3 Mbps. According to an ILSR analysis of the most recent FCC broadband deployment report (based on December 2019 data), 24 percent of households do not have access to broadband with speeds of 100/20 Mbps; and 81 percent of households cannot access broadband with symmetrical speeds of 100 Mbps. Of the 2 percent that the FCC recognizes as lacking broadband, nearly half are in areas with FCC funding to improve access via the Connect America Fund Phase II Auctions and the Rural Digital Opportunity Fund.

Idaho may soon be one of the fastest-growing markets for a particular type of community broadband network: last-mile open access. Inspired in large part by the success of an innovative community, Ammon, many Idaho communities are considering investments to ensure that all their residents can choose from the various independent internet service providers that have chosen to compete on Ammon's fiber network. This approach fits well with the small-government mindset of the Gem State: make basic public infrastructure investments to enable independent companies to compete in the market rather than solely using government subsidies to reinforce monopoly service providers. However, some of the cable and telephone companies in Idaho have strong allies in the Idaho legislature fighting to preserve the monopoly model.

Though Idaho does not have any specific barriers to municipal networks, the state generally limits municipal authority in ways that effectively require each community to get a judge to sign off on its plans. Efforts to create a clear process and authority for this model have been thwarted in the legislature, largely by local incumbent providers as well as a national cable company that serves only a fraction of the state.

Idaho has two Tribal reservations with notable broadband networks that were profiled in "Building Indigenous Future Zones: Four Tribal Broadband Case Studies" by the Institute for Local Self-Reliance. Both Nez Perce Networks and Red-Spectrum Communications, operated by the Coeur d'Alene Tribe, use fiber-optics and wireless access to better connect residents, businesses, and anchor institutions in the areas they serve.

In addition to Ammon, the communities of Emmett, McCall, and Mountain Home are pursuing similar municipal, open-access fiber models.

Ammon

The Idaho Falls metro area in eastern Idaho includes Ammon, home to about 16,000 residents. Ammon is among the best-known municipal fiber networks in the nation even though it is not even half done. Its approach is path-breaking in two regards:

1. The network relies on an innovative financing mechanism that dramatically reduces risk. As the network grows, households in the expansion area can choose to connect or not. If they want to connect, there is a three-part fee structure:

   ■ The first fee pays for the installation of the network. Customers can make a one-time payment (often in the neighborhood of $2,500) or can amortize the fee over 20 years with an assessment on the home (resulting in a monthly fee in the neighborhood of $20). That fee is temporary and disappears once the installation cost is paid.

   ■ The second fee, which was $16 per month in 2021, is assessed as long as a home wants to use the network. This is a maintenance fee to pay for the various costs of keeping the network healthy.

   ■ The third fee is what homes pay service providers, the companies offering various plans—from internet access now to other innovative services that will be offered over time, such as telemedicine or gaming-related services.

2. The network has an advanced user-centric approach to open access.

Ammon's online portal, where subscribers can switch providers in less than a minute, is a defining feature of the network. When the network launched, the price for a gigabit was $99 per month with a 3-year contract. But by 2019, competition had driven the price down to $9.99 per month with no contract. Additionally, one provider had begun offering a free 15 Mbps option. (Of course, those prices do not include the one-time infrastructure fee or ongoing maintenance charges.)

> Ammon's fiber network has received international attention for its low prices, but it also provides benefits for local schools and public safety departments.

At the end of 2019, 800 of 1,500 households and 50 businesses passed had joined the network. By mid-2021, 1,200 households and 100 businesses were connected, with another 250 households slated to get hooked up in the coming months.

Residential growth in Ammon is off the charts, with newly constructed premises being connected without any fees. (The builder pays $1,195 to expand the network.) In these homes, residents are paying less than $30 per month for gigabit service, including all fees. In the meantime, other communities across the state are moving forward with similar models, including Mountain Home, McCall, and Emmett.

The remarkable prices for blazing-fast internet access sometimes overshadow the other benefits Ammon derives from its network, including public safety benefits and much lower costs to the school district for the connections it needs. And Ammon is just getting started.

More Information:

- Video: Ammon's Model: The Virtual End of Cable Monopolies *(Next Century Cities and Institute for Local Self-Reliance)*

- Report: Enabling Competition and Innovation on a City Fiber Network *(Berkman Klein Center for Internet & Society at Harvard University)*

- Community Broadband Bits Podcast Episodes 86, 173, 207, and 259 *(Institute for Local Self-Reliance)*

- The City with the Best Fiber-Optic Network in America Might Surprise You *(Fast Company)*

- The Launch of the Ammon Fiber Utility *(Next Century Cities)*

New Hampshire

The Granite State is home to many small towns, some of which rely on older DSL networks for connectivity, and yet BroadbandNow ranks New Hampshire 23rd out of 50 states. The FCC claims that just 3 percent of the state's 1.3 million residents do not have access to broadband with speeds of at least 25/3 Mbps. According to an ILSR analysis of the most recent FCC broadband deployment report (based on December 2019 data), 4 percent of households do not have access to broadband with speeds of 100/20 Mbps; and 73 percent of households cannot access broadband with symmetrical speeds of 100 Mbps.

New Hampshire has not created specific hurdles for municipal networks in the way some other states have, but it has also not gone out of its way to make it easier for communities to build them. The state limits the borrowing authority for local governments, which are permitted to borrow for broadband investments in only limited ways.

