Minnesota Governor's Task Force on Broadband

2021 Annual Report

This document contains the Task Force's recommendations for policy makers and stakeholders to review and position for adoption in the 2022 legislative session.
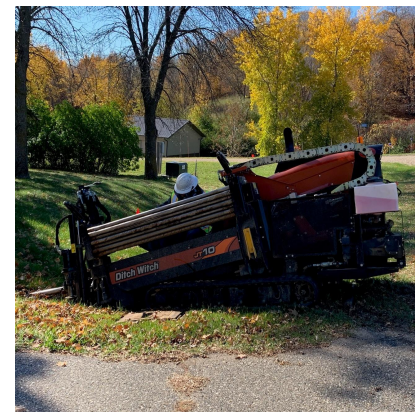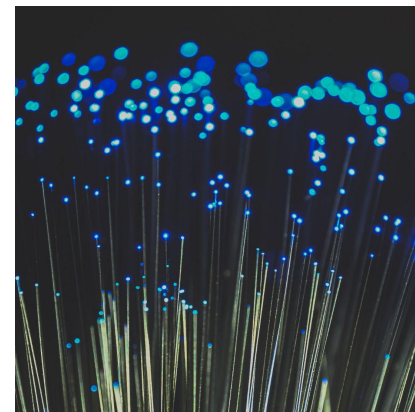
m EMPLOYMENT AND ECONOMIC DEVELOPMENT

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Introduction

The Governor's Task Force is composed of 15 appointed members from across the state*, representing multiple sectors. Meeting monthly, they review the current state of broadband deployment, access, adoption, and affordability relative to the Minnesota statutory goals to serve 100% of Minnesota families and businesses.

This annual report is required under the Governor's Executive Order (EO19-10) that continues the work of the Task Force, which is to continuously evaluate the State's progress toward achieving the goals stipulated in the Minnesota broadband statute, section 237.012. This report includes an inventory and assessment of the areas required by the statute. Additionally, the Task Force makes recommendations to the Governor, and the legislature, that if adopted, would improve the likelihood of achieving the state's broadband goals.

➤   *See member name list in appendix

Executive Summary

One no longer needs to be a technical expert to understand the critical and essential need for every Minnesotan to have high speed broadband (homes and businesses). Broadband has become a primary and foundational way all households gain access to every day services: education, health access, employment resources, and transportation. Yet in Minnesota, there are still well over 171,000* families, nearly 80% of whom are rural, that don't have this access (no service, or inadequate service). An even greater number of families all across the state (urban *and* rural) _have_ access to broadband, _but can't afford to purchase it_.

As the pandemic continues, so does the heightened urgency for addressing the access and affordability issues facing families, particularly as it relates to meeting state education standards and mandates for equitable education. While many of the conditions that deter full household broadband coverage have been stated in past reports and have not changed substantially, the opportunities to do something more ambitious to address those needs _have_ changed.

Billions of dollars of new funding have been allocated to Minnesota via the American Rescue Plan (ARP), and soon new infrastructure dollars will be too ($65 billion over 10 years for broadband nationwide). Minnesota Regional development commissions (and the the communities they serve) have made it abundantly clear, that broadband and childcare must be the #1 priorities for leaders at all levels now, and the "once in a generation" federal money must be invested wisely to ensure Minnesotan's broadband needs are fully addressed.

➢ *Based on Connected Nation October 2021 data.*

Recap of Statutory Goals

ALL households and businesses in Minnesota are to have access to speeds of at least 25/3Mbps by 2022 & 100/20Mbps by 2026. (The links show PDF maps of the wireline covered and uncovered areas.)

- Wireline service of at least 25 Mbps download and 3Mbps upload (**2022** goal)

