Is Fiber at the Tipping Point?

Medina County, Ohio, is trying a new model for financing and building rural broadband. If the model succeeds, it may be adaptable to other localities.

By Masha Zager / *Broadband Communities*

During the last several years, fiber broadband deployment in the United States has reached new heights. Driven by rising bandwidth needs and wired-wireless synergies, all major telephone carriers have now committed – to different degrees – to delivering fiber services in large portions of their territories. Capital markets once hostile to FTTH are underwriting this expansion as long as 5G wireless is promised as part of the package.

Small telephone companies continue to tap the Universal Service Fund and RUS loans to build out fiber to customers. Electric utilities that invested in fiber infrastructure for smart grids, as well as municipalities that invested in fiber for institutional networks, are leveraging those assets for community broadband. WISPs, capitalizing on customer loyalty, are beginning to make strategic fiber investments. Property developers are financing fiber networks as part of their overall developments. Even some cable companies are transitioning to FTTH in areas where they face competition from telco fiber.

'JUST DO IT'

This patchwork system of financing and ownership, and an equally patchwork set of federal, state and local policies and subsidies, inevitably creates gaps. Even after a massive building spree, fiber broadband is available to only about 30 percent of U.S. households, and the FCC estimates that 21.3 million Americans lack access to 25 Mbps /3 Mbps broadband. (This is almost certainly an underestimate; Microsoft data shows that 162.8 million people do not use the internet at 25 Mbps /3 Mbps speeds.) Many communities have been left out in the cold.

Small, nonmetropolitan communities with no locally based ISPs, few fiber assets and little access to capital markets are most likely to be underserved or entirely unserved with broadband. Thousands of them have conducted feasibility studies, sought private partnerships or public grants, and studied other options for improving their broadband service. Though there have been notable successes (many reported in this magazine), most of these efforts have led nowhere.

However, there have always been industry leaders in the "just do it" camp – those who insist that good broadband, and usually fiber, is *always* feasible, if only because its benefits are so great. They argue that communities should spend less time debating feasibility and more time finding creative solutions, developing workable plans and generating local support.

For example, as early as 2008, Timothy Nulty, then CEO of ValleyNet, told the **Broadband Communities** Summit that rural fiber was feasible because the disadvantages – sparse population, low incomes – were counterbalanced by low real estate costs and high take rates. Though his efforts were temporarily derailed by the recession that took hold that year, he succeeded in bringing FTTH to many tiny Vermont communities, using previously untried financing and deployment methods. (He has now moved on to an even more rural part of Vermont.)

iFIBER will be the anchor ISP for Medina County.

THE MEDINA COUNTY PROJECT

Today, the "just do it" faction is growing in numbers and strength. A recent example of this philosophy in action is the Medina County, Ohio, project announced in April. It aims to extend a county-owned middle-mile fiber network to homes and small businesses.

Medina County is a largely rural area between Cleveland and Akron. In 2010, the county's port authority contracted with the Cleveland-based One Community network to build a middle-mile network throughout the county, connecting all towns with 144 strands of dark fiber. The Medina County Fiber Network (MCFN) operates on an open-access basis, leasing fiber to government agencies, anchor institutions, enterprises and 13 carriers that serve those customers.

According to Bethany Dentler, executive director of the Medina County Economic Development Corporation, about 1,000 new jobs were added in the county since the MCFN completion. She estimates that nearly half the total payroll created, half the capital investment, half the square footage and nearly three-quarters of the jobs retained are a direct result of deploying fiber optic broadband.

However, most residents and small businesses in Medina County are still underserved. David Corrado, CEO of MCFN, thought the network could provide transport services for last-mile FTTH networks that would serve residents and small businesses. The port authority didn't want to invest in last-mile networks – at least not right away – as it is still paying off a $15 million bond for the middle-mile network. So Corrado spent several years talking with companies around the United States, trying to find one interested in extending MCFN's open-access model to serve smaller customers.

Eventually, he found partners quite by accident. Verizon was building fiber backhaul for a 5G network in Cleveland, and Corrado reached out to Foresite Group, the engineering firm working for Verizon, to find out whether Verizon wanted to lease MCFN fiber for its path through Medina County.

As it turned out, Verizon needed a higher-count fiber cable than MCFN could supply, but MCFN began a conversation with Foresite's Brian Snider and others that led to new ideas about serving Medina County. Over a year or more, they began contacting other potential partners and investors, as well as the towns that needed better service, and put together a plan.

FINANCING THE PROJECT

Unlike the standard vertically integrated model in which a single company finances, builds and operates a network and uses it to sell services, the Medina County project separates all these roles. Overseeing the entire project and arranging the financing will be Lit Communities, a new company founded by Snider and several other Foresite veterans. Originally, Neighborly, which is involved in a similar project in Maine (see p. 39) and which Snider briefly joined, was to have played this role; however, shortly after the project announcement in April, Snider formed Lit Communities and assumed oversight of the project.

The financing is complex and not yet finalized. As Corrado explains, "With fiber to the home, sometimes you have to put the cart in front of horse a little." Lit Communities will fund some of the project and own a portion of the last-mile network. In addition, private-equity investors are expected to supply some funding, and local banks will issue construction loans. Grant funding may also be available.

At some point in the future, local individuals will be able to invest small-dollar amounts, and further down the road, the goal is to have

local municipalities purchase the infrastructure. Legally, the last-mile network will consist of a series of limited liability corporations, one for each municipality, which will allow Lit Communities to track the costs and revenues for each municipality separately. "That makes it easier for the municipalities to take over ownership," Corrado says.

