

Regional Broadband Perspectives & Recommendations

Prepared by Connect Michigan with support from the Michigan Department of Agriculture and Rural Development

April 2019

Contents

- Introduction 3
- Internet Service Provider Survey..... 4
 - Hard Barriers to Deployment..... 5
 - Soft Barriers to Deployment 6
 - Local Policies 8
 - Final Comments..... 9
- Community Leader Survey.....10
 - Provider Relationships and Service.....10
 - Eliminating Barriers and Working Together12
 - Final Comments.....15
- Survey Summary16
- Recommendations17
 - Local Policies and Ordinances17
 - High Costs of Broadband Deployment21
 - Relatively Small Customer Base in Unserved Areas (i.e. Lack of Demand)24

Introduction

Today, the success of a state has become dependent on how well it is connected to the global economy and how those connections are leveraged to improve the quality of life for its residents, the sustainability and growth of its businesses, the delivery of services by its institutions, and the overall economic development of its communities. As noted in the National Broadband Plan, broadband internet is “a foundation for economic growth, job creation, global competitiveness, and a better way of life.”

In this environment, deploying broadband infrastructure, services, and applications, as well as supporting the universal adoption and meaningful use of broadband, are challenging—but required—to advance technologically empowered communities. From healthcare, agriculture, public safety, and tourism, to government, education, libraries, talent, and economic activity, every sector of a community or region requires the power of broadband and related applications to function at the highest capacity.

One thing is clear: broadband and related technologies have transformed nearly every facet of society. While many of these technological changes can be discussed on a global scale, community or regional technology advancements depend on local leadership and action. A critical first step in advancing technology is identifying and understanding the opportunities and barriers to technology advancement and developing a strategy for removing those obstructions and leveraging opportunities.

Broadband commonly refers to high-speed internet access that is “always on.” Broadband includes several high-speed transmission technologies, such as fiber, wireless, satellite, digital subscriber line, and cable. There are two primary types of broadband service: fixed and mobile. Fixed broadband is designed for permanent, stationary use at a home, business, or institution, while mobile broadband is designed for use “on the go.”

The region of the state within the Northeast Michigan Council of Governments (NEMCOG) and Regional Prosperity Initiative (RPI) Region 3, including the counties of Alcona, Alpena, Cheboygan, Crawford, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, and Roscommon, is rural in nature and its households and businesses are generally unserved or underserved by broadband infrastructure. It is estimated that 29% of households in the region do not have access to broadband service, as defined by the Federal Communications Commission.

Several factors, such as household density, terrain, geography, uncertain demand, and cost, impede a broadband provider’s decision to expand its networks within and beyond a community. While increasing household density or reducing terrain and geographical barriers to broadband expansion are long-term, or in some cases, impossible solutions, a municipality or county can develop a broadband investment-friendly community by adopting model policy language and best practices that create a transparent, fact-based, and communicative environment in which broadband providers can better operate and effectively plan deployment efforts. Commissioner Clyburn at the Federal Communications Commission recently stated, “The time is ripe for taking a look at how we can work with local governments to remove barriers to deployment and for generally evaluating how we can further streamline processes for rolling out new services.”

To this end, Connect Michigan conducted two surveys in the NEMCOG region in order to dig deeper into the barriers and opportunities for broadband in the region. One survey was designed for internet service providers (ISPs) and the other for community leaders, including decision-makers, zoning officials, and road commissions. The following pages provide a summary of survey responses along with several recommendations for improving broadband and technology access, adoption, and use in the region.

Internet Service Provider Survey

RPI Region 3 is served by 30 last mile residential internet service providers (ISPs), providing connections across several different types of networks and technologies. The list below shows the ISPs in the region along with the technology(ies) they provide as well as their website. Not every ISP provides service to the entire NEMCOG region.

ISP	Technology(ies)	Website
Lewiston Communications	Cable	http://portal.lewistoncomm.com
MIcom	Cable	https://micomcable.com
Parish Communications	Cable	http://parishonline.net
Spectrum	Cable	http://www.charter.com
Sunrise Communications, LLC	Cable	http://www.src-mi.com
Agri-Valley Services, Inc.	DSL	http://www.agri-valleyservices.com
AT&T Michigan	DSL	http://www.att.com/local/michigan/
CenturyLink	DSL	http://www.centurylink.com
CynergyComm	DSL	https://cynergycomm.us
Frontier Communications	DSL	https://frontier.com
Iserv	DSL	http://www.iserv.net
Michigan Broadband Services	DSL	http://michbbs.com/alphacom/public_html
Winn Telecom	DSL, Fiber	http://www.winntel.com
I-2000, Inc.	DSL, Fixed Wireless	http://www.i2k.net
RACC Enterprises, LLC	DSL, Fixed Wireless	http://www.racc2000.com/BroadBand.html
Allband Multimedia, LLC	Fiber, Fixed Wireless	http://allband.org
Elevate Net	Fiber, Fixed Wireless	https://elevatenet.net/
M33 Access	Fiber, Fixed Wireless	http://www.m33access.com
186networks	Fixed Wireless	http://www.186networks.net
AirNorth	Fixed Wireless	http://www.airnorth.net
ATI Networks, Inc.	Fixed Wireless	http://atinetworks.net
Cherry Capital Connection, LLC	Fixed Wireless	http://www.cherrycapitalconnection.com
ISP Management, Inc.	Fixed Wireless	http://www.ispmgt.com
Lighthouse.Net	Fixed Wireless	http://lighthouse.net
NorthNet LLC	Fixed Wireless	N/A
QHP Internet, LLC	Fixed Wireless	http://www.qhpinternet.com
AT&T Mobility	Mobile Wireless	https://www.att.com/shop/wireless.html
Sprint	Mobile Wireless	http://www.sprint.com
T-Mobile	Mobile Wireless	http://www.t-mobile.com
Verizon Wireless	Mobile Wireless	http://www.verizonwireless.com

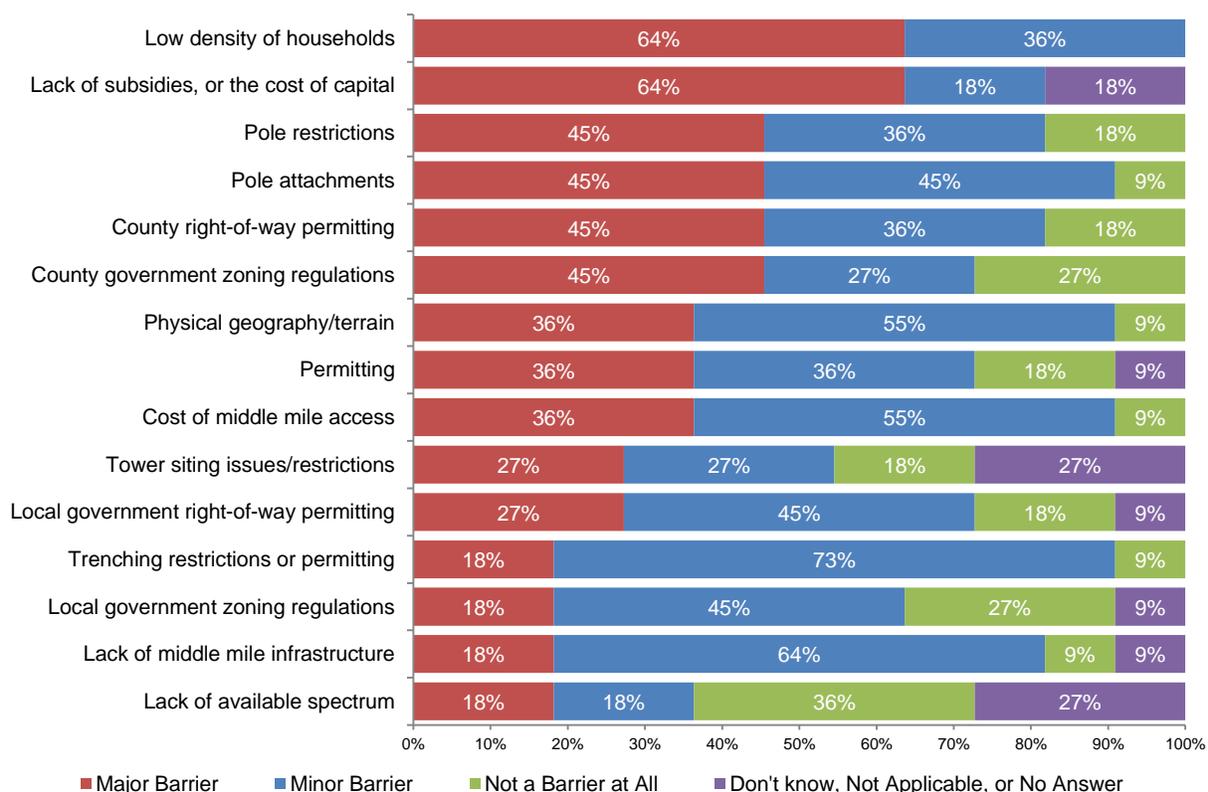
Surveys were sent to each of these providers, and responses were received from Elevate Net, ISP Management, Sunrise Communications, Cherry Capital Connections, CenturyLink, ATI Networks, Agri-Valley Services, M33 Access, one anonymous fiber provider, Vogtmann Engineering, and Peninsula Fiber Network, (a middle mile fiber provider in the region). ISPs were asked to identify obstacles preventing the expansion of their networks, as well as those preventing customers from subscribing. ISPs were also given the opportunity to offer potential

solutions to local and regional policymakers. The following summarizes the responses provided by ISPs.

