

Broadband Case Study: Midwest Energy & Communications



Cooperative Profile

Midwest Energy & Communications (MEC) serves some 36,000 electric members across twelve counties in southwestern and southeastern Michigan, as well as in adjacent areas of northern Indiana and Ohio. MEC president and CEO Bob Hance is closely attuned to his members' needs. Beginning around 2010, when the co-op was still known as Midwest Energy Cooperative, he noticed a shift in what people wanted to talk about during his frequent member gatherings. "Over time it became clear they wanted to talk about communications, not electricity," says Hance.

It was not only homeowners who were clamoring for faster, more reliable, Internet service. Whirlpool and Kellogg headquarters are located nearby as is a massive Pfizer manufacturing center, touted to be the largest pharmaceutical manufacturing facility in the Western Hemisphere.¹ The epicenter of the nation's recreational vehicle (RV) industry is immediately south of MEC in Northern Indiana. Many of their employees live in MEC's service footprint and need to connect 24/7 to their employers and customers.

As some area companies and residents began to talk openly about relocating, Midwest Energy Cooperative conducted feasibility studies and launched a fiber-to-the-premises (FTTP) Internet service program in 2014 under the brand name Midwest Connections.² When its pilot experience proved successful and the network began to expand, the fiber-communications business was melded into the cooperative as a new business division. MEC currently has more than 8,700 fiber Internet, telephone, and local TV subscribers, some of whom are not MEC electric members (as discussed later in this case study). Its take-rates are unusually high, reinforcing Hance's belief that his members were widely underserved and with communication technologies far inferior to fiber broadband.



Figure 1. MEC technician installing a fiber drop. Figure 2. Checking wireless signal strength in a member's home. Photos courtesy of MEC.

¹ https://www.mlive.com/news/kalamazoo/index.ssf/2018/03/portage_pfizer_expand.html

² In the past, Midwest Connections provided dial-up and satellite service as well as broadband-over-powerlines (BPL). The entity has been an active Internet Service Provider (ISP) since the mid-nineties.

In the process of addressing the community’s needs, the cooperative has redefined itself. It has done so exceptionally well — the cooperative received the 2017 Utilities Technology Council’s coveted APEX Award, recognizing utilities and individuals who have shown extraordinary initiative.³

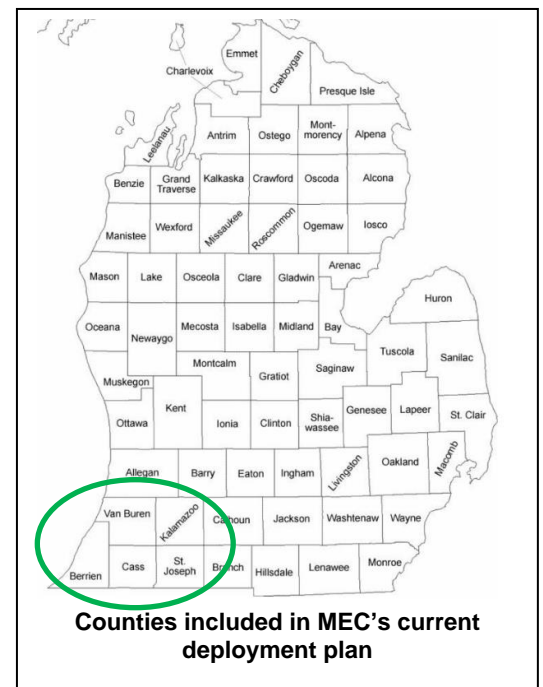
Business Drivers of the Broadband Investment

As noted earlier, MEC has seen a groundswell of interest in high-speed Internet service in the communities it serves. The cry from businesses was “we need high-speed Internet to be able to compete internationally.” And in addition to their employees being disadvantaged at home, another constituency for better Internet service existed — professors at area universities, such as Notre Dame and Western Michigan University, live in MEC’s service territory and they need the same level of broadband access they had on campus. MEC’s VP of Regulatory & Gas Operations Dave Allen notes that the co-op got a surprise when it polled broadband subscribers to ascertain their reasons for signing up. “The number of people who told us they work from home was unexpectedly high,” says Allen. He adds, “It’s also a homebuying decision. Realtors ask very early in the process whether a home has broadband Internet service. It’s reflected in the home value.”