- Wireline service of at least 100 Mbps download and 20Mbps upload (**2026** goal)
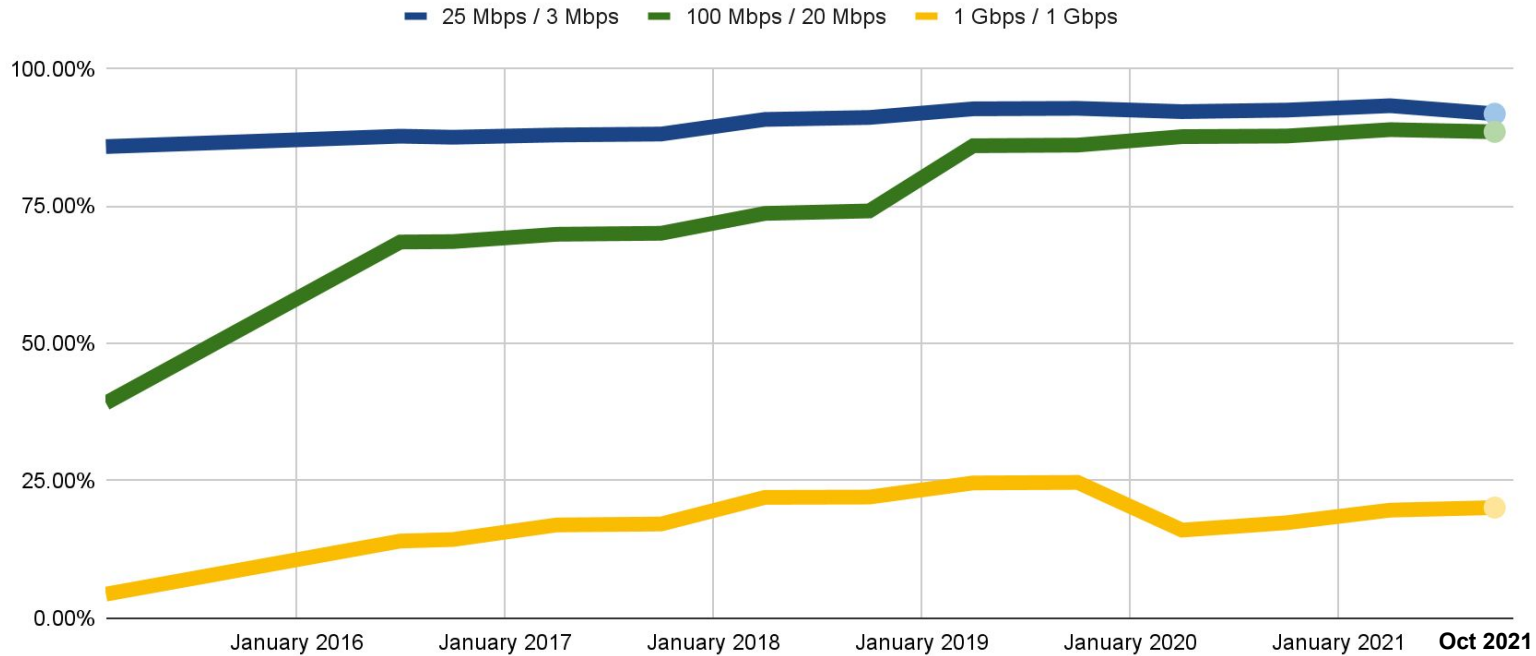
Additionally, the comparative goals are:

that by 2022 and thereafter, the state be in:

1. the top five states of the United States for broadband speed universally accessible to residents and businesses;
2. the top five states for broadband access; and
3. the top 15 when compared to countries globally for broadband penetration.

Historical Estimate of Broadband Service Availability in the State of Minnesota

% of service availability

■ 25 Mbps / 3 Mbps   ■ 100 Mbps / 20 Mbps   ■ 1 Gbps / 1 Gbps

Statutory Comparative Goals Score

The scores as of 2021 related to our comparative goals are:

1. Goal - be in the <u>top five</u> states of the United States for broadband speed universally accessible (available) to residents and businesses;
   - *According to the US News Annual Infrastructure Ranking, Minnesota is in <u>15th position</u>*
2. Goal - be in the <u>top five</u> states for broadband access (subscriptions);
   - *Depending on the source data referenced, Minnesota is ranked between <u>15th and 31st</u>*
3. Goal - be in the <u>top 15</u> when compared to countries globally for broadband penetration.
   - According to a UNESCO 2020 report, "*The Republic of Korea continues to have the world's highest household broadband penetration at over 97%. Switzerland leads the world in fixed broadband subscriptions per capita, at over 40%. By comparison, <u>the US ranks 24th in terms of household broadband penetration</u>, and 20th in the world for fixed broadband subscriptions per capita, just behind Finland and ahead of Japan.*"

Key Challenges -

While good progress has been made toward goals, old and new obstacles remain.

Broadband <u>expansion in unserved/underserved areas</u> has been delayed.

1.1 In 2021, the legislature's decision to allocate funds from the federal Capital Projects Fund (instead of regular state funding) effectively eliminated the ability of the Office of Broadband Development (OBD) to award any construction grants for further build outs in 2021, delaying access for Minnesotans most in need of services

1.2 Building out provider networks in less densely populated areas of our state continues to be a problem, primarily due to the high cost per subscriber to reach remote and geographically difficult areas to build (e.g. the rocky and wooded terrain across the state of Minnesota, etc.)