Hard Barriers to Deployment

ISPs were asked to identify to what extent various “hard barriers” are impeding their ability to deploy or expand broadband infrastructure at a local or regional level. “Hard barriers” are those which delay the physical deployment, expansion, or upgrading of infrastructure. The chart below shows the fifteen hard barriers and the degree to which responding providers identified them as major, minor, or no barrier at all.

Hard Barriers to Infrastructure Deployment



As shown, ISPs identified the low density of households in the region along with a lack of subsidies or the cost of capital as the two major barriers preventing infrastructure build-out in the region. Additionally, pole restrictions, pole attachments, and county of right-of-way permitting and county zoning regulations were the second most oft-cited barriers to infrastructure deployment. Conversely, local government right-of-way permitting and zoning regulations were identified as minor barriers by most and major barriers by a small number of respondents.

ISPs were asked to provide suggestions or ideas for easing or eliminating the hard barriers included in the chart. Below are comments from ISPs responding to the survey:

“Municipality owned poles with dark fiber should allow more ready access to pair to encourage more access to the community. There is no justification for charging the public to build out a large infrastructure then not allow use of the

infrastructure if it is to benefit the public. Building infrastructure purely to generate connectivity for parking meters should never be acceptable.”

“Public Private Partnerships similar to [the] Clare County model to build towers and a [employ a] streamlined process of obtaining zoning and permitting.”

“To have a county wide permit to allow us to install poles and or trenching would speed up new construction tenfold.”

“Long-term, low-interest loans made readily available would allow the spread of cost over a longer revenue cycle.”

“Primarily for funding; with low densities and difficult terrain, grants and low-interest loans are key.”

“Federal level adopting protections for Title I the same as Title II, (the FCC provides different levels of legal protections and regulations for Title I Information service and Title II Telecommunications services). State adding wording to Michigan Zoning Enabling Act leveling the playing field, eliminating the role of the Zoning Board of Appeals to override the planning commission in regards to SUP processing and providing low interest capital that can be repaid through achieving goal or allowing fees to be assessed at the township level.”

“Create a state fund (subsidy) available to Carriers on a project to project basis. Any funding not used in a project year would roll over to the next year. Strive to support an annual fund for a minimum of 7 to 10 years, and then measure the results.”

Pole attachment easing, public-private partnerships, grant funding, and county-wide permitting were all mentioned as possible solutions to the identified barriers. Additionally, ISPs were asked if they experienced state-level barriers to deployment. Four respondents indicated they did and the following are the comments made regarding those barriers:

“Granting leased space for fixed wireless carriers on state towers would greatly improve coverage without the direct need of additional towers.”

“Permitting on state highways and interstate highways is one of the largest barriers to gain access to business customers.”

“Lack of response to pole attachment requests and unreasonable requirements associated with those requests.”

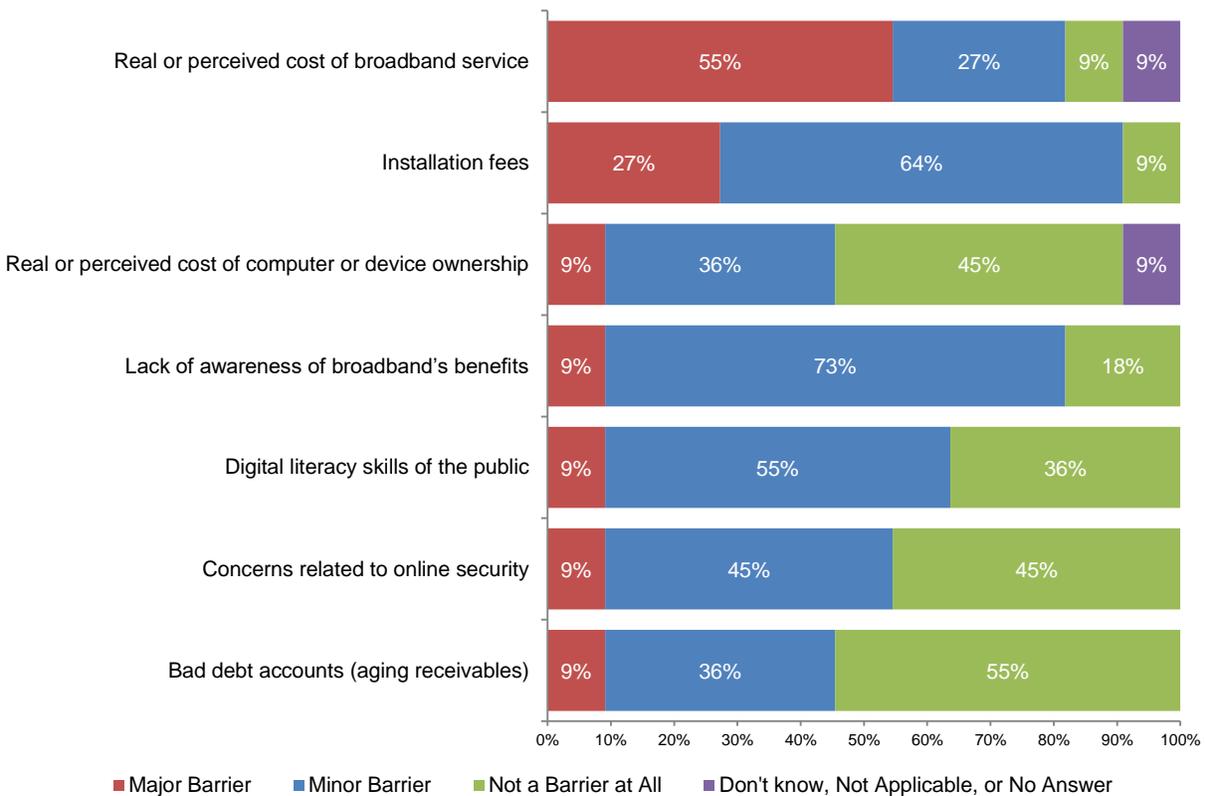
“The cost to provide a fiber to home connection for underserved or unserved areas is too costly.”

Again, improving ease of access to the right-of-way, public-private partnerships (via access to state-owned assets), and pole attachments were mentioned as solutions to the barriers.

Soft Barriers to Deployment

ISPs were asked to identify to what extent various “soft barriers” are impeding their ability to deploy or expand broadband infrastructure at a local or regional level. “Soft barriers” are those related to the adoption and use of broadband or the demand for broadband service, that may prevent households or businesses from subscribing. The chart below shows the seven soft barriers and the degree to which responding providers identified them as major, minor, or no barrier at all.

Soft Barriers to Infrastructure Deployment



As shown, the most oft-cited soft barrier to deployment is potential customers' real or perceived cost of broadband service. This can be more easily stated as broadband affordability. Installation fees were also identified as a barrier to deployment. Some of the more commonly identified minor barriers include customers' awareness of broadband's benefits, digital literacy, and concerns regarding online security and safety.

ISPs were asked to provide suggestions or ideas for easing or eliminating the soft barriers included in the chart. Below are comments from ISPs responding to the survey:

"Cities and townships could have information for ISPs in the region on their websites to help spread the word."

"Install costs are more of a hard barrier, rural customers and small towns are most affected."

"Education is key."

"Greater participation of providers as the solution."

"Transitioning from facilitating how internet access can improve life style."

"Marketing has driven a desire for higher bandwidth that is not necessary and causes a project to be cost prohibitive. Example: Customers believe a provider should deliver Gigabit speeds when we cannot achieve 20 megabit."

Additionally, ISPs were asked to identify any population groups in the region that tend to be most affected by the soft barriers (e.g. seniors, veterans, minorities, etc.). The following are provider comments on this topic:

“Senior citizens do not seem to have as much information about availability as many are not as active on social media and other advertising platforms.”

“Rural customers, low density areas are the most costly to deploy.”

“Different across all demographics”

“Seniors.”

Seniors appear to be the group most impacted by the soft barriers identified by ISPs.

Local Policies

The survey asked providers; “If you could ask local or state governments to enact any policy or do away with any barriers to deployment, what would you request.” This question asks respondents to provide a “wish list” of sorts on ways to improve broadband deployment. The following are comments from responding ISPs.

