



# Closing the digital divide

Broadband access is a critical issue for townships

**A**ccess to digital information has reshaped how citizens, educators, businesses and municipalities interact and participate in nearly every dimension of society.

High-speed broadband internet connectivity benefits economic development and industry growth, increases profitability for local businesses, boosts educational outcomes for K-12 and higher education students, creates pathways for additional democratic participation and public information exchange, and increases home values. With broadband internet, communities are strengthened, citizens are empowered and businesses flourish—and its importance will only continue to grow.

The COVID-19 pandemic forced a rapid shift to a digital society, economy and educational environment—as well as governmental, with many township employees working from home and boards shifting to virtual meetings to conduct township business. The past year has highlighted some of our state's access issues and exacerbating others in relation to the digital divide. In this moment of societal cataclysm, an equitable and mutually beneficial path forward is on the shoulders of municipalities, citizens and the federal

government. Awareness, technological solutions, federal funding sources, growing numbers of private partners and an interested public have created an environment where alignment and forward momentum are possible and necessary.

Townships are in a unique position to help—as the most accessible unit of government for many of Michigan's citizens, townships can provide both a voice and a rallying point for their residents to pursue broadband solutions. Township officials around the state are reporting that broadband access is the number one issue brought to them by their constituents. Township boards can step up by forming broadband committees and funding planning activities that enable their communities to gather data, build plans, and pursue partnerships and funding that result in broadband access for their citizens. According to a recent Broadband Breakfast expert roundtable discussion, "Gathering data at the community level is key to improving broadband mapping." Local engagement is critical to improve broadband mapping for expansion efforts.

## Case Study: Lyndon Township

**Lyndon Township** (Washtenaw Co.) is a rural community located just 20 minutes west of Ann Arbor. Despite this proximity to the sixth largest city in Michigan, township residents were almost entirely lacking in broadband connectivity. On Aug. 8, 2017, residents approved a bond proposal to fund construction of a community owned fiber-optic broadband network serving every home in the township.

Noted Supervisor **Pam Byrnes**, who calls herself a “very grateful township resident, “Having broadband/unlimited data/streaming has been a life changer. I was a mere township resident using my Verizon hot spot when this project was being formulated and put to the voters for approval. One year ago on March 11, 2020—*right* before the lockdown, my internet was installed. I can’t express how fortunate we were to have this access to the world when everything came to a screeching halt.”

The vote passed with 622 (66%) voting yes, and 321 (34%) voting no, and at a record-high non-general election voter turnout of over 43%. The \$7 million project was funded by a bond backed by a 20-year millage, with an average annual millage rate to retire the bonds estimated at 2.91 mills. Based on currently available taxable valuation data for the township, the average cost per property owner for this construction will be about \$21.92 per month.

The township proceeded with activities to execute necessary public bids, contracts, and decisions that informed the design, construction, and operation of the fiber optic network. The township selected Midwest Energy and Communications (MEC), a local electric cooperative who also provides fiber to the home services, as the operator. MEC lit service to the first households in the township on June 27, 2019. Construction of the mainline fiber was completed in the first half of 2020, with all subscribing households connected by the end of 2020. The levels of service available in Lyndon Township are 50Mb for \$35/month, 250Mb for \$45/month, and 1Gb for \$70/month. All levels of service are symmetric, have unlimited data, and adhere to the principles of both net neutrality and privacy.

This initiative has brought 21st century internet access to all Lyndon Township residents at competitive prices, even when accounting for the property tax. More information can be found at <http://www.lyndonbroadband.org>.



## What is broadband internet?

“Broadband” is internet access, but the term refers to a high-speed internet connection that provides a user the capability to upload and download high-quality video, data and images. Current federal standards define broadband as 25 megabits per second (Mbps) for download and 3 megabytes per second for upload, though this definition has become outdated. Technology to deliver this connection can include wireless, satellite, fiber and more. (*The sidebar article on page 18 offers an overview of these different technologies.*)

When visualizing bandwidth, or broadband speed, it may help to think of an internet connection as a system of roads. If there is only one lane and a lot of traffic, it will take a long time for a group of cars to reach their destinations. But if more lanes are available, the same group of cars can reach their destinations much quicker.

The second important metric is latency. Latency is a different kind of speed—this is the amount of time it takes a single car (or piece of data) to travel from one end of the highway to the other.

