

# Gigabit Service in Small Rural Towns

Business and community leaders in small-town Michigan offer insights into the challenges and opportunities of becoming gigabit communities.

By Joe Ross and Jessica Steeley / *Communications & Research Inc.*

**R**ecently, FCC Chairman Tom Wheeler complained that most Americans lack real choices for high-speed broadband service. However, some small Midwestern markets are finding new ways to increase both speeds and choices.

Important solutions can be learned from regional network providers, small-market municipalities and small-business leaders. Their goal is to have easily accessible broadband, despite the roadblocks they have experienced.

Connect Michigan, a nonprofit Internet think tank working to bring broadband to Michigan, is helping communities build broadband networks in rural areas. It is getting help from providers such as ACD, a fiber Internet and phone provider located in Lansing, Mich., that serves the Midwest. ACD was a participant in the REACH-3MC consortium, which in 2010 was awarded federal stimulus funding to build a 955-mile fiber optic backbone network across Michigan. This middle-mile network made it more economical for ACD and others to expand broadband service to rural and underserved communities in Michigan.

In Michigan, as in much of the United States, the path to becoming a gigabit community requires creative thinking. A core challenge for public and private sector leaders is to develop networks that can serve government, residential and business customers.

One best practice that has emerged is to allow multiple network providers to be profitable, ensuring the system's future success. (ACD is unusual among private network

operators in that it encourages multiple providers to serve customers on its networks.)

Another best practice is for cities to facilitate operators' building fiber. "To attract providers, municipal officials need to streamline their permitting processes, allowing tech firms to quickly build out these next-generation broadband networks. Time is money in this race," says Kevin Schoen, CEO of ACD.

The cities of Dowagiac, Zeeland, Eaton Rapids and Hillsdale – all located in southern Michigan and all with populations between 5,000 and 9,000 – recently collaborated with ACD to implement fiber broadband in their communities. These cities are all on the path to implementing citywide fiber broadband. Currently, fiber is available to businesses, schools and utility plants; within a year, residents will start to receive fiber connections as well. Municipal and business leaders in the four cities agree that having fiber networks gives them a competitive advantage.

Zeeland jumped to the head of the broadband race after ACD expanded the city's fiber network and installed a distributed antenna system. ZBx Technology, a Zeeland technology company, will become one of the first businesses connected to the network. ZBx, which is now an agent for ACD, expects to increase the speed and reliability of its communication with its customers once they are connected to the same network.

"With ACD's fiber, we'll be able to connect local residents and businesses directly to the backbone of the Internet, giving them world-class speeds, and we'll be able to better offer

our cloud-based services,” says Zach Nordhof, owner of ZBx Technology.

### THE PATH TO GIGABIT

Municipal government leaders may know they need fiber, and they may have a general understanding of its role in attracting new businesses and promoting economic opportunities, but “gigabit” is a new concept. Providers must do a better job explaining why getting on the path to a gigabit community is urgent and what the economic and social opportunities of a gigabit community are.

Hillsdale gets it. “It’s going to be one of those things, like an iPhone, where you never knew you needed it until it came along, and then you find that you can’t do without it. I think it’s really going to give us a huge competitive edge,” says Mary Wolfram, economic development consultant to the city of Hillsdale. She believes the region’s high-skilled labor force, bolstered by Hillsdale College’s science and engineering programs, will adapt quickly to the benefits of gigabit speed.

### CHALLENGES FOR SMALL COMMUNITIES

Small communities are implementing broadband faster than their larger neighboring cities, but they still face challenges.

Some of the studied communities built and operated networks that connected their municipal facilities, then leveraged these municipally owned assets by turning them over to ACD, which expanded their reach to broader sectors of their communities. In the past decade, other Michigan municipalities have tried owning and operating their own networks, but a number of cities found that maintaining fiber and upgrading end-user equipment was not cost-effective.

“With a small utility department like ours, you do have to take care of your critical services first, and while Internet might be critical to a dentist’s office or a doctor’s office, providing electricity to some other residents would have higher priority [for us],” says Mitch Billingham of Dowagiac’s information services department.

Smart manufacturing is a major economic development opportunity for the Midwest – and it relies on robust broadband to connect automated machines.

Another challenge is that, in small towns where high-speed Internet has never been available – towns that have high concentrations of flip phones and business bases that are not reliant on exported goods – officials, businesses and community members don’t always see the value of gigabit service. When fiber broadband is introduced, not everyone wants to adopt it, and some may see no need to have it. Residents, especially business owners, want to see results before they consider subscribing.

“We run into some mixed emotions from the public,” says Chad Culbert, electric distribution superintendent at Hillsdale Board of Public Utilities, which built the original fiber backbone in Hillsdale. “They’re much more understanding of speed or connection than they were five, six years ago. I think they’re coming around to the fact that [fiber broadband is] here to stay.”