“Local: Streamline tower process or designate allowable areas for towers. Better yet, allow co-location on local government owned towers. Ease access to owned poles and or dark fiber to assist in deployment to the benefit of the community. State: Encourage the local government entities to work with providers and bring more access to their areas. Highlight and reward them for their efforts, even if it just a mention or posting. Elected officials would appreciate any mention of their efforts from the state level. Allow co-location on state owned towers. Allow possible tower build sites in state forest areas for better coverage. Possibly even encourage access in state parks and campgrounds. Highlight any work from state or local entities, elected officials, and employees to encourage cooperation.”

“Anything to ease the barrier of Vertical Asset availability and affordability. The expense of building a tower usually ruins the business case for rural areas. Mutually Beneficial Public / Private Partnerships. Favorable access to capital - low interest loans, grants, incentives. On a Federal Level - Access to spectrum.”

“Ease the requirements for MDOT permits.”

“Construction cost subsidy (even in the form of long-term, low cost loans), simplified ROW and pole attachment policies, shortened governmental approval processes, commitment from local and state government to give their business to the providers willing to build into their area.”

“Expedited and lower cost permitting.”

“Create a standard [permitting] policy vetted by providers in conjunction with regional leadership creating a standard for adoption.”

Expedited and predictable permitting appears to be a common theme among respondents. Cost subsidies and funding are also common desires among ISPs.

Additionally, providers were asked to identify three communities where they experience the biggest barriers to deployment, and three communities where deployment is easiest. Below are those summaries (some identified communities may not be located within the NEMCOG region and some responses were provided without comment):

Communities with High Barriers: Crawford County; Oil City, Lake County, and Gladwin County (no affordable vertical assets); Cheboygan Road Commission; Centerville Township, Leelanau County; Emmet County; and Cottrellville and Watertown Townships (very rural, too costly to run

fiber). While some of the identified communities are not within RPI Region 3, they can be explored as examples and case studies for communities within the region.

Communities with Low Barriers: Leelanau County (LIFT program that resulted in allowing co-location on county towers); Breckenridge, Shepherd, and Rosebush (affordable access to vertical assets for antennas); Villages of Sterling and Prescott; Cheboygan County Zoning, Antrim County, Crawford County, Worth Township (costly but very dense and underserved); and City of Sandusky (unserved but very dense). Similarly, many of these communities are not within RPI Region 3, but can serve as examples for communities in the region.

Final Comments

At the end of the survey, ISPs were provided a final opportunity to provide additional comments on the expansion of broadband in the region. The following are those comments:

“Information about dark fiber available in the state could help. Potential for relationships with local entities for towers, poles, etc., would go a long way however those entities must understand that we are not willing to sit through years of pointless meetings with no outcome. Any funds coming from state or federal must be managed responsibly. There is no reason for so much red tape and high \$\$ requirements. Beyond that, larger carriers that are copper based that have proven to do very little with all they have been given should be last in line for funding. Smaller ISPs and WISPs can do far more with far less funding. Jobs can be created and harder-to-reach areas would become easier with 50-100k minimal interest micro loans instead of outright grants.”

“The simple reality is that the cost of deployment exceeds the revenue achievable from the rural markets under current regulatory and market (pricing) conditions. The only defense I can determine is the spread of construction costs over a long term. Even with long-term, low-interest financing, many more rural areas will still struggle to make a business case work. However, if some business cases work, the resulting middle-mile connectivity will greatly help to close the gap by providing transit fiber through more rural areas, allowing subsequent, lower cost distribution in the most rural areas.”

“Definition of ‘high-speed’ must be changed. The 10/1 and 25/3 speeds are already outdated. Rural areas need to be able to attract business to grow and businesses need higher speeds.”

“Concepts and understanding are still rooted in solutions accepted 20 years ago. Begin to look at alternative approaches and construction techniques that are being embraced in the past 5 years. Create a new Information Technology category rather than being forced to become a CLEC¹.”

¹ A competitive local exchange carrier (CLEC), in the United States and Canada, is a telecommunications provider company (sometimes called a "carrier") competing with other, already established carriers (generally the incumbent local exchange carrier (ILEC))

Community Leader Survey

Similar to the provider survey discussed previously, a survey of community leaders was also conducted across RPI Region 3. More than 190 community leaders were invited to take part in the survey and 64 responses were received. The table below shows the type of entity and the county in which they are located that responded to the survey. The survey did not request the name of the specific responding community. Additionally, multiple responses were received from the same community, but from different representatives of that community, (e.g. Alcona County as shown in the table).

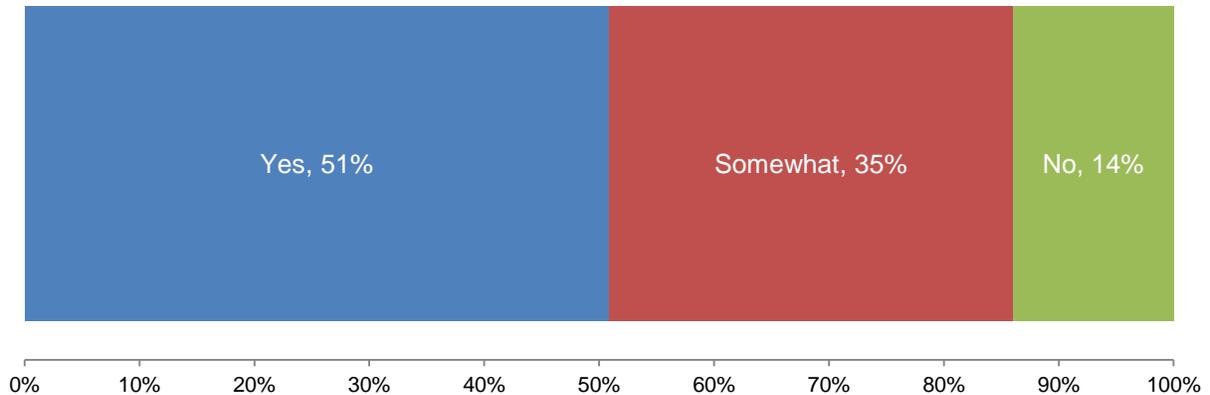
County	Community Type	County	Community Type
Alcona	City	losco	Township
Alcona	City	losco	Township
Alcona	City	losco	City
Alcona	County	Montmorency	City
Alcona	County	Montmorency	Township
Alcona	County	Montmorency	Township
Alcona	County	Ogemaw	County
Alcona	School	Oscoda	Township
Alcona	Township	Oscoda	Township
Alcona	City	Oscoda	Township
Alcona	Township	Otsego	Township
Alpena	City	Otsego	Township
Alpena	Township	Presque Isle	City
Alpena	Township	Presque Isle	City
Alpena	Township	Presque Isle	Region
Cheboygan	Township	Presque Isle	Township
Cheboygan	Township	Presque Isle	Township
Cheboygan	Village	Presque Isle	Township
Cheboygan	Township	Presque Isle	Township
Crawford	Region	Presque Isle	Township
Crawford	Township	Presque Isle	Township
Crawford	Township	Presque Isle	Township
Crawford	County	Presque Isle	Township
Emmet	County	Presque Isle	Township
Emmet	Township	Roscommon	College
Emmet	Township	Roscommon	Road Commission
losco	City	Roscommon	Township
losco	City	Roscommon	Township
losco	County	Roscommon	Township
losco	Township	Roscommon	Township
		Roscommon	Village

This mix of responding entities provides deep insights into broadband perceptions from the public sector.

Provider Relationships and Service

Respondents to the community leader survey were asked if they know or are aware of the broadband providers that serve their community.

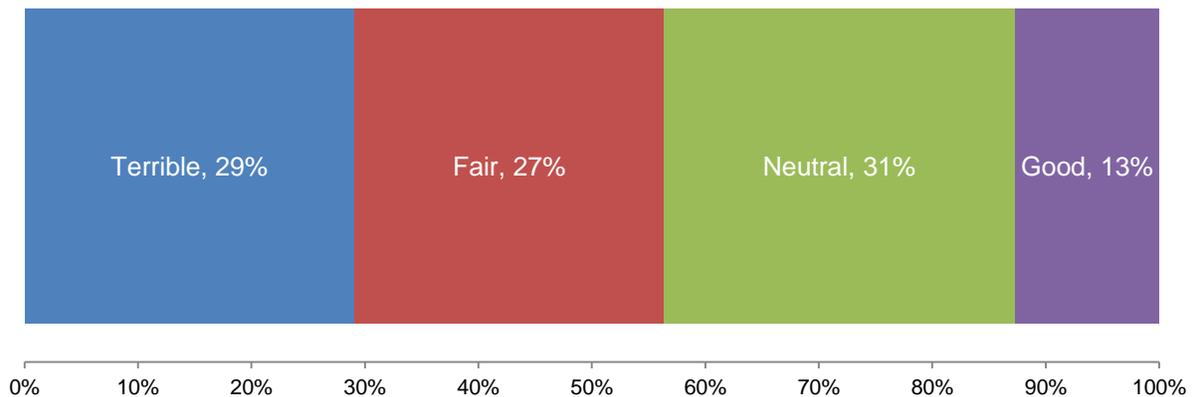
Do you know which broadband providers offer service in your community?



