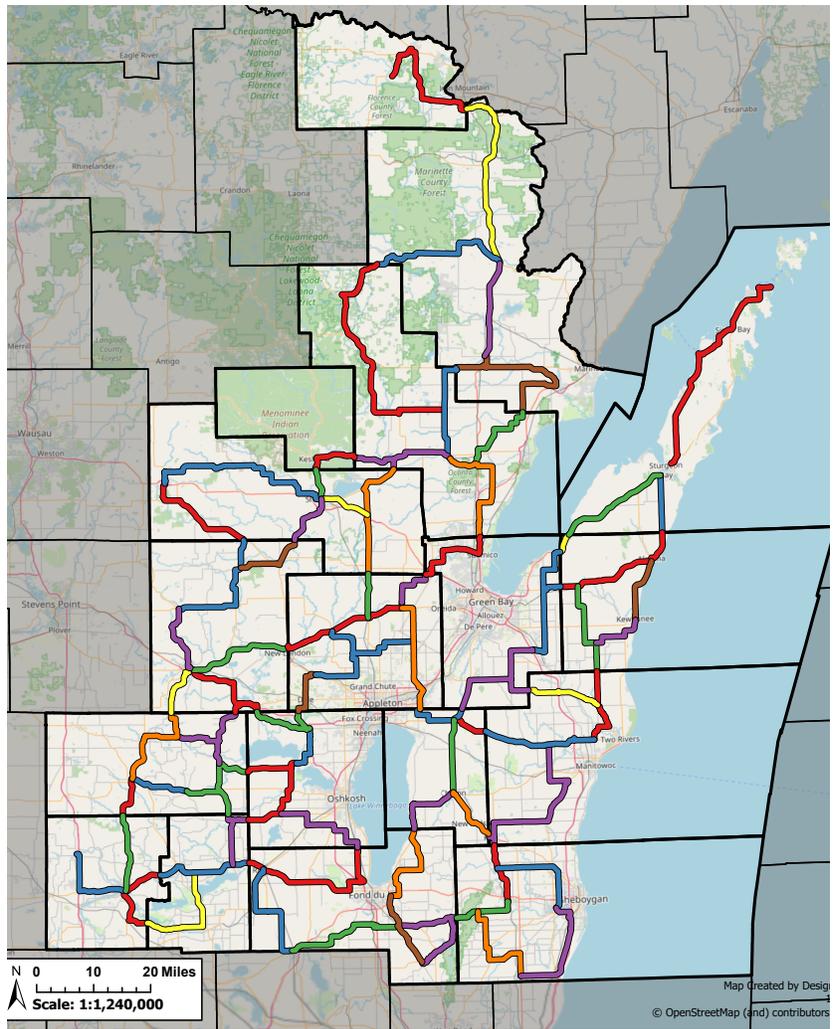




REGIONAL BROADBAND ACCESS STUDY

Executive Summary

New North Region, Wisconsin



EXECUTIVE SUMMARY

A broadband study in the eighteen counties of the New North region began in early fall of 2021 and was completed December of 2021, with consultant report reviews with each county in early 2022. The study included meetings with stakeholders and interested parties throughout the region, interviews and meetings with businesses, meetings with county officials, and residential and business broadband surveys. The work included these key tasks and activities:

- **Asset Assessment and Analysis**– A county by county analysis of demographic data, tower, broadband, and fiber assets in each county, identification of underserved and unserved areas of each county, and broadband technology systems available in each county (e.g. fiber, DSL, cable Internet, wireless, etc.).
- **Market, Current Use, and Gap Analysis** – A county by county review of current service provider service offerings, speeds, and prices for those services and what bandwidth is available.
- **Broadband Surveys** – A residential broadband survey and a business broadband survey was distributed to every postal address in all eighteen counties. Respondents were invited to fill out the survey on paper or by completing the survey via a Web form. More than 17,000 responses were received. As part of the survey work, an interactive online speed test was used to collect real time tests of actual upload and download speeds. This online speed test will continue collecting data in 2022.
- **Connectivity Solutions** – This section provides an overview of various technologies, including both broadband wireless and broadband fiber.
- **Regional Middle Mile Strategy**– A regional middle mile strategy is proposed to help accelerate the build out of fiber to the home and fiber to the business, particularly in underserved and unserved areas of the region. The middle mile network can also substantially improve current and future fixed point wireless broadband services.
- **Infrastructure Funding and Grant Opportunities** – A discussion of a variety of grant and funding strategies.
- **Risks, Legal, and Regulatory Considerations** – A review of potential risks in making broadband investments, and legal and regulatory considerations.
- **Network Operations Considerations** - An analysis of tasks and activities associated with working with ISPs and WISPs, and key tasks and activities that would be associated with regional middle mile network.

The survey data collected as part of this study indicates that residents and businesses are anxious for better Internet service. Because a very large number of often passionate comments were received, they have been included in a separate document.