The final important metric is data. This is a measurement of how much total data flows over a connection, via both download and upload. Unfortunately, some connections today have data caps. For data caps, an analogy can be drawn to leasing a vehicle—if you exceed the miles you are contractually limited to, you have to pay a penalty on a per-mile basis. A modern broadband connection should allow for 100 Mbps download and upload speed, have a latency less than 100 milliseconds, and have no data cap.

## How can townships further internet expansion efforts in their communities?

Townships play an important role in creating and enabling visions of what they want their communities to look like in the future. While historically these activities have focused around land use and zoning, enabling access to infrastructure like broadband has become a critical area in planning activities.

When understanding how to address citizen concerns around broadband, a thorough understanding of address-level broadband access, the speeds of that connectivity, and citizens’ attitudes regarding service plans and price points is critical in the early planning and engagement process of a community network journey.

When seeking to address the broadband gap, understanding which households have access to broadband, and at what speeds they are currently connected, is critical. All state and federal grant programs rely upon coverage data for funding eligibility. The primary existing source of coverage data, the Federal Communications Commission (FCC) Form 477, is self-reported by service providers and aggregated to the census block level. This data is unreliable

and lacks the granularity needed for accurate coverage inferences. Furthermore, recent studies from the Michigan Moonshot—a collective call to action that aims to bridge the digital divide in Michigan—and the Quello Center at Michigan State University have found that localized data can differ greatly from state averages, further identifying the need for regionally collected information.

### Future proofing

As we consider the trajectory of technology, it is also important to consider future demand for broadband. We know that users' bandwidth grows at an average rate of 50% year over year, so it is important to look to future growth such that your community won't be working to address the same problem again in five or 10 years. Wireless, cellular and LEO satellite solutions that can provide speeds up to 100 Mbps today are already an order of magnitude behind what will soon be the majority of households that have access to 1,000 Mbps cable or fiber. And while cable and fiber can easily scale up to 10,000 Mbps and beyond, other solutions will struggle to grow beyond their current levels of service.

### How to pay for it

Problems are often simple, even when the solutions are not. In this case, the simple problem is that areas of Michigan with low population densities do not enable fast enough returns on investment to motivate many providers to invest in infrastructure. To solve the problem, significant capital investments are needed to build infrastructure: someone needs to pay for it.

### Grants

There are a number of grant options available at the state and national level. There are two important considerations for grants. First, grant programs generally favor shovel-ready projects—if your township wishes to pursue grant money, it must develop a complete project plan, including pre-engineering and financial feasibility, so that it's ready to go when a new grant becomes available. If you wait to start until a grant is announced, it's already too late. Second, do not count on grant funding as the sole solution—generally, grant funding is very competitive and even good grant programs usually have match requirements of around 25% of the project cost.

The Michigan Moonshot maintains a list of high-priority grant opportunities for Michigan communities (visit [www.merit.edu/community/moonshot](http://www.merit.edu/community/moonshot); click on “policy and funding”).

### Municipal financing

Townships have various mechanisms available to finance projects such as broadband infrastructure. Each mechanism has advantages and disadvantages, as well as varying requirements.

- **General fund:** If a municipality has sufficient unencumbered funds in their general fund, this can be used to build broadband infrastructure.

## Bridging the broadband gap

- Michigan currently ranks 30th in the nation for broadband internet access.<sup>1</sup>
- In 30% of Michigan's townships, the majority of households don't have access to broadband—and 11% of townships don't have any access to broadband at all.<sup>4</sup>

Benefits to communities include:

- Broadband fiber within a neighborhood has been shown to increase median home values by as much as 7%.<sup>2</sup>
- Communities without access to real-time data suffer higher rates of injuries and crime.<sup>1</sup>
- A home broadband connection gives households an estimated economic benefit of as much as \$1,850 a year.
- Farmers with broadband access see an average of 6% higher revenue on average.<sup>1</sup>
- K-12 students with home broadband access, on average, score higher on standardized tests, achieve a higher grade point average and are more likely to intend on pursuing higher education.<sup>3</sup>

<sup>1</sup>Michigan Broadband Roadmap. (August, 2018). Retrieved from <https://www.merit.edu/wp-content/uploads/2018/12/MCAN-final-report.pdf>

<sup>2</sup>Molnar, G., Savage, S. J., & Sicker, D. C. (2015). Reevaluating the Broadband Bonus: Evidence from Neighborhood Access to Fiber and United States Housing Prices. Retrieved from <https://pdfs.semanticscholar.org/36ff/7956a0244097d8e503730b182b6724641fb0.pdf>

<sup>3</sup>Hampton, K. N., Fernandez, L., Robertson, C. T., & Bauer, J. M. (2020). Broadband and Student Performance Gaps. James H. and Mary B. Quello Center, Michigan State University.