The majority of responding community leaders know the ISPs serving their community, and slightly more than one-third are somewhat familiar with their local service providers. A small percentage does not know who provides internet service to their community.

Additionally, community leaders were asked to rate the relationship between local broadband providers and their community. The following chart shows the distribution of responses.

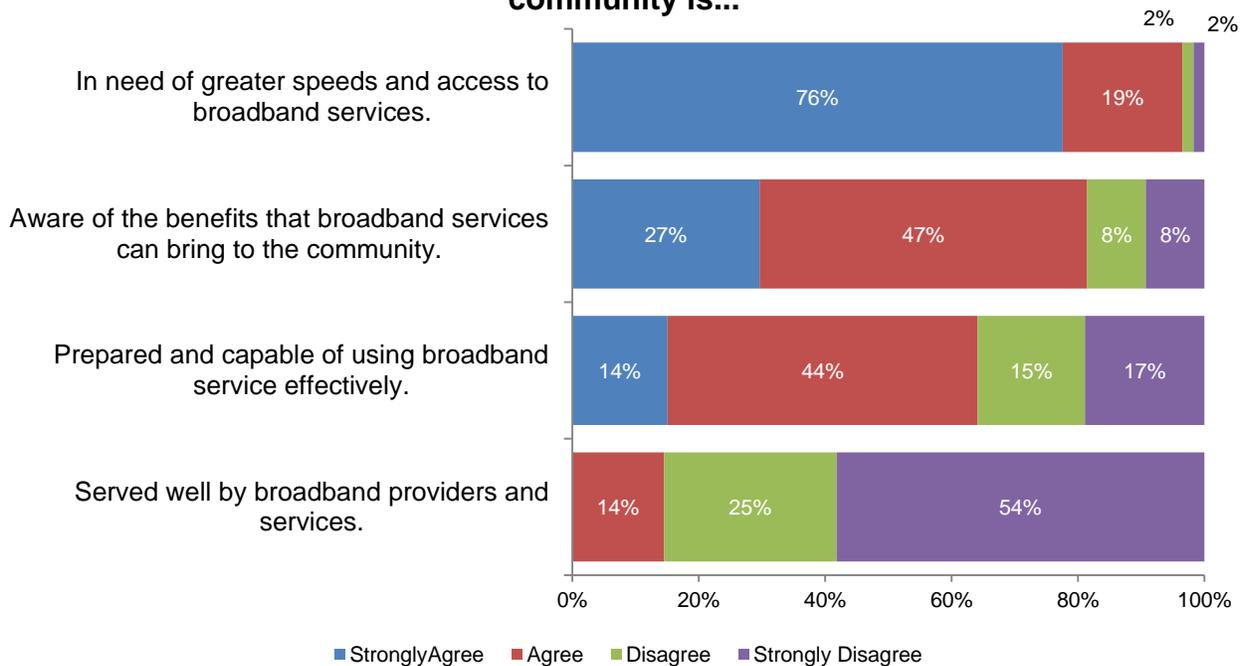
How would you rate the relationship between ISPs and your community?



More than half of respondents indicated that the relationship with their local ISPs is either “terrible” or “fair.” No community rated their relationship as “excellent.” On average, communities that indicated they knew which ISPs served their community tended to rate their relationship with those ISPs higher than communities that only somewhat knew or didn’t know who provided internet service to the community.

Community leaders were also asked to agree or disagree with several statements pertaining to the residents and businesses of their community and their internet service. The following charts shows how communities in the region responded to these statements.

Community Leader Perceptions of Broadband: The public in my community is...



As shown in the chart, three-quarters of community leaders feel that their residents are in need of greater speeds and access to broadband services, and more than half indicated that the public is not well served by broadband providers. Additionally, community leaders tend to agree that the public they serve is aware of the benefits of broadband and are prepared and cable of using it effectively.

Eliminating Barriers and Working Together

In the survey, community leaders were informed that ISPs often cite zoning regulations, right-of-way permitting, pole attachments, tower restrictions, and other types of local regulations and policies as barriers to broadband deployment. Leaders were then asked how their communities could work to eliminate or lessen these barriers to promote broadband expansion. The following table provides the community responses to this question and identifies the type of community responding and the county in which they are located.

County	Community Type	How can barriers be eliminated or lessened?
Alcona	City	Give us a substantive list of true barriers and we will constructively work them to remove the barriers.
Alcona	City	I'm not aware of any barriers. Providers can make requests of the city to remove barriers to expansion.
Alcona	City	The city is actively working toward MEDC RRC (Redevelopment Ready Communities) certification, and is in the final steps toward this goal. This includes identifying issues/barriers in our zoning ordinances, etc. We also have a man in our town that has been actively contacting broadband carriers to find out what we need to do to become eligible for service.
Alcona	County	Let the provider follow rules when working in the right-of-way.
Alcona	County	We would grant access.

County	Community Type	How can barriers be eliminated or lessened?
Alcona	School	We have a motivated group of people ready to dive in and do the legwork.
Alcona	Township	Community would have to work together to remove most of the barriers such as road commissions requirements and the forestry problems.
Alcona	Township	To my knowledge, no provider has expressed concern over these issues to the Township Board.
Alpena	City	I control zoning and right-of-way, anyone that wants to compete with spectrum are not getting issues from the local government.
Alpena	Township	We have no issues
Cheboygan	Township	There is no barriers!
Crawford	Region	All of them. Great Lakes provides fiber optics on existing poles to bring services to rural areas. Could do similar in other areas or with other electricity providers.
Crawford	Township	The township was never contacted re: install of the broadband cable. Likely due to all the work being done in the road ROW. Assume they'll use the existing land lines to connect to homes from the primary road broadband cables.
Crawford	Township	We have none, so if someone wants to come in, they could just call me.
Crawford	County	The county does not administer any zoning. It is all done at the township level.
Emmet	County	We do not make it difficult for expansion.
Emmet	Township	Would have no problems in our community
Iosco	City	We tend to work with the companies as much as possible to avoid any barriers for expansion.
Iosco	City	We would have that conversation. We would do what we could to make the regulation lesser. They won't even engage in the conversation.
Ogemaw	County	It's very frustrating that I am often the last person to know about any such projects, a new business, etc. I'd be happy to help speed things along if I were trained in what is needed regarding these things.
Oscoda	Township	We have no control.
Oscoda	Township	We have no zoning. They can do whatever they want in the township.
Otsego	Township	Work with county zoning to streamline the process, Townships would support and recommend to planning commission.
Presque Isle	City	We'd consider streamlining for powerful broadband.
Presque Isle	Township	I am not aware of any of these problems in our community. I think their issue is more of a lack of people that may want to use their service.
Presque Isle	Township	Meeting to discuss their particular needs in our area as first step.
Presque Isle	Township	Not sure, no providers have approached the township.
Presque Isle	Township	Not sure. Haven't had anyone contact the township.
Presque Isle	Township	We are under County zoning, towers may be a special use. Not hard to work with. I am the Chair of the Co. planning commission. ROW permits are through the road commission. Power is provided by PIE&G.

County	Community Type	How can barriers be eliminated or lessened?
Presque Isle	Township	Work with electric utility (PIEG) for allowing pole attachments. I believe it is the low cost for rural areas which is the problem as their ROI is low as customers per mile is low. Charter, etc., only serve dense populations and not rural areas.
Presque Isle	Township	We have no regulations at the township level
Roscommon	Road Commission	N/A
Roscommon	Township	Money is an issue for people in my belief.
Roscommon	Township	Our zoning has been very open and helpful and fast.
Roscommon	Township	These are not issues in our township
Roscommon	Village	We really don't want to.

As shown, many community leaders feel as though these regulations are out of their control or are not an issue in their community.

Similar to the question posed to ISPs in the first survey, community leaders were asked; "If you could request something from your broadband providers that would make working with them easier and more productive, what would it be?" The following provides community leader responses to this question:

"A department that works strictly with problem areas and come up with some solutions."

"A contact person that works specifically with small/rural communities, that could help pave the way or give us concrete steps to follow, since we do not have the manpower or budget to expend the many hours and dollars it takes to accomplish this."

"A node on the fiber optic cable that is on our right-of-way, 30 feet in front of our building!"

"A phone number where someone answers the phone."

"A presence and willingness to expand to the last mile."

"Be open to expanding services. "

"Better communication."

"Cooperate with each other to ensure district areas will be covered and not left behind."

"Follow rules."

"Honest answers about available service options; not ideal service."

"Increase service area."