- 50% of respondents are "dissatisfied" or "very dissatisfied" with their current Internet speeds, and 88% of residents are interested in faster and more reliable Internet service.
- 96% believe that New North and/or the local governments should help facilitate better Internet access.
- 35% of residents report the quality of Internet service is affecting where they choose to live.
- 98% of businesses indicated that the Internet is important to the success of their business.
- 71% of businesses reported that they need employees able to work from home.

Future-oriented Infrastructure

Affordable high speed Internet is essential to the future growth and prosperity of the New North region. Over the past twenty years, Internet access has evolved from a luxury to a necessity. School students need Internet access to complete homework and to study. Online shopping can save energy and make it easier for the elderly and homebound to obtain the needs of every day life. Telemedicine and telehealth services and applications is revolutionizing health care, reducing costs, and allowing older citizens to live independently longer.

More and more workers and business people are working from home, either on a part time or a full time basis, and the Covid crisis has highlighted the critical need for reliable high performance Internet service for work, learning, and access to health services. New work from home job opportunities are growing rapidly, but most of those jobs require reliable, symmetric Internet service to qualify.

Many business employees are already trying to work more from home more often (e.g. one or two days per week) to reduce travel costs. Some major businesses in other parts of the U.S. are actively planning to have 20% of their workforce work full time from home to reduce employee travel costs and office energy costs. Corporate employees working from home require high bandwidth services to be connected to the office network and to use corporate videoconferencing systems. These corporate network services often require 10-50 Megabit **symmetric** connections.

Broadband has become essential community infrastructure.

Just as communities had to take on the task of building and maintaining roads in the early twentieth century, communities must now help develop and support digital road systems as a matter of community and economic business development.

The New North region, with the right broadband infrastructure, has much to offer to businesses seeking to relocate:

- Great quality of life with a diverse group of small, medium and large communities.
- Tremendous recreational opportunities throughout the region.
- Excellent K12 school systems and a wide range of higher education options.
- Low cost of living and very affordable housing compared to many large metro areas in other parts of the country.
- A well-educated work force with a diverse set of technical and job skills.

With the right broadband infrastructure, the New North region can be attractive not only to businesses seeking to relocate, but also to an emerging group of businesspeople and entrepreneurs that typically are well-educated, own their own businesses or work for large global corporations, and are making choices about where they lived based on family needs and interests, rather than business interests.

This new breed of entrepreneurs and workers place a high value on the kinds of amenities that contribute to a good quality of life—traditional neighborhoods, vibrant downtown areas, a wide range of cultural and recreation opportunities, good schools, and a sense of place. These businesspeople and their families make relocation decisions based on quality of life only where there is abundant and affordable broadband, because broadband is the enabler of this new approach to personal and work life.

It is also important to note the impact of the Covid pandemic. During the lengthy period of business shutdowns and work from home requirements, many businesses and workers realized that living in a large metro area with heavy traffic, lengthy commutes, and a high cost of living was no longer necessary for many professional and white collar workers.

This rise in interest for permanent work from home situations represents a tremendous opportunity for the New North region to attract those workers. However, those seeking permanent relocation for work from home will be making decisions based on the availability of high performance, affordable broadband, and in particular, will place a high value on homes with fiber Internet service.

RECOMMENDATIONS

Develop a regional Broadband Strategy. Use the findings and recommendations in this report to develop a multi-year set of goals that can be realistically achieved using a basket of local, state, and Federal funding. Commit to providing the grant writing resources needed to pursue every possible grant opportunity.

County governments should not become Internet providers. Instead, the local governments should focus on developing public/private partnerships by making targeted investments in passive broadband infrastructure like towers and dark fiber. These assets have long life spans of forty years or more and can be leased out to private sector ISPs (passive infrastructure leasing is not a telecommunications service). While the revenue from the lease agreements will be modest, the funds generated can be used to support maintenance of this infrastructure.

Improved and Affordable Fiber and Wireless is Needed. Many residents and businesses rely heavily on poor DSL Internet access and need an alternative. Improving service provider access to more towers in the rural and underserved areas of the region will support improved Internet service. Expanded fixed point broadband wireless service is a critical strategic short term goal in the the region, but widespread access to wireless and fiber access is critical to the long term economic growth of the New North. In most of the New North counties, fixed point wireless coverage is excellent, with many counties showing nearly universal access to wireless broadband. The counties and the region should reserve some, and perhaps a majority, of ARPA funding to support increased fiber to the home availability, especially in the smaller communities and underserved areas of the New North.

Develop partnerships with WISPs and ISPs. WISPs and ISPs should be provided a copy of this report, and then be invited to meet to provide input on what infrastructure investments would enable them to expand service most efficiently. Local and regional WISPs may be able to provide insight into where towers are most needed and what they are willing to pay for tower space. WISP and ISP suggestions should help inform the broadband strategy for both county-level strategies and the regional strategy, noting that ISP/WISP demands may not always match the long term broadband needs of businesses and residents.

Ordinance and Planning Changes – A variety of strategies can be implemented at the county and regional level that do not require significant capital expenditures but can cumulatively have a positive long term impact.