<sup>4</sup>Connect Michigan, Aggregated Coverage Data (July 2018)

- **Public revenue bond:** A municipality can issue a bond that is secured by the future revenue from the broadband buildout. Revenue bonds carry additional risk because their repayment is dependent upon the success of the broadband service, so significant due diligence is required.
- **General obligation bond:** A municipality can issue a general obligation bond, which is backed by the credit and taxing power of the issuing jurisdiction. Often the municipality would vote on a new tax, such as a property tax, to fund the bond repayment. The community network in **Lyndon Township** (Washtenaw Co.) is an example of this model. (See page 16 for more on Lyndon Township's broadband efforts.)

### Public-private partnerships

Many of Michigan's townships are rural and have very limited staff resources—becoming an internet service provider is generally not high on their priority lists. Fortunately, there are many ways that townships can help their residents get broadband access that do not involve them staffing up or suddenly becoming network wizards. They can

## Home internet technologies

**Cable**—Cable internet services are delivered over the same coaxial cables that were originally installed for the purpose of delivering analog video to television sets. Is it broadband? Yes! Cable is the most prevalent form of broadband today. But, it is available in few rural areas.

**DSL**—Digital subscriber line (DSL) service is a family of technologies that are used to provide internet connectivity over telephone lines originally intended for analog voice. Is it broadband? Generally, no. While DSL can reach broadband speeds, the signal degrades over distance so rural customers can rarely get broadband speeds.

**Cellular (including 5G)**—Cellular provides wireless connections, generally to a mobile endpoint like a phone. Many cellular plans have data limitations when using data for devices other than a phone (“tethering” or “hotspot”). 5G cellular will provide modest improvements in rural areas but will not provide the high speeds advertised for larger or more urban areas. Is it broadband? Only if truly unlimited data is available along with a good signal. True unlimited plans are not widely available in rural Michigan.

**Traditional satellite**—Satellite internet access is provided by communications satellites in Earth’s orbit. Traditional communications satellites have high latency, which make the services problematic for real-time applications such as voice or video chat and gaming. Is it broadband? No. The high latency precludes traditional satellite from being anything but a service of last resort.

**Low earth orbit (LEO) satellite**—New LEO satellites have an altitude of only a few hundred miles, and as such can transmit data with low latency. Starlink is leading this market, with over 1,000 satellites currently in orbit and beta service deployed to a limited number of Michigan users. Is it broadband? Probably. But, Starlink is still in beta, and it’s not yet clear how widely available their service will be and how it will perform.

**Fixed wireless**—Fixed wireless is the operation of wireless communication devices or systems used to connect two fixed locations, such as between a tower and a building. Is it broadband? It can be. Unfortunately, with Michigan’s rolling topography and foliage, fixed wireless often fails to achieve broadband speeds in rural areas.

**Fiber optic**—Fiber to the home is the fastest way to deliver internet service to residences and businesses. Internet backbones use fiber optic cable, as the last-mile connection removes any bottlenecks between the end user and the internet backbones. Is it broadband? Yes! Fiber to the home is the best possible broadband connection. But, home access to fiber is not widely available.

partner with private companies to play to their strengths, as in the example of Lyndon Township. Public-private partnerships can take many other forms as well, including incentivizing private investment and shared investment models.

## Rural Digital Opportunity Fund

Recently, the FCC announced preliminary winners of the Rural Digital Opportunity Fund reverse auction that will allocate \$9.2 billion for broadband expansion across the U.S., including \$362 million in Michigan for almost 250,000 locations. While winners have up to six years to complete construction, townships should explore the results to see what might be in the works for their own communities (visit [www.fcc.gov](http://www.fcc.gov), and search for “Rural Digital Opportunity Fund Phase 1 Results”).