"Lower fees."

"More competition."

"No data limits and quality connections."

"Perhaps provide WIFI to the whole township to provide inexpensive coverage."

"Please make sure our commercial companies get fast service - also, have broadband available to our rural areas as many business owners come "up north" to work and play!"

“Provide a 3 year plan for expanding their footprint in our township. They refuse to commit to any such program for expansion.”

“Provide service.”

“Provide service to our township at an affordable price.”

“Reasons why they do not expand their services.”

“Sharing a schedule of upgrades improvements.”

“To bring the service to our area.”

“To have them be interested in expanding service.”

“Train me so I know what they need-- step by step, why those things are necessary, and how long it typically takes to get each thing done.”

“We’re looking for the most up to date technology.”

The answers provided by community leaders are quite varied. Most simply request more and faster service in their communities, while others offer more robust solutions, including providing build-out plans, improving communication, a specific contact person for rural issues, and more education on the issues faced by ISPs.

Additionally, community leaders were asked if their community would be willing to work in partnership with ISPs to resolve/mitigate barriers to help expand broadband infrastructure. Most (80%) of respondents indicated they would be willing to work with ISPs in this fashion while 17% indicated they were unsure. Only one respondent indicated they would be unwilling to work with ISPs on these matters.

Relatedly, communities were also asked to indicate what assistance they need in working with broadband providers. More than one-third of communities (36%) indicated that improved communication was needed between themselves and the ISP community. More than one-quarter (28%) indicate that funding would help improve their work with ISPs and entice build-out in their communities. Another quarter (24%) requested additional information on what services are available and where, as well as more information regarding the companies in their area. One respondent indicated training and technical assistance on broadband and internet service would help their community, and two other respondents indicated that any kind of assistance would be helpful.

Final Comments

At the end of the survey, community leaders were given a final opportunity to provide additional comments on broadband in their communities. The following are those comments:

“Broadband is essential in connecting rural areas with the rest of the world--our residents are being short changed because they cannot connect.”

“ISPs need to serve all areas in northern Michigan, just as utilities are required to do so. State and federal government is of no help. No one seems to care.”

“ISPs should be required to achieve the bandwidth they charge for.”

“Funding & expertise for detailed vertical asset inventory studies and providing connection options that are realistic for a rural environment & challenges that currently exist.”

“Hope to require on-site inspection of all installation, with provider paying for inspection.”

“It is vital for farmers, small business, and students.”

“It's disappointing. Telecommuting could be a better possibility if we could get the providers to the table.”

“Just that we need better service. The one internet service provider here is over loaded.”

“Lack of good broadband access has stopped several small companies from locating in our township.”

“Only that I am very favorable. There is a significant need in our area, we are severely underserved for broadband.”

“Residents want Internet, happy with WIFI but no providers come to the area.”

“Simply put: We beg you to help us. The future of Harrisville depends on broadband.”

“The need is going to increase as more people want high speed affordable internet etc.”

“The only way I see it being successful out here is if it is comparable in price to what those in a more populated area pays.”

“Think that is critical for the areas growth .”

“We need broadband and cellular service. We have HUGE holes in coverage.”

“Would be interested in learning more about the possibilities, but we don't have a lot of discretionary money on hand.”

Survey Summary

The surveys indicate that there are a number of ways in which both ISPs and communities can improve broadband in RPI Region 3. The following section provides information and details on how local policies could be modified or implemented to expedite broadband expansion in the region and build positive relationships between internet service providers and community leaders.

Recommendations

The provider and community surveys offered a variety of views on the challenges facing broadband expansion in the region. The results indicated three main challenge areas:

1. Prohibitive Local Policies and Ordinances
2. High Costs of Broadband Deployment
3. Relatively Small Customer Base in Unserved Areas (i.e. lack of demand)

The following examines each of these challenges and offers recommendations for solving the problems presented in the region.

Local Policies and Ordinances

A number of providers cited pole attachment regulations, other pole restrictions, right-of-way permitting, and zoning regulations as substantial barriers to deployment of service. By addressing local policies and ordinances which may inadvertently stifle broadband expansion as well as encouraging sound policies to make buildout less costly and easier, the region can create an atmosphere friendly to providers, community leaders, and residents alike.

Dig Once

The Federal Highway Administration has indicated that “ninety percent of the cost of deploying broadband is when the work requires significant excavation of the roadway.”² A “dig once” policy focuses on increasing coordination between government agencies and utility companies to minimize the frequency of roadway excavation and disturbance. These policies aim to facilitate joint trenching cost savings and ensure that broadband infrastructure improvements are considered alongside other infrastructure and public works projects. To this end, these policies encourage or require that every infrastructure project include notification and facilitation of opportunities to lower the costs of broadband infrastructure investment by coordinating project planning when a right-of-way (ROW) disturbance is to occur.

To encourage communication and cooperation, policies and programs should provide information to parties controlling and located within the right-of-way (ROW). The timely placement of empty broadband conduit, or, where appropriate, wireless facilities for broadband service,³ can dramatically reduce costs and expedite network upgrades. The Federal Highway Administration provides guidance and federal policies in relation to dig once.⁴ Additionally, the National Broadband Plan noted that “the cost of running a strand of fiber through an existing conduit is 3-4 times cheaper than constructing a new aerial build.”⁵

To encourage the implementation of dig once, it is recommended that local governments:

- Draft and adopt dig once policies. Policies should include direction for all open trench projects to allow for broadband conduit to be placed, a notice period for informing entities that the trench is open for conduit placement, and allowance for the placement of

² <https://www.fhwa.dot.gov/policy/otps/workplan.cfm#dig>

³ <http://www.gpo.gov/fdsys/pkg/BILLS-112hr1695ih/pdf/BILLS-112hr1695ih.pdf>

⁴ <https://www.fhwa.dot.gov/policy/otps/workplan.cfm#dig>

⁵ Federal Communications Commission, National Broadband Plan, 2010, <http://www.fcc.gov/national-broadband-plan>

empty conduit by local government.⁶ Other policies may call for developers to install conduit and fiber-optic cable in underground excavation within the city limits, such as in Celina, Texas where developers pay for the installation and then convey the assets to the city.⁷ Local governments should work with providers from the region to develop trenching and conduit standards that meet both local public works, utility, road commission, and telecommunications needs in order that any future conduit installations in a dig once scenario will meet standards that work for all interested parties.

- Create a centralized database of planned ROW projects to facilitate coordinated planning. All ROW owners and entities with infrastructure in the ROW would be encouraged to participate in the database and provide information on their planned maintenance and projects in the ROW. This information could be used to allow utility and ROW owners to take advantage of planned disturbances in the ROW to more efficiently maintain existing or install new infrastructure.
- Coordinate departments such as Public Works and others on how to manage the installation of empty conduit in identified trenching projects where additional broadband infrastructure is needed.
- Work to identify abandoned utility infrastructure in the area and then present that information to broadband vendors.

Examples

- The City of Brentwood, California has worked locally and now leases conduit that is capable of meeting the needs of a communications provider and has been able to now lease conduit that they have been installing for the past decade. <https://www.mercurynews.com/2015/05/20/sonic-partners-with-brentwood-to-bring-high-speed-internet-to-town/>.
- Dakota County, MN has worked to install fiber and conduit when the ground has been opened up for other projects This approach has allowed them to develop a robust set of assets for communications that have helped close the gaps in services in the community and helped increase investment in last mile broadband services. https://ilsr.org/wp-content/uploads/downloads/2014/09/all_hands_on_deck_mn.pdf.
- In Mount Vernon, Washington, conduit placement requirements were added to the city's code, helping to build its open access telecommunications network. City Ordinance Language: 12.20.015 Construction standards for the regulation of use of public rights-of-way and public property. All developments shall be required to construct and install telecommunications conduit on all streets that are affected, disturbed, constructed and/or improved by development unless otherwise approved, pending a review by the city engineer. This conduit shall be for the purpose of installing telecommunications cable, fiber optic wiring or other infrastructure as necessary. This conduit shall be placed at horizontal and vertical locations as determined by the city engineer. The conduit shall conform to the size, shape, and characteristics as determined by the city engineer based on industry standards. Once installed and accepted by the city, the conduit shall become the property of the city of Mount Vernon. Development as defined in this section shall mean the construction of improvements such as buildings, homes, subdivisions, streets, and utilities. (Ord. 2927, 1999)

⁶<https://edcgov.us/Government/CAO/Broadband/Documents/1.23.18%20Policies%20and%20Ordinances%20that%20Facilitate%20Broadband%20Deployment%20Report%20to%20Board.pdf>

⁷<https://muninetworks.org/content/celina-tx-looking-future-through-conduit-ordinance>

- The City of Sandy, Oregon passed an ordinance requiring all new developments to install underground fiber along with other utilities. Developers are now required to put conduit all the way into a home and to deed that conduit to the city. The city also developed a public-private Fiber-To-The-Premise (FTTP) project.