Internal business requirements also drove MEC’s decision to invest in broadband. At the same time members were clamoring for better Internet service, the co-op was considering revamping its communication system to address the hodge-podge of legacy copper wire, satellite, powerline carrier, and wireless systems it had in place. Plans to upgrade from automated meter reading (AMR) and Supervisory Control and Data Acquisition (SCADA) systems to an advanced metering infrastructure (AMI) not only demanded broadband communications, but also presented MEC with the opportunity to deploy an array of new features for managing the grid and offering new services to members. Among the new capabilities planned are fault location and automated service restoration/downline automation. In 2012, the co-op contracted with Power System Engineering to conduct a feasibility study. Following that study, Pulse Broadband, Inc. designed and engineered the 243-mile, high-speed communications ring connecting the co-op’s substations and other key facilities. This was to become the foundation element of a much wider broadband network enabling MEC to offer high-speed Internet to its members.

Project Overview and Deployment Approach

MEC’s current deployment plan includes eligible portions of Cass, St. Joseph, Kalamazoo, Van Buren, and Berrien counties in Michigan, which include some 24,000 homes and 2,500 businesses. Since MEC serves rural areas, not cities and towns, average member density is less than nine per mile. There are also ten schools, seven libraries, 23 medical/health care providers, one



³ <https://utc.org/news/utc-announces-2017-award-winners-industry-leaders-honored-telecom-technology-conference/> MEC also received the 2016 Calix Innovation Award. <https://www.calix.com/about-calix/calix-innovation-awards.html>

community college, five community support agencies, and 24 governmental facilities. There is also a Native American tribe, the Pokagon Band of Potawatami.

Fiber Internet was launched in two small, test markets in 2014. Full buildout of MEC’s fiber network to serve members in its entire southwest Michigan service territory, comprising more than 2,000 miles of fiber-optic lines — was launched in 2014 and was expected to take five years. A crowdsourcing approach is used to prioritize construction in zones, based largely on substation service areas, that have achieved the level of signups necessary to meet the co-op’s targeted return on investment. CFO Todd Crandall has built sophisticated modeling tools to determine when required investment returns are met. The co-op is several months ahead of schedule. About 80 percent of the fiber is carried overhead on poles and 20 percent underground, following the pattern for electric lines. MEC’s Allen notes that the addition of fiber-optic lines to its poles helped operations personnel recognize the need to maintain rights-of-way. On many area farms — seed corn is the mainstay of the agricultural economy here — farm equipment is becoming taller and the risk of snagged lines increases proportionately.

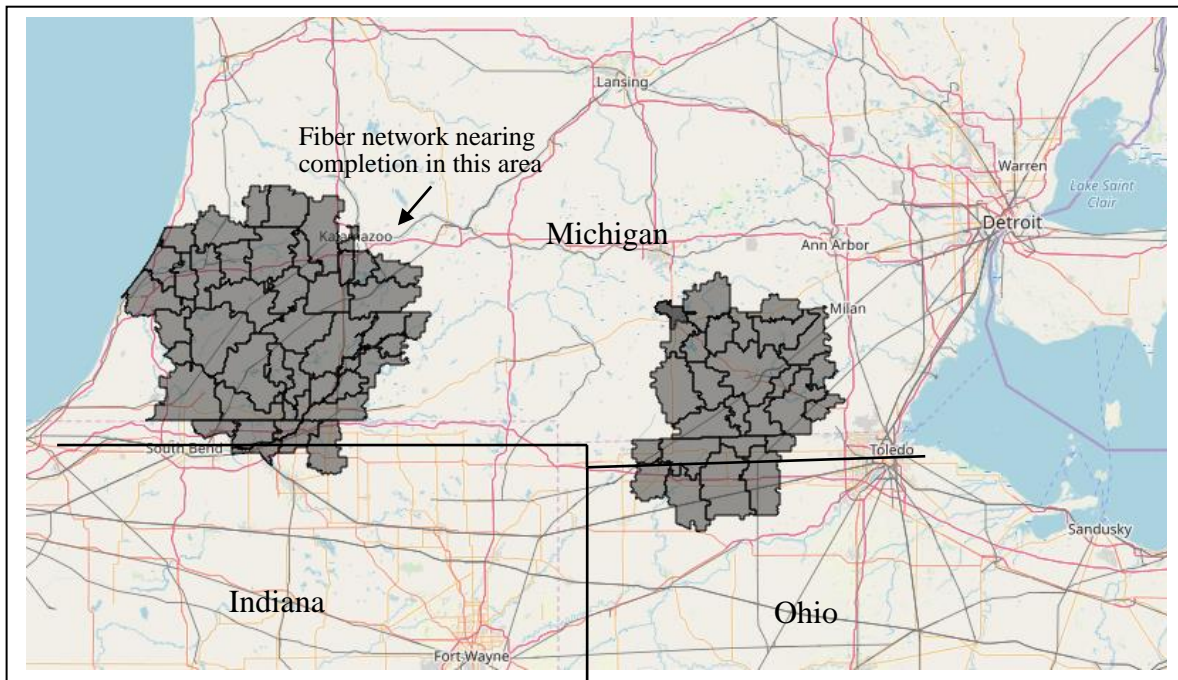


Figure 3. MEC’s two electric membership areas in southern Michigan, northern Indiana and Ohio. Initial broadband construction plans are focused on the southwestern Michigan area.