The state has recently created a legal structure to facilitate towns working jointly to share the challenge of building networks, called communications union districts, which have been used in neighboring Vermont to build fiber-optic networks. A rapidly growing model centered in Cheshire County involves towns financing fiber in unserved areas and working with another provider—sometimes the incumbent telephone company, Consolidated—to deliver services to residents and businesses.

Cheshire County Area

The public-private partnership model is bolstering high-speed internet access in southwestern New Hampshire. Sixteen Cheshire County communities have issued documents indicating their interest in partnering with a private internet service provider (ISP) to improve insufficient broadband connectivity.

Fitzwilliam, Marlborough, Gilsum, and Troy voted in March 2021 to issue bonds through the New Hampshire Municipal Bond Bank to construct fiber networks; Greenfield, Jaffrey, Marlow, Roxbury, Keene, Peterborough, and Temple, delayed by the pandemic, voted in support of FTTH agreements in April, May, and June.

According to New Hampshire's Southwest Region Planning Commission (SWRPC), six more cities—Charlestown, Goshen, Langdon, Salisbury, Sullivan, and Unity—have issued warrant articles indicating their interest in partnering with a private ISP to expand internet access.

Most of the cities are considering partnerships with Consolidated Communications to improve insufficient connectivity. Consolidated is expanding its fiber mileage across southwestern New Hampshire at an increased pace. The ISP has nearly completed construction of FTTH networks in Dublin, Harrisville, Rindge, Westmoreland, and Walpole—five Cheshire County towns that voted to bond last year. Upon finishing construction of the most recent project service agreements, which are expected to be complete by the end of 2021, Consolidated will have upgraded an additional 16,000 residents to internet speeds of up to 1 gigabit per second.

Towns working with Consolidated generally will issue bonds and execute a 20-year contract under which they own the network while Consolidated maintains, operates, and monitors the network. When the 20-year contract ends, each town will be able to renew the contract with Consolidated or request bids for a new network operator. To finance the town's bond payments, Consolidated will charge every subscriber a monthly infrastructure fee based on how many miles of fiber will be needed in the towns and how many residents are projected to subscribe to the company's broadband service.

The towns of Sullivan and Peterborough are exploring slightly different partnership models to obtain better broadband than neighboring communities.

Sullivan has opted to partner with FiberCast, a local ISP, to build a FTTH network. The town will issue a bond that will be paid off through service fees charged to subscribers. Upon completion, FiberCast will own the network and maintain it under a 20-year contract. If enough customers do not subscribe to the network, it will not affect the town but is instead the business risk of FiberCast, which contractually has to make up the difference.

Peterborough voted to contract with Consolidated, but the town will not be issuing a municipal bond. Peterborough already has more than 37 miles of fiber-optic cable within the town limits from a FairPoint Communications build in 2016, which Consolidated now owns after taking over FairPoint. The town voted to extend high-speed fiber internet service to the 20 percent of town residents who are currently unserved. The cost of Peterborough's proposed project is low enough that it will not require issuing debt.

In the future, there will likely be more exceptions to what has been a fairly consistent partnership model. According to Jeff McIver, Consolidated's consumer product manager, the company is "in discussion with some towns to fund [network builds] through different means, but none have yet approved a model that funds the fiber expansion."

More Information:

- Report: The Secrets Behind Partnerships to Improve Internet Access *(Institute for Local Self-Reliance)*

- New Hampshire Towns Join Chesterfield, Partner With Consolidated Communications for Fiber Builds *(Institute for Local Self-Reliance)*

- Project Connect Sullivan *(City of Sullivan)*

Conclusion

More communities than ever before are considering community broadband options, and a 2021 Consumer Reports poll suggests that 75 percent of Americans support municipal broadband being available as an option. Though cable and telephone companies have continued to attempt to restrict municipal broadband, no new state has added a restriction since North Carolina in 2011. States should allow this decision to be made locally.

Seventy-five percent of Americans support municipal broadband being available as an option.

Communities seeking to create a more competitive broadband market and/or target low-income neighborhoods with high-quality, modestly priced service are increasingly building their own networks, whether in partnership with ISPs or on their own.

Local governments considering this option have to do their homework to find appropriate consultants, vendors, business models, and more. But as the communities profiled here demonstrate, there are many models and opportunities to improve internet access.

Christopher Mitchell is the Director of the Community Broadband Networks Initiative with the Institute for Local Self-Reliance (ILSR) in Minneapolis. Mitchell runs MuniNetworks.org, the comprehensive online clearinghouse of information about local government policies to improve Internet access. The interactive community broadband network map tracks more than 600 such networks. He also hosts audio and video shows, including Community Broadband Bits, Connect This!, and Building Local Power.

Sean Gonsalves is a Senior Reporter, Editor, and Researcher for ILSR's Community Broadband Networks Initiative. Sean was a longtime reporter, columnist, and news editor with the Cape Cod Times, and nationally syndicated columnist in 22 newspapers, including the Oakland Tribune, Kansas City Star, and Seattle Post-Intelligencer. His work has also appeared in the Boston Globe, USA Today, the Washington Post and the International Herald-Tribune.

Jericho Casper is an Associate Broadband Researcher with ILSR's Community Broadband Networks Initiative. She graduated with a Bachelor's in Science from the University of Virginia's Media Studies Department. Before working for ILSR, Jericho was Assistant Editor of Broadband Breakfast, a Washington D.C.-based telecommunications news outlet.