Tower Permitting, Co-location, and Pole Attachment

Radio towers allow ISPs to transfer wireless Internet signals across wide distances, providing broadband service to both smartphones and homes. While particular zoning ordinances may preserve the natural beauty of a landscape, they also make it difficult for ISPs to install new towers. Furthermore, pole attachment regulations often prohibit ISPs from placing transmission hardware on existing towers. Since fixed wireless is one of the primary methods for getting service into extremely remote areas of the NEMCOG region, the ability to erect towers while encouraging co-location of wireless equipment and easing other pole attachment regulations is vital to expanding service in the area. To solve the challenges, local governments must evaluate zoning ordinances which put up barriers to telecommunications towers and equipment.

In Emmet County, Michigan, the Planning and Zoning Commission is revising zoning laws to make it easier to build towers and use existing buildings to transmit wireless broadband signals. Revising the zoning ordinance was first suggested by representatives from a group of townships in the county, and also by an interested ISP. Originally, the townships and ISP recommended reducing red tape for towers up to 100 feet. To protect the beautiful rural landscape throughout Emmet County and accommodate all 12 townships, however, administrators met in the middle with easier access for shorter towers. Finding a successful middle ground, the new zoning ordinances also make co-location easier, by allowing placement of wireless equipment on top of existing towers and other buildings. With the ability to approve towers under 60 feet through administrative approval, ISPs can build new towers without going through months of red tape.

To address these challenges, it is recommended that local governments:

- Local townships should utilize the vertical asset inventory completed by Connected Michigan (anticipated in late summer 2019), to identify both public and private vertical assets that could be leveraged to decrease capital costs for deployment as part of a partnership or municipal network deployment. The identification and publication of these assets can decrease the costs associated with identifying and qualifying transmission locations. It can be costly to put engineers in the field to identify locations and even to qualify a possible tower. Through this work, additional data is being collected for FCC towers such as images that help a provider further assess the likelihood of being able to use a facility, but also information on assets like grain bins, water towers, and buildings, that could be viable options for a provider looking to make point to point connections, or offer point or multi-point services in a particular area.
- Townships should make available publicly-owned towers and offer co-location services to businesses if such assets are available.
- Local government should assemble a working group of ISPs, pole owners, and community leaders to discuss ways in which they can expedite the pole attachment process while preserving property values and landscapes.

Example:

Clark County, Nevada's land use strategy documents regarding communication towers and antennas clearly lists situations in which no permit is needed (e.g., an antenna is not visible), an administrative review is available (e.g., location on public property), or special use review is required. With easily accessible documents, the county helps

telecommunications carriers avoid public hearings which serve as a major incentive for the providers. For a full description of the land use policy language, see Clark County Code 30.44-1 Global Use Table, http://www.clarkcountynv.gov/Depts/comprehensive_planning/zoning/Documents/3044.pdf.

Rights-of-Way (ROW) Permitting

In 2002, the State of Michigan enacted the Metropolitan Extension Telecommunication Rights-of-Way Oversight (METRO) Act⁸ to streamline access to the ROW for telecommunications providers. This legislation created the METRO authority, though the authority is no longer responsible for the policies of the METRO Act, as responsibility was transferred to the Local Community Stabilization Authority (LCSA). The METRO Act is intended to help telecommunications providers obtain permits faster and more easily, improve competition for telecommunications services, encourage the development of new technologies, provide for a standardized ROW permitting process, and ensure reasonable management for public ROW by municipalities within the state.

As written, the METRO Act currently only applies to ROW in cities, townships and villages. County road commissions are not subject to the METRO Act. As such, providers seeking access to county ROW do not have access to the same streamlined processes, adding a level of uncertainty and ambiguity to infrastructure build-outs in rural areas.

Recently, Governor Snyder signed into law Public Act 97 of 2018,⁹ which limited bonding requirements that could be imposed on providers and capped ROW permit fees charged by a county road commission to \$300 each, or \$1,000 in total for multiple permits per project. In large counties (those with populations greater than 250,000), these caps are doubled.

These streamlined permit fees will improve consistency for accessing the county ROW by ISPs, particularly in rural areas where fee structures previously varied from one county to the next. In addition to establishing a fee schedule, the METRO Act provides a single point of application, standardized timeline and approval process, and process for dispute resolution between ROW owners and ISPs, which are not addressed in Public Act 97.

In Osceola County, Michigan, the local government instituted an almost no-fee policy in order to attract expansion of broadband service.

To continue the momentum of streamlining access to the ROW for information service and telecommunications providers, it is recommended that local governments explore the following recommendations:

- Local government should develop policies alerting companies who own infrastructure in areas being excavated for projects so they may perform maintenance or enhancements during excavation.
- Local road commissions should work with internet service providers in the area, particularly those providing wired infrastructure, to further discuss and explore ways to improve access to the right-of-way. Road commissions and ISPs should work together to strike a balance between the necessary elements of allowing private access to the right-of-way, (e.g. fees, permits, approval timelines, etc.), and the protection of the public health, safety, and welfare.

⁸ <http://www.legislature.mi.gov/documents/mcl/pdf/mcl-Act-48-of-2002.pdf>

⁹ <http://www.legislature.mi.gov/documents/2017-2018/publicact/pdf/2018-PA-0097.pdf>

Example:

- The city council in Missoula, Montana voted to reduce its fees to excavate and install new fiber-optic lines in the public right-of-way by 75 percent. According to Councilwoman Caitlin Copple, “It’s a gesture of good will to the service providers that we want to work with them. It was a unanimous vote, and it shows Missoula is serious about business.” This decision came after a feasibility study was completed exploring how Missoula could create a twentyfirst century broadband network and a citywide map revealing broadband access in the area. Permitting fees for new fiber installations were reduced from a baseline cost of \$2,078 for the first 600 linear feet to just \$300 for the first 300 linear feet.

High Costs of Broadband Deployment

The survey responses also showcased the extensive costs associated with broadband deployment and insufficient federal, state, or local subsidies to support buildout in high cost areas. When coupled with low population densities in certain parts of the NEMCOG region, the business case simply cannot be made for deployment of service in some areas. As a result, recommendations to address the cost issues with expanding service include:

Partnerships

Expanding broadband into sparsely populated areas often produces low or zero return on investment for the private sector due to significantly higher deployment costs, lengthier middle-mile networks, or challenging terrain. Partnerships can bridge this gap by bringing multiple assets together to successfully expand broadband access and adoption. A partnership between entities of all types, public, private, and non-profit, can address economic challenges by sharing capital costs and enhancing revenue potential (e.g., finding anchor tenants, aggregating community and regional demand, and removing regulatory barriers to expedite deployment).

The following recommendations are made to facilitate the creation of successful partnerships for broadband expansion:

- Local communities should facilitate a provider “meet and greet” where local multi-sector leaders and providers come around the table to discuss broadband challenges, solutions, and paths forward. The communities should organize these discussions monthly or quarterly as a means to get to know providers and their abilities to expand access in unserved parts of the region, improve speeds and connectivity, and share barrier concerns such as cost, digital literacy, and more.
- Develop templates and model language for partnerships to facilitate the repeatable, predictable, and expeditious implementation of innovative partnership models for broadband expansion. The model partnership language will establish consistency and best practices for communities and ISPs exploring collaboration options and provide guidance to public entities entering into the partnership to be in compliance with state laws and regulations. A guide developed by the US Department of Commerce on public-private partnerships can be found here: https://broadbandusa.ntia.doc.gov/sites/default/files/resource-files/bbusha_effective_public_private_partnerships.pdf.
- Develop recommendations to mitigate tax policies that may discourage broadband partnerships (e.g. personal property taxes, etc.).
- Develop a guide of potential broadband funding opportunities and seek out multiple entities to serve as co-applicants and to strengthen the application for funding.
- Conduit is not expensive, but without a funding mechanism to cover installation costs, valuable joint build and open-trench opportunities can be lost. A funding set-aside or

budget process must be put in place to allow for implementation of these policies. The funding mechanism will allocate monies to build broadband infrastructure when opportunities arise and the fund would maintain a reserve or set-aside for unanticipated projects.

<https://edcgov.us/Government/CAO/Broadband/Documents/1.23.18%20Policies%20and%20Ordinances%20that%20Facilitate%20Broadband%20Deployment%20Report%20to%20Board.pdf>

- Identify economic impact and returns on investment across various sectors of the entire community that come from the expansion and adoption on broadband.
https://connectednation.org/wp-content/uploads/2018/01/Why-Broadband-Matters-companion-media-kit_FINAL.pdf

Community Anchor Institution (CAI) Inventory

Community anchor institutions (CAIs) include entities such as government offices, schools, libraries, healthcare facilities, higher education institutions, public safety agencies, and others. Robust use of connectivity is critical for CAIs to provide support services to communities. Given this, partnerships with CAIs are an excellent opportunity for ISPs to bring high-capacity networks into a community or region, thereby increasing infrastructure and connectivity to homes and businesses nearby.