MCFN, whose fiber will be used for transport, will receive a fee for each subscriber connected and will assist in marketing services to small businesses. Its owner, the Medina County Port Authority, as a local municipality, will have an option to purchase last-mile infrastructure after the network is up and running, and Corrado says, "We might, if it has a high enough take rate that it helps us become self-sustaining and pay our bonds back." He adds that the county will likely defer to towns and cities that want to purchase their local infrastructure unless integrating the last-mile network with the middle-mile network makes more economic sense.

THE ECOSYSTEM

In addition to Lit Communities and MCFN, a number of other partners are involved in the project. Foresite will be responsible for engineering and construction management and hopes to hire and train local construction crews. Clarus Broadband has been tapped to operate and maintain the network; it, too, may be able to train local residents so the municipalities can eventually support their own networks. The public relations firm Harrison Edwards will oversee the community engagement process.

Technology partners include Vetro FiberMap and CostQuest for preliminary design software; Nokia, Dura-Line and Corning for equipment; and COS Systems for demand-aggregation and open-access B/OSS software.

The final key partners are retail service providers. Although Lit Communities and MCFN describe the network as open access, controlled access might be a better term. According to Snider, an ISP needs about 3,000 subscribers to be financially successful while providing a high quality of service. The experience of some early open-access networks shows that allowing more ISPs than are sustainable triggers a "race to the bottom."

Accordingly, the Medina County last-mile network will open with a single ISP, iFIBER Communications, which has offered services on multiple county-owned networks in Washington state since 2005. iFIBER will provide voice and video services in addition to internet access. As the network is built out across Medina County, additional ISPs will be invited to participate; Snider estimates that eventually, as many as six or eight ISPs might coexist. Providers will be held to high service standards, and customers will be able to switch among them using only the COS Business Engine software, without any need for service installation.

iFIBER is used to competing on community networks – it has a 70 percent penetration rate in some markets – and relishes the opportunity to do the same in Medina County. In a prepared statement, CEO Kelly Ryan said, "The open-access model encourages healthy competition between service providers, so we must fight for customers based on better prices and better service."

However, the plan includes more services than the standard triple play – and more service providers than just ISPs. On day one, Medina County residents will have access to telehealth services provided by Docity, a telemedicine provider that partners with communities. Docity connects patients and providers through live virtual visits using a smartphone, tablet or computer. Its mission is to eliminate 30 percent of all in-person visits by 2030 and replace them with virtual visits at 30 percent of the cost. Telehealth could be a boon to elderly residents and those who live far from their doctors, and it could help hospitals cut costs as well, says Corrado.

Other services under discussion include smart-home and smart-city applications. Snider says he can even envision services such as Netflix offered on the local network, rather than over the public internet. The more services are available, the more revenue is generated to support the network.

PHASING THE BUILD

The project's first phase will connect three small, underserved communities in the southern part of the county. The first residents will begin receiving services in fall 2019, and the first phase should be completed in about 18 months.

Snider says the three communities were selected for two reasons: They were the most underserved – and thus most in need of the new network – and their local officials were willing to smooth the path for the network. Mayor Carol Carter of Seville, one of the three towns, a strong booster of the project, said in a statement, "With Medina County Fiber, our residents will finally be able to enjoy the benefits of high-speed internet at affordable prices. Superfast transmission of data will give students access to the best online resources for research and completing homework assignments; home-based work will have clear, reliable connections; farmers will be able to access essential market data in seconds; and property values for homeowners are likely to rise, too."

Mayor Carter's words are backed up by actions. Seville and the other first-phase communities have pledged reduced-rate pole permits, fast turnaround for permitting, off-duty police to guard worksites and other steps to help reduce construction costs.

The second phase of the project will connect residents and businesses in the county seat, Medina, and other denser localities throughout the county. These areas are better served today than the first-phase communities. Construction costs there will be lower, but the FTTH network will face stiffer competition from incumbents. The total of the first and second phases will reach about 41,000 premises passed.

Finally, the county has rural areas in which Lit Communities hopes to work with electric co-ops to deliver fixed-wireless service at first and,

eventually, fiber to the home. The goal is to connect all premises in the county within five years.

As it plans the network, Lit Communities is "trying to picture the next 15 to 20 years," in Snider's words. That means adding capacity for future needs – extra dark fiber to lease out or to backhaul 5G antennas, support autonomous vehicles or connect new housing developments. Cabinets are also designed to hold more equipment than is needed today. Building spare capacity now will be less expensive than trying to add more later.

THE TIPPING POINT

Snider comments that good broadband is always feasible, but each project is unique. In this case, he says, the existence of the MCFN – and the fact that it connects all the towns in the county – made the countywide project feasible. In particular, it made possible starting with the most underserved towns. Without the MCFN, the first phase would probably have had to begin at the county seat.

Another important asset the county has is the enthusiasm of its residents. Snider says, "Medina County has an older demographic, but people recognize that connectivity is needed. Watching the community come out to the meetings we've held and seeing the support they've rallied is tremendous."

Corrado adds, "The meetings are jam-packed. Homeowner associations are calling us. People want to distribute fliers. The Service Zones [COS demand-aggregation software] site is open, and communities are already competing for the next phase."

Snider believes that, after studying the mistakes other fiber deployers have made, he has found a winning formula for delivering great broadband to underserved communities. Even though the strategy will vary from place to place, depending on local circumstances, he's certain he can find ways of structuring projects that private equity and private finance will feel comfortable with. The demand is there – people require broadband to participate in the society and economy. New deployment techniques and community cooperation can reduce costs, demand aggregation can reduce risk, and an open-services model can increase revenues.

All that's needed is creativity. Snider says, "You have to think outside the box and maybe even blow up the whole box."

If he's right, then perhaps the industry is at a tipping point, and many more Medina Counties will be stepping forward in the next few years. ❖

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