## A note on special assessment districts

Special assessment districts would be a useful tool for townships to finance broadband, especially for townships with a significant number of residents who are already served. Unfortunately, townships are not currently allowed under Michigan law to use special assessment districts for this purpose. Legislation has been introduced over the last several sessions of the Michigan Legislature to enable this, but it has died in committee each time.

## Statutory issues

In Michigan, there are two main laws that townships should be aware of when it comes to engaging on broadband: The Michigan Telecommunications Act and the Metropolitan Extension Telecommunication Rights-of-Way Oversight (METRO) Act.

- **Michigan Telecommunications Act:** This act defines under what circumstances a municipality can provide broadband to their own citizens—basically, a township must ensure there isn’t a viable private provider available by issuing a public RFP for services and receiving fewer than three viable responses.
- **The METRO Act:** This act provides additional requirements that townships must comply with if providing broadband access, including public hearing, cost-benefit analysis and accounting requirements.

## How townships can take action

A decade ago, it would have been hard to believe that rural townships would be taking the lead on broadband expansion for their communities. Intuitively, it seems that this is a problem that should be solved by private companies, the state or federal governments, or some combination of those. Unfortunately, this hasn’t happened, and despite new attention to the issue, it’s still unlikely that things are going to change for many rural townships without local action.



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- **Form a broadband committee** with involvement from at least one board member as well as selected interested citizens. Many communities have citizens who are ready and willing to engage on this issue if given a vehicle to do so. Townships can provide that vehicle by forming a committee to conduct research into the community's current broadband situation, as well as possible solutions.
- **Conduct data collection to understand both the true coverage situation within your township as well as citizens' attitudes regarding broadband.** Data collection that includes parcel-level granularity and speed tests is recommended to understand real-world availability.
- **Fund planning activities that support next steps as determined by the results of data collection.** These may include feasibility studies, pre-engineering or other consulting services.
- **Take action based upon the outcome of community conversations.** Some options require direct involvement from the township, such as establishing partnerships, submitting grant applications, obtaining financing or even building broadband infrastructure. Don't worry if these actions seem intimidating—there is lots of help available, from resources within the Michigan

Township Association to the Michigan Moonshot initiative, to specialized consulting services. You may also be surprised to find how much expertise is available from citizens in your own community!

## You don't have to go it alone

Broadband is a critical issue for many of Michigan's townships, and elected officials are well positioned to get the ball rolling. But you don't have to go it alone. The following are some resources to help get you started.

- Join the Michigan Moonshot, view the educational webinar series, and download the comprehensive (and free) Michigan Moonshot Framework, which includes more detailed information on these topics as well as template resolutions and RFPs that townships can use. Visit [MichiganMoonshot.org](http://MichiganMoonshot.org)
- Join the upcoming session at MTA's 2021 Virtual Conference entitled "Bringing Broadband to Your Community." Attendees can view the session live on April 21 from 1-2 p.m. and will have access following the event to watch on demand at their convenience.
- Join Michigan Broadband Jumpstart, which provides a community of practice to help individuals get their own initiatives off the ground. Email [jumpstart@mibroadband.org](mailto:jumpstart@mibroadband.org).
- Join the Michigan Broadband Alliance, which provides advocacy, education, and information to help municipalities and nonprofits achieve ubiquitous broadband. Email [alliance@mibroadband.org](mailto:alliance@mibroadband.org).

Among the many lessons learned over the past year, it is the necessity in all our communities, for all our residents, to have fast, reliable access to broadband. The time is now—and townships can help make it happen.

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For more information and resources, visit [www.mibroadband.org](http://www.mibroadband.org) or [www.merit.edu](http://www.merit.edu), or email [alliance@mibroadband.org](mailto:alliance@mibroadband.org) or [info@merit.edu](mailto:info@merit.edu).

*Learn more, and get your questions answered during the session, "Bringing Broadband to Your Community," being held Wednesday, April 21, from 1-2 p.m. during MTA's Virtual Conference & Expo. Fineman and Bewersdorff, along with Lyndon Township Deputy Supervisor Gary Munce, will share their expertise and experiences helping to expand broadband in our state. You can also stop by the Merit Network virtual booth in the Expo, and download resources, get contact information or ask questions during the live chat on two days.*