The following are recommendations to spur additional investment in communities and ensure CAIs have the connectivity they need:

- Create an inventory of the location and current connectivity of NEMCOG's CAIs. Connectivity information should be made public to communities and interest groups where available and appropriate. ISPs could then identify additional connectivity needs and how best to serve the region's critical institutions. Data collection efforts should be undertaken in conjunction with local communities, and industry associations affiliated with the type of CAI from which data is being requested. Data should be collected in ways that minimize the impact of the collection to the operations of the CAI and provide proper data security where necessary. The intent of such a database is to facilitate improved communication and coordination between CAIs and ISPs to find connectivity solutions and opportunities that may not have been known before. Additionally, CAI infrastructure could be leveraged to improve connectivity in the surrounding community. A guide to improving CAI connectivity published by the Benton Foundation can be found here: <https://www.benton.org/blog/action-plan-connect-community-anchor-institutions-and-close-digital-divide>.
- Develop and provide educational materials to rural, unserved, and underserved CAIs with information on the importance of connectivity for their sector and how broadband service can enhance and improve the efficiency of the services they provide to their patrons, constituents, and the public. Materials should also include information on how CAIs can help identify and coordinate sustainable community or regional partnerships.

Backhaul Inventory

Backhaul capacity, sometimes referred to as "middle-mile" internet access, is a system of infrastructure that carries telecommunications traffic to and from centralized servers around the world and connects it to individual households and businesses. To borrow a comparison from the water utilities industry, a home has a pipe providing water ("last-mile" service) connected to a larger water main ("backhaul" or "middle-mile"), which then connects to the water source (the internet). To ensure all NEMCOG residents have access to high-speed internet, the region must

examine and improve the availability of backhaul infrastructure. Backhaul infrastructure can take several forms, including fiber-optic cables and point-to-point wireless connections. The private sector has invested heavily in backhaul connectivity in Michigan, but ISPs in some rural areas in the region struggle to access the necessary middle-mile bandwidth.

The following are recommended to address backhaul challenges:

- Conduct an analysis of the public and private backhaul accessibility and capacity in the region. Such an assessment should include an examination of both “lit” backhaul (accessible to last-mile ISPs) and “dark” infrastructure (that which is currently in place but does not provide connectivity to any last-mile ISPs), as well as the locations of the nodes where last-mile providers can connect to that backhaul. Considerations of proprietary or sensitive information sharing would need to be included to protect private data.
- Create incentives for backhaul providers to install dark fiber and maximize the number of strands deployed during construction projects to increase capacity. These could include tax incentives on fiber infrastructure and improving right-of-way access along roads to streamline and encourage backhaul fiber construction in those rights-of-way.

External Funding Sources

To ease some of the costs associated with building out broadband in rural areas, communities and providers may take advantage of external funding sources which subsidize deployment. Several federal and state programs provide funding for the purposes of expanding broadband to rural areas. Some of those programs include:

- The FCC Connect America Fund (CAF) – The CAF¹⁰ is comprised of several programs including Phase II, Mobility Fund, and Rural Broadband Experiments which offers subsidies to broadband providers to build out networks in rural and/or hard-to-serve locations.
- The FCC E-Rate Program - The E-Rate program¹¹ helps schools and libraries obtain affordable broadband. According to the FCC, eligible schools, school districts and libraries may apply individually or as part of a consortium. Funding may be requested under two categories of service: category one services to a school or library (telecommunications, telecommunications services and internet access), and category two services that deliver internet access within schools and libraries (internal connections, basic maintenance of internal connections, and managed internal broadband services). Discounts for support depend on the level of poverty of the community and whether the school or library is located in an urban or rural area. E-Rate is a discount program, and discounts range from 20% to 90% of the costs of eligible services.
- The FCC Rural Health Care Program - The Rural Health Care Program¹² provides funding to eligible health care providers (HCPs) for telecommunications and broadband services necessary for the provision of health care. The program aims to “improve the quality of health care available to patients in rural communities by ensuring that eligible HCPs have access to telecommunications and broadband services.” In 2015, Michigan providers received an estimated \$3,609,000 for rural health care support. The Rural

¹⁰ <https://www.fcc.gov/general/connect-america-fund-caf>

¹¹ <https://www.fcc.gov/general/e-rate-schools-libraries-usf-program>

¹² <https://www.fcc.gov/general/rural-health-care-program>

Health Care Program has an annual cap of \$400 million and is made up of three programs: the Healthcare Connect Fund, the Telecommunications Program, and the Rural Health Care Pilot Program.

- The USDA ReConnect Program – USDA provides several loan and grant programs to help support rural areas, including those lacking high-speed internet access. Most recently, the USDA launched the ReConnect Program¹³ to help expand broadband infrastructure and services in rural America via grant and loan programs. USDA determined it would make available up to \$200 million in grants, \$200 million in loan and grant combinations, and \$200 million in low-interest loans.
- In 2018, the Michigan legislature created the Connecting Michigan Communities Grant program (CMIC). The CMIC grant is a one-time \$20M fund to expand broadband service into the most remote areas of the state. The grant is anticipated to begin accepting applications in mid-2019 with awards being made in the spring of 2020. More information on the grant can be found here: <https://www.michigan.gov/cmigrant>.

The following are recommended to take advantage of these external funding sources and others:

- Create a Rural Broadband Funding Guide which outlines opportunities for funding broadband expansion projects. Sources of funding include, but are not limited to, federal programs such as the FCC and USDA, state programs, and local non-profit and foundations. https://broadbandusa.ntia.doc.gov/sites/default/files/resource-files/ntia_guidetofedfunding_062317.pdf
- Local, county, and regional organizations should actively work to gauge local ISP interest in these grant and loan programs and provide any support possible to those seeking to expand broadband using these funds.

Relatively Small Customer Base in Unserved Areas (i.e. Lack of Demand)

Both providers and local leaders expressed a lack of demand for broadband services as an issue. Through the surveys, a number of barriers to broadband adoption were discussed including the perceived high cost of service, installation fees, and equipment. Other barriers included digital literacy, cyber security concerns, and a lack of knowledge on the benefits of broadband access. By addressing cost issues and launching broadband education programs, the region can increase the consumer base, and therefore demand, for internet service.

Eliminate Cost Barriers

The monthly cost of internet service was reported as a significant barrier to home broadband adoption in the NEMCOG region of Michigan. Cost barriers, in fact, are reported in communities across the country. According to the NTIA,¹⁴ “[l]ow-cost broadband service is more readily available in some geographic areas than others. In areas where service costs are high, broadband adoption programs may be able to negotiate discounts for program participants with local service providers, or may pay the provider to cover all or a portion of program participants’ subscriptions.” Improving the affordability of broadband can lead to a significant improvement in broadband adoption, which increases economic activity in communities.

¹³ <https://www.usda.gov/reconnect>

¹⁴ https://www2.ntia.doc.gov/files/NTIA_2013_BroadbandUSA_Adoption_Toolkit.pdf

Additionally, a series of federal and private programs offering low-cost broadband services to qualifying customers is already available nationwide. Such programs include the FCC's Lifeline Program,¹⁵ which provides a \$9.25 per month subsidy for the purchase of voice telephone service, including mobile, and broadband (as of December 2, 2016) by low-income households. To receive the benefit of Lifeline, consumers must receive service from a participating provider that is an Eligible Telecommunications Carrier (ETC). Unfortunately, many low-income consumers are unaware that these services may be available. Additionally, some ISPs offer subscription programs that offer low-cost broadband service for qualifying low-income households. In Michigan, these programs include:

- Lifeline
- Access from AT&T
- Spectrum Internet Assist (Charter)

The monthly cost of home broadband service is not the only financial barrier to home broadband adoption. Without a device through which a person can access the internet, such a service is meaningless. The type of device can also have a major impact on the individual's ability to use the internet in a meaningful way; while a smartphone is useful for communication or social media, it is not ideal for filling out a job application, doing homework, or working from home. For these tasks, an individual often needs a computer, which can be costly.

To address the cost barriers, the following recommendations are made:

- Develop a grassroots outreach and education strategy targeting households experiencing broadband affordability issues to provide information on programs able to assist with the cost of broadband service. Outreach efforts should coordinate with the state 2-1-1 information system and other organizations that serve vulnerable populations (e.g., community-action agencies, Michigan Works!, Department of Health and Human Services, etc.) to provide users with information on low-cost broadband subscription programs.
- Encourage and support local libraries to seek funding for and implementation of hotspot or device-lending programs. Such efforts allow patrons to check out a 4G or 5G mobile wireless or Wi-Fi enabled device for a specified period of time. This can provide low-income patrons with home connectivity where a device or broadband service is not available or affordable.
- Explore surplus equipment policies to ensure discarded devices (i.e. desktops, laptops, and tablets) can be donated to non-profits that refurbish and provide computers to low-income families and families with K-12 students in the home. Encourage public institutions, including counties, local government, community colleges, and others, to consider computer donations to similar non-profit organizations to maximize available devices for vulnerable populations.
- Encourage schools and communities to invest in mobile service solutions and devices for students that can be used at home and provide connectivity. Devices as part of a school one-to-one initiative¹⁶ enabled with Wi-Fi and mobile broadband (3G, 4G, or 5G technology) can provide connectivity on and off campus.