Better understanding of the need for fiber is vitally important. “Having access to the global economy is critical, and without Internet connections, Michigan businesses can’t compete. But if we can help businesses better understand the benefits of a high-speed connection, we can grow and improve Michigan’s economy,” says Eric Frederick, executive director of Connect Michigan.

When only a small number of customers are interested, a network operator will incur high costs to serve a few people. However, small rural towns adjacent to large metropolitan markets, such as Detroit and Grand Rapids, are beginning to see gigabit broadband as more of a necessity. This gives operators the assurance that more customers will eventually jump onto the broadband bandwagon, thus reducing the average

cost per connection (and the risk). Steve Schoen, president of ACD, explains, “Our business model for building out networks in small, underserved markets includes getting one major customer in a town or selling to a combination of large businesses and municipal entities such as schools, libraries and utilities.” After landing these “anchor tenants,” ACD can then consider building out fiber to smaller businesses and to homes.

### SMART MANUFACTURING DEVOURS BANDWIDTH

Municipal government leaders agree that fiber deployment is necessary to attract businesses to a region. Smart manufacturing is a major Midwest economic development opportunity that depends on robust broadband. This high-skilled, high-paying manufacturing process devours bandwidth because its automated, networked machines are powered by massive information systems.

“There’s a lot of high-tech firms out there, and if there’s not a high-speed network available, that pretty much shuts down a lot of the opportunities for economic growth,” says Scott Poyer, director of utilities for the city of Eaton Rapids. He sees fiber availability becoming as necessary for businesses as water and electricity.

Michigan manufacturers are tied into a global supply chain that requires multiple companies across numerous continents to act as one. Those connections take an ocean of bandwidth. Fiber allows companies to seamlessly work with other companies across the planet.

On any given day, in the early hours of the morning, purchasing managers at Detroit manufacturers send out

buy orders to widget suppliers in Asia. Those suppliers may outsource to CAD engineers in India to design the widgets. In less than 24 hours, the widgets are ordered, designed and shipped to the Motor City.

Michigan's fiber networks also give smaller manufacturers and service companies more entry points to global markets. A number of small companies mention the Chinese commerce website Alibaba. "Alibaba introduces us to Asian partners, but having the bandwidth to hold a high-definition videoconference adds a higher level of trust with an HD tour of their products and facilities," says one manufacturing executive.

A few city managers and manufacturing executives share a concern about early wireless networks and other broadband technology from the past 15 years that never quite offered the bandwidth capacity they expected. These leaders see fiber to the premises as a method that can be implemented in their communities without becoming obsolete.

## THE BANDWIDTH TO WORK FROM HOME

Being on the "Internet highway" is a greater economic advantage than being on the actual highway for some smaller communities, such as Hillsdale.

However, businesses aren't the only ones to benefit from broadband fiber connections. Though fiber isn't yet widely

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available to residents of these areas, the potential opportunities for individuals are great. "I just think that once the community starts to use it and see its benefits, it's going to fill in all the residential spots pretty quickly," Culbert says.

These benefits include the ability for individuals to telecommute and work from home, which allows parents to live in a community where they want to raise their children and still work for a big-city company.

Many of these municipalities are small towns with safe communities, but they're surrounded by bigger cities, and they have a growing number of telecommuters. Fiber connections allow people who work in big cities to live in small communities and work from home a few days a week.

Robust broadband also allows residents to become entrepreneurs and create their own businesses, as did two young graduates of Hillsdale College who started their own company making e-books in Hillsdale. They didn't need paper or a printer, but they did need a high-speed connection.

Beyond working from home, there are other advantages for residents, including allowing residents to cut the cord on cable TV. Fiber broadband is reliable, with high speeds that make streaming a lower-cost alternative to video subscriptions.

Households that receive their phone, television and Internet services from broadband lines tend to pay less than those who have cable subscriptions. In a community where fiber broadband is widely available to residents, it is possible the region's per capita disposable income could be raised by as much as \$100 per month because residents would have less need for cable subscriptions.

Communities looking for opportunities to improve through the implementation of fiber should consider following in the footsteps of these Michigan towns.

The leaders of these municipalities network with other municipalities to decide on the best strategies for introducing and implementing fiber broadband. Networking has helped them resolve many implementation issues without "reinventing the wheel."

"I really struggled. I had to ask questions of nearby communities, and I depended on some outside consultants that we thought were worth paying for an opinion," Billingham comments. His advice is to treat fiber as a service the town offers, such as garbage service, and develop a rate structure for any company that wants to rent fiber lines.

Fiber is effective, efficient and becoming a greater necessity for communities, especially ones with large and/or high-tech businesses. As a tool for economic growth and community development, fiber is a convenience that will soon become a necessity. ❖

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