Broadband Business Case

Projected cost for full buildout through year five of the initial network coverage area is \$73 million. CFO Crandall expects positive net income and cash flow by the fifth year with a targeted internal rate of return (IRR) of 10 percent when the network is fully mature; that is, when construction is complete and subscriber take-rates have leveled off. Annual revenues are projected to exceed \$18 million, with annual operating expenses of roughly \$14 million. Crandall points out that the electric business “scales well with fiber,” meaning the co-op has two revenue streams using shared assets or, put another way, better

utilization of existing utility assets. Remarkably, take-rates are approaching 70 percent in zones that were built-out early in the five-year deployment period. As Crandall says, “the additions just keep coming in.” Selling fiber broadband services to non-members is considered a for-profit service and the associated margins accrue to the cooperative’s established margin structure. This is important due to an unusual feature of the Michigan regulatory landscape — it is one of the few states that does not define electric franchise areas; hence, people and businesses in neighboring communities often express interest to MEC for fiber connections, and even electric service.⁴ In some cases a neighboring industrial park operator or municipality is eager to connect (see sidebar).⁵ MEC’s policy is not to charge members for fiber drops. In these cases buildout relies on member capital. In non-member areas however, subscribers pay the capital cost of the network buildout required to serve them. In this sense it may be described as a target-of-opportunity business model. About 3 percent of subscribers are non-members of MEC on the electric side.

Reaching Outside the Membership Area: A Testimonial

“The Niles Industrial Park is vital to the economy of the City of Niles. Over time manufacturing processes become increasingly dependent on broadband Internet. The City of Niles tried to work with several providers to deliver this service but was unsuccessful. With all the copper lines available in use as T1 connections, several industrial facilities were left without access to broadband. This forced owners and employees to run home, sometimes many times a day, so they could upload or download critical data onto flash drives just to keep operating. Niles was in serious jeopardy of losing critical employers just due to the lack of broadband. After years of trying to lure a broadband provider, the City of Niles decided to build dark fiber infrastructure, hoping this would convince a company to provide the connection to the internet. As this project was wrapping up, the City of Niles learned about a broadband project nearby by MEC. This has led to an outstanding relationship between the City of Niles and MEC. MEC was able to extend their project into the Niles Industrial Park just in time to save jobs. An agreement was also reached for MEC to light the City’s dark fiber project and MEC has been given access to the City-owned utility poles to further extend the reach of MEC within the City of Niles. The timing and cooperation of this project proved critical to retaining jobs in the City of Niles.”

Richard A. Huff
City Administrator
City of Niles, Michigan

Broadband Business Model

MEC’s communications business operates as a division of the cooperative and not as a subsidiary. The original business plan anticipated a need for 35 dedicated personnel in the broadband business; however,

⁴ In at least one instance, an inquiry about electric service for a housing project under construction came from a developer who had previously arranged for fiber Internet from MEC.

⁵ MEC was also approached by Lyndon Township in early 2018. Under a cooperative arrangement, the town is building its own fiber-optic network and will pay MEC to act as its ISP Operator. For more details, see: <http://www.lyndonbroadband.org/2018/05/24/lyndon-township-selects-internet-service-provider-operator/>

only 20 staff have been added to date. Dedicated staff include fiber service reps, tech support, and installation/repair. All other personnel are shared resources. The cooperative employs activity-based, cost tracking to insure that inappropriate cross-subsidization is avoided. This helps the co-op conform with Michigan Public Service Commission (MPSC) rules.