¹⁵ <https://www.fcc.gov/consumers/guides/lifeline-support-affordable-communications>

¹⁶ Programs that provide all students in a school, district, or state with their own laptop, netbook, tablet computer, or other mobile-computing device. One-to-one refers to one computer for every student.

Digital Literacy Training

Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.¹⁷ Digital literacy programs can help consumers overcome the technical barriers to broadband adoption via education and awareness building. Digital literacy impacts not only a user's ability to navigate the internet safely and in a meaningful way, but also impacts that user's ability to utilize technology in the workplace, access government services delivered electronically, participate in telemedicine applications, or access online educational opportunities. A focus on digital literacy helps to further bridge the digital divide by bringing together partners for the teaching and learning of digital skills.

The following are recommended to improve the digital literacy of NEMCOG residents and to lessen the literacy barrier to broadband adoption:

- Support libraries, schools, community colleges, non-profits, community or regional service organizations, and others in providing digital literacy and technology training to residents and businesses through the creation of a regional clearinghouse of existing digital literacy and technology training programs and curriculum. The clearinghouse should be accessed via the web and administered locally. Training should include relevant curriculum for both residents and businesses. The clearinghouse should be curated and managed by a single point of contact. Additionally, the clearinghouse should host information on digital literacy and technology training grant programs available from both public and private sources.
- Leverage the International Society for Technology in Education (ISTE) Student Standards that have been adopted by the Michigan Department of Education (MDE) as a standard set of skills and capabilities needed to be successful in a digital world. Labeled as the Michigan Integrated Technology Competencies for Students (MITECS), the program offers openly licensed educational resources for use by organizations that provide technology and digital skills training.¹⁸
- Establish partnerships with local colleges, universities, and libraries to develop mentoring programs to train local residents in digital skills, particularly those skills needed by employers. Partnerships should promote the importance of being digitally literate to stay safe online, improve job skills, and access electronic services, among others.
- Support, through schools, the use of technology both in the classroom and at home to foster increased technology competencies in support of learning and preparation for career and college. Technology skills gained by students often extend to parents and others in the home. Additionally, schools and libraries should collaborate to provide comprehensive technology and access to information.

Examples

- CyberSeniors is a great example of what can happen when youth from local schools, become involved with helping expand the skills of other generations that might struggle with basic digital literacy. Cyber-Seniors is non-profit designed to help develop these mentorships, and ultimately helping increase the understanding and need for broadband and technology. <https://cyberseniors.org/>.

¹⁷ American Library Association <http://connect.ala.org/node/181197>

¹⁸ <http://www.techplan.org/mitecs/>

- With a population of just under 1,200, digital learning resources are hard for many residents of Harbor Springs, Michigan, to find. Harbor Area Regional Board of Resources, Inc. (HARBOR Inc.) and community partners are changing that with HarborActive, an interactive digital literacy training initiative. HarborActive provides hands-on training across a variety of programs and applications, with classes designed for both businesses and casual users. HARBOR Inc. began working with Connect Michigan in 2011, designing a Community Technology Action Plan to advance broadband adoption and use in the area. HarborActive addresses the need for digital literacy at the root of broadband growth. HarborActive was founded by Rachel Smolinski, Executive Director of HARBOR, Inc. and Marcie Wolf, partner at Abuzz Creative, a web design, social media marketing and video production company. HarborActive brings many of Harbor Spring's richest community resources together, including the Harbor Springs Chamber of Commerce, the Harbor Springs library, and Community Connections of Greater Harbor Springs, an organization focused on aging in place and quality of life for seniors.
- Marketing businesses and economic development agencies are teaming up in Roscommon County, Michigan, to help small businesses strengthen their online marketing skills. The Boost Your Business seminars provide free, hands-on instruction using Facebook and website marketing, giving small and home-based businesses and non-profits the opportunity to hone social media skills and use the latest online marketing tools to get real results. The class shows entrepreneurs, businesses, and non-profits in Roscommon County how to set up a business Facebook page to market or sell a product or service. Attendees also receive instruction from local IT hardware and software service experts, on website best practices. Whether making a website for the first time, resurrecting a long-dormant page, or learning how to use an active page to make more impressions, participants at any stage of online marketing can benefit from the class.
- The school district in Ludington, Michigan, provides iPads for all students, from kindergarten through 12th grade. While the school supplies textbooks, lectures, and classwork on the iPad, local library programs are helping students get the most out of their device. The Mason County District Library (MCDL), serving Ludington and the county, uses the applications Overdrive and Tumblebooks to supply e-books and other digital content to their users. MCDL staff members have helped students add and learn to use these apps on their iPads, while using the library's existing subscription. Together, these applications offer over a million e-books and even more extra digital content, giving Ludington students access to a wealth of knowledge, without demanding a larger budget. "It makes financial sense because it prevents the schools from having to set up parallel services," said Eric Smith, Director of MCDL. "It's significant cost savings for the local community and taxpayers."

Create Partnerships to Raise Awareness

There are many ways in which broadband and related technologies can improve the quality of life of NEMCOG residents, businesses, institutions, and communities. Many community anchor institutions (CAIs), such as government offices, healthcare providers, libraries, and schools, as well as private businesses, offer online tools and services for their constituents. Still, many times potential users and beneficiaries do not access these online tools/services, and this may happen for a variety of reasons. Some may not have access to broadband at the speeds required; others may have the access but lack the digital literacy skills or may feel uncomfortable using online tools for such sensitive topics (like healthcare or banking information). Still others may have both the access and the skills but are unaware that such

tools exist. Telemedicine, online education, and e-government applications cannot improve quality of life if they are unused, unknown, or unrecognized.

The following are recommended to overcome these challenges:

- Develop a best-practice guide to assist institutions, organizations, and businesses in the creation of effective partnerships for the purpose of promoting e-services to the public. Best practice methods could include shared news media, flyers and promotions, social media advertisements, public service announcements, etc. Promoting the use of broadband for improved quality of life helps to increase the demand for service, thereby also increasing broadband access.
- Conduct a study to determine the extent of the home connectivity gap among households with K-12 students by working with schools to collect information from students and their families about their current state of home broadband access and adoption.
- Develop a consistent and coordinated messaging and marketing campaign to continually reinforce the benefits and importance of broadband, its many applications, its availability in the region, and related resources available from the state and others.
- Encourage anchor institutions, non-profit organizations, agencies that provide services to the public, private businesses, and local, regional, and state government to create partnerships to build awareness for and use of new and existing internet-enabled applications including, but not limited to, telemedicine, e-government tools, online educational content, e-banking, and public safety tools, among others.

Example

- The Keweenaw Convention and Visitor's Bureau (KCVB) in Keweenaw, Michigan, is making vacationing easier than ever. In a popular, rural vacation destination of Michigan with large parts untouched by broadband, information about camping, lodging, restaurants, and events has formerly been scattered. In response, KCVB implemented an application that puts all of Keweenaw's resources in one place online—and you don't even need an internet connection to use it. The Keweenaw attracts sportsmen, skiers, hikers, families, campers, and outdoor adventurers of all types. This rural expanse is a large part of the attraction, yet it also fragments broadband access in the area. Visitors come to unplug and get away from their devices; however, inaccessibility makes planning a vacation itinerary more difficult. KCVB solved this problem by implementing a mobile app which, once downloaded, can be accessed even without an online connection. The app went live in 2015 with approximately 2,500 downloads projected for the year. In only four months, it surpassed 3,000, including tourists and residents alike. The app offers information on lodging, campsites, restaurants, nature trails, historic sites, events, shops, and more. When the user is not connected to the internet, they can still use the app for turn-by-turn directions and to contact businesses. "They can literally touch the phone and the number comes up, so they don't have to write numbers down," said Amanda Oppe, Social Media and Marketing Manager for KCVB. KCVB's app was designed with visitors, residents, businesses, and Keweenaw's natural charms in mind. Push notifications go through the app to the user to inform them of special deals that businesses are hosting or to warn them of oncoming snowstorms. With the app now in place, KCVB plans to implement more features to make vacationing, buying, selling, and generally visiting this area easier.

Summary

A coordinated effort is needed in order to act upon the provided recommendations and overcome the region's broadband challenges. Community leaders and internet service providers should improve their communication to further identify challenges, develop solutions, and implement strategies that balance the needs of region.