1.3 Continued insufficient Border-to-Border program grant dollars to fund all the construction needed to help providers reach service areas not economically viable otherwise

1.4 Hesitancy to use viable non-fiber solutions like fixed wireless in difficult to reach areas for fear of greater technical network challenges or forestalling future funding of a fiber network

1.5 Rural Development Opportunity Fund (RDOF) designated areas 'in dispute' or not yet approved can slow or block other viable development projects

1.6 Supply chain issues and labor shortages may impact providers, and can delay construction timelines

NOTE: the numbered Challenges roughly align with the corresponding numbered Recommendations in that section.

Key Challenges - Continued

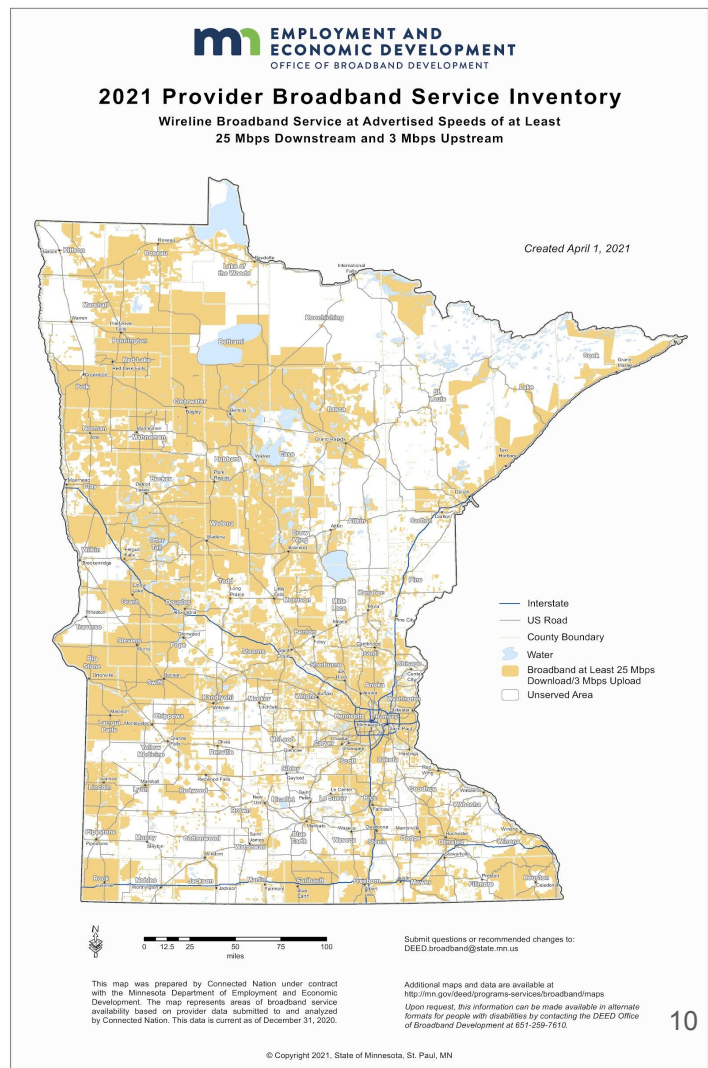<u>Inaccuracy of mapping and speed measurement</u> across counties -

2.1 The FCC tracks broadband household coverage by census block, and considers an area "served" even if only 1 household in a census block can be served by a provider, which often dramatically overstates actual coverage in that census block, particularly in rural areas

2.2 Map inaccuracies can block future investments in areas that still lack service that reliably meets the state goals

2.3 Advertised speed is sometimes not the speed users experience - a number of factors determine the net speed a user receives, including their in-home equipment, and connecting via Wi-Fi, and the number of connected devices in the home

2.4 Many users in more remote areas must still rely on old infrastructure (e.g. copper wire) to their homes, even though their provider may have fiber to a nearby node or pole

2.5 While speed testing is important for users & providers, testing methodologies are not uniform, and can provide a conflicting view of user's experience compared to stated provider speeds

Key Challenges - Continued

Affordability and Accessibility for many is a substantial barrier.

3.1 As currently designed, discounts and subsidy programs for low income households are frequently not utilized by targeted users for various reasons (e.g. documentation requirements, language barriers, lack of awareness & trust, difficult to navigate)

3.2 Small schools, usually rural, pay a disproportionate rate per student (as much as $80) for internet and network services due to the way their aid programs are funded by the state

3.3 One in 5 Minnesotans have an impairment that affects their lives, and use of broadband. There are insufficient supports for those with physical and mental challenges, and their need for use of broadband services is often greater than others to access specialized services (e.g. websites for health, transportation, jobs, education, etc.)

EMPLOYMENT AND ECONOMIC DEVELOPMENT
OFFICE OF BROADBAND DEVELOPMENT

2021 Provider Broadband Service Inventory
Wireline Broadband Service at Advertised Speeds of at Least
25 Mbps Downstream and 3 Mbps Upstream

Created April 1, 2021

Legend:
— Interstate
— US Road
County Boundary
Water
Broadband at Least 25 Mbps Download/3 Mbps Upload
Unserved Area

0 12.5 25 50 75 100
miles

Submit questions or recommended changes to:
DEED.broadband@state.mn.us

This map was prepared by Connected Nation under contract with the Minnesota Department of Employment and Economic Development. The map represents areas of broadband service availability based on provider data submitted to and analyzed by Connected Nation. This data is current as of December 31, 2020.

Additional maps and data are available at
http://mn.gov/deed/programs-services/broadband/maps
Upon request, this information can be made available in alternate formats for people with disabilities by contacting the DEED Office of Broadband Development at 651-259-7610.

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Key Challenges - Continued

Technology and program <u>education</u> (re: usage/digital navigation):

3.4 For many users, especially those for whom English is a second language, the advancing sophistication of home technology (e.g. Wi-Fi networks, streaming, etc.), has increased the difficulty of getting & staying connected

3.5 Given the experience of customers now varies depending on many factors inside <u>*and*</u> up to the home, customers need more technical assistance getting and staying connected, and these needs often go unmet

3.6 "Digital Navigation" services are new, and not yet widespread. There is no statewide plan for digital navigation services to support all citizens in getting and staying connected. (See NDIA report in the appendix)

<u>Coordination</u> of American Rescue Plan (ARP) federal funding opportunities for infrastructure build outs:

3.7 Many counties, cities, & townships need help to coordinate the use of their ARP dollars for broadband with neighboring counties, cities, & townships to maximize the opportunity to reach more unserved populations

3.8 The state has set aside $1.15 billion of ARP fiscal recovery dollars for long term needs, but none currently is dedicated to this purpose of coordination to advance broadband deployment goals

Recommendations

Each year the Task Force makes recommendations to the Governor and legislature to consider enacting, through enhancements to existing policy or new policy that aligns with Minnesota statutory broadband goals.

The chart at the end of the recommendations section shows progress toward previous recommendations.

Recommendations - *Unserved, Underserved, & Funding*

(1.1 & 1.3) The total $180 million Capital Projects Fund allocated to Minnesota from the federal ARPA fund, should be allocated to OBD for funding the Border-to-Border Broadband program over the next 2-3 years to help attain broadband service for all Minnesota residents.

(1.2 & 1.3) Grant funds should first be focused on unserved areas (~171,000 households fit this category), and the definitions of 'unserved' & 'underserved' should remain unchanged as they highlight the geographic areas not meeting stated goals.

(1.1, 1.2, 1.3, 1.4, 1.5) Geographic considerations should be factored in when allocating broadband grant funds. A "one-size fits all" grant allocation will not secure service in areas of the state where a fiber/cable option is difficult or impossible:

- Unserved areas of the state that are difficult to reach due to low density, tough geography, etc. should receive a higher % of funding match from OBD to increase build out options for wireline projects/solutions
- The legislature should require all future projects funded by OBD grant dollars be capable of 100 Mbps download and 100 Mbps upload at the time of deployment (irrespective of whether or not a provider offers a service package of 100/100), and meet network reliability requirements in the Infrastructure Investment and Jobs Act

Recommendations - *Mapping and Speed Goals*

(2.1-2.3) Minnesota should continue to invest in improving broadband maps
- strive to achieve ISP cooperation in producing address-level or 'shapefile' broadband maps (rather than rely on current FCC census block data)
- include eligibility data related to the various federal programs supporting broadband infrastructure development
- OBD is encouraged to incorporate, whenever possible, data from reliable 3rd party 'crowd-sourced' maps when determining eligibility for Border-to-Border grants

(2.4 & 2.5) The legislature should continue to make the investments from state general funds necessary to ensure that all Minnesotans, regardless of zip code, have access to broadband at speeds that meet state goals. Federal investments should not be seen as a substitute for ongoing state investment.

Recommendations - *Access, Affordability & Education*

(3.1, 3.3, 3.4, 3.5, 3.6) Provide funding to the Office of Broadband Development to promote broadband adoption and use to redress digital inequity.

(3.2) Fully fund the Telecommunications Access Equity Aid (TEA) program (by raising the funding cap to at least $9 million) in order to allow school districts to equitably procure the internet and network bandwidth needed to fully support digital learning. This aid program benefits school districts by making access to broadband more affordable by fully funding the eligible costs of the federal E-rate program.

(3.1, 3.3, 3.4, 3.5, 3.6) Establish and fund a position within the MN Department of Education to provide leadership and support to schools (and families) in areas of digital equity, digital literacy, funding (E-rate, etc.), cybersecurity, instructional technology and other areas of education technology.

(3.7, 3.8) Given expressed needs from city & county leaders to expand the Lead for MN American Connection