Network Architecture

MEC's FTTP network takes advantage of a 243-mile fiber communications ring that connects its electric substations and facilities to enable smarter grid operations. Using this as a middle-mile backbone, the wider broadband network is a bi-directional FTTx open network using Gigabit Passive Optical Network (GPON) electronics.⁶ The system is scalable, offering the potential of gigabit service to every premise in the project footprint. Voice services are offered through Alianza.⁷ As for video, MEC offers subscribers ViewLocal (a package of local TV stations) and regularly provides broadband adoption workshops on "cutting the cord" and going "Over-the-top."⁸

Regulatory and Tax Issues

Management at MEC report that no significant issues have arisen beyond the fact that its investments in broadband infrastructure have resulted in higher property-tax assessments. On the regulatory side, broadband investment has been a positive effect thus far. The MPSC has expressed interest in the approach the state's electric cooperatives have taken to extend broadband Internet access to rural areas (see sidebar).

Helping Michigan Regulators Understand Fiber Broadband in Rural Areas

On November 5, 2018, MECA hosted a rural broadband field day for MPSC leadership to learn more about electric co-op efforts to bring quality, fiber-speed internet service to rural communities in Michigan. The event, held at the HomeWorks office in Portland, was attended by approximately 20 senior members of both the MPSC and the Michigan Agency for Energy (MAE).

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⁶GPON stands for Gigabit Passive Optical Network. Its main characteristic is the use of passive splitters in the fiber distribution network, enabling one single feeding fiber from the provider to serve multiple homes and small businesses. Source: www.multicominc.com

⁷ <https://www.alianza.com/press-releases/midwest-energy-communications-upgrades-broadband-phone-with-alianza-voip-solution>

⁸ Over the top (OTT) is a term used to refer to content providers that distribute streaming media as a standalone product directly to viewers over the Internet, bypassing telecommunications, multichannel television, and broadcast television platforms that traditionally act as a controller or distributor of such content. Source: https://en.wikipedia.org/wiki/Over-the-top_media_services

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The event kicked off with presentations on co-op broadband deployment efforts by HomeWorks (Mark Kappler, general manager), Great Lakes Energy (Scott Blecke, VP engineering and Steve Drake, CFO), and Midwest Energy and Communications (Bob Hance, CEO).

In the afternoon, attendees visited a HomeWorks broadband connected home. The homeowner, a General Motors engineer, explained how the service allows him to live in the rural community that he loves, and continue to work remotely for his employer, which is headquartered in the Detroit area. He no longer has to rent office space to access a quality internet connection (a \$10,000 annual savings!) and said the quality of service he now receives at his home is superior to what he even had available at the office.

Chris O'Neil, Fiber Operations Manager at HomeWorks, concluded the event with several demonstrations to explain how the fiberoptic broadband system works.

Source: Michigan Electric Cooperative Association <http://www.meca.coop/meca-expands-outreach-with-mpsc/>

Market Setting

MEC is currently focusing its broadband investment in areas of southwest Michigan, as the southeastern part of the state has greater access to high-speed Internet service. Pre-existing Internet service providers include xFinity from Comcast (cable), Frontier Communications (DSL) and satellite companies such as HughesNet. Wireless Internet air-cards that plug into laptops and PCs to enable Internet access using the cellular network when beyond the range of home wireless networks and WiFi hotspots are an option; however, these can be expensive since costs increase with higher levels of data usage. MEC's Allen points out, "The reality is that if there had been real broadband service available at an acceptable price we wouldn't be in this business." MEC's Basic service of 25 megabits upload and download speed is currently offered at \$49.95 per month with a one-year commitment.⁹

Why is this Case Important?

It took eighty years and \$120 million to build MEC's electric distribution system. By comparison, the same cooperative is well on its way to completing in five years a fiber-optic, communications network comprised of 2,000 miles of lines for an investment of roughly \$73 million. This helps explain why the cooperative changed its name from Midwest Energy Cooperative to Midwest Energy & Communications. What is most telling about MEC's bellwether experience is that the co-op's leadership recognized that providing broadband communication services is an accretive business. That is, the new business division leverages core assets for improved financial performance and enhanced member services. More simply

⁹ Current residential offerings can be found at: <https://www.teammidwest.com/internet/residential-internet/>

stated, adding broadband to the services mix unlocks additional value for members. And, based on the treasure trove of testimonials MEC has received, fiber broadband is also a powerful tool for local economic development and jobs retention. For MEC and the communities it serves, fiber broadband has helped stem the outward flow of businesses and jobs from rural “Michiana” that once seemed likely.

For additional information, contact:

Bob Hance

President and CEO
Midwest Energy & Communications
bob.hance@teammidwest.com
Ph: 775.727.2113

Paul Breakman

Senior Director, Cooperative Systems
Business and Technology Strategies
paul.breakman@nreca.coop
Ph: 703.907.5844

This case was researched and written by Eric Cody, Cody Energy Group: CodyEnergyGroup@gmail.com