- **Conduit/fiber overlay plan** – Identifying where it is desirable to have telecom infrastructure and maintaining that data in county GIS systems is an important first step.

- **Map private sector assets** – All telecom ROW permits should be carried from town and county Planning and Engineering departments to the GIS department and maintained and updated regularly. It is important to get all “red line” and as-built changes from contractors and telecom firms so that accurate records are kept on telecom infrastructure.
- **Integrate telecom into planning and permitting** – New construction, road and sidewalk improvements, and other infrastructure projects should include a review of the fiber overlay plan to assess the value of adding, at a minimum, conduit and hand holes. Private developers should be encouraged early in the planning process to add conduit and hand holes to both commercial and residential projects.
- **Open ditch policy** – Look for joint trenching opportunities. As noted above, a conduit and fiber overlay plan will help identify where limited capital funds for telecom infrastructure can be put to best use. Occasionally, private sector infrastructure projects will agree to participate in a joint (shared) trench opportunity.
- **Minimize tower permitting costs** – Tower ordinances that require unusually high cost engineering and radio interference studies can discourage private sector investment. Tower ordinances and permitting fees should find a balance between the need to protect the public and minimizing the cost of erecting new towers.

Seek Grant Funds. The Federal government has been steadily increasing the amount of grant funding available for broadband infrastructure, with USDA and HUD both having programs that are designed to help underserved and unserved areas construct new broadband infrastructure. Some Federal grant applications will be due in mid-spring of 2022, so planning for submitting grant proposals should begin in early January 2022.

Covid relief funding (ARPA, American Rescue Plan Act) should also become available in early 2022. Because ARPA funding is expected to exceed the previous Covid funding program (CARES), County shares of ARPA funds should be substantial and a portion of it could cover a large part of the needed broadband infrastructure improvements.

Some of the grants will allow joint applications from a county and ISPs/WISPs (i.e. public/private partnerships). New North counties should use this report to create opportunities to explore public/private partnerships that will seek funding for specific improvements in underserved areas of the county.

Manage Expectations. The current deficiencies in Internet access in the region took decades to develop, and the proposed improvements should be approached as a multi-year process, with an expectation of substantial improvements in access and availability in nine to fifteen months. More information on the time needed for wireless and fiber broadband improvement projects is included in Section 8.1.

Develop a long term funding strategy. Grants may not provide sufficient funds to reach the the regional and individual county long-term community and economic development goals. Evaluate longer term funding strategies, like using a special assessment, or implementing a very small increase in property taxes. Revenue would be earmarked exclusively for broadband improvements. Improvements in broadband access and affordability in the region will be most successful by recognizing that funding will come from a range of funding sources rather than a

single source. Grants, public/private partnerships, some local funds, and other sources may all be needed to achieve success.

Grants can be extremely important in the early stages of an effort to support planning activities and/or to fund a first-phase build-out initiative. However, grants rarely allow spending on operational expenses. Grants should be used carefully as one-time cash injections to support very specific goals. Communities that have relied too heavily on “the next grant” as a key source of expansion or operational funding usually experience severe financial problems.

Demand and Speed Test Data Aggregation – New North should continue to maintain and support the existing online speed test data Web site and promote the use of it throughout the region. This data will be extremely valuable in support of grant applications where FCC 477 may not represent unserved and underserved areas accurately.

Middle Mile Network – A regional middle mile dark fiber network, developed collaboratively by the New North counties, other local and regional partners, and New North, would significantly accelerate the availability of fiber to the home and fiber to the business in the New North region. It would also be an extremely powerful economic development tool—allowing tech-oriented businesses to locate almost anywhere in the New North region.

The middle mile network should have the following characteristics:

Wholesale Business Model – The New North region, if it moves forward with the initiative, should operate the middle mile network on an open access, wholesale business model with a wide range of competitive providers offering business and residential services. A single public wholesale price list will be used to determine the cost of provider use of the network. The enterprise will not offer any telecommunications services to businesses and residents—it would be operated strictly as a dark fiber network via dark fiber leases and IRUs (Indefeasible Right of Use), in compliance with Wisconsin law.

Business-class Capable – The network should be based on a future proof fiber architecture using a dual Active Ethernet and NG-PON design for high performance residential and business-class services available to every location on the network. The network should be designed to deliver Active Ethernet to businesses and institutions, with any desired quality of service (QoS) required to make New North businesses competitive in the world economy. This approach will provide a fiber infrastructure capable of delivering any current or future service.

Redundancy and Resiliency – The network should be designed with a redundant “ring” architecture to minimize downtime from accidental fiber cuts and network equipment failures. New North businesses, K12 schools, health care facilities, higher education, and home-based workers will have a high reliability network.

Universal access – The goal of the effort should be to facilitate rapid expansion of private sector offerings of high performance fiber and wireless services to all residents and businesses as rapidly as possible consistent with fiscally conservative operations.

Disclaimer

The telecommunications business is continually evolving. We have made our best effort to apply our experience and knowledge to the business and technical information contained herein. We believe the data we have presented at this point in time to be accurate and to be representative of the current state of the telecommunications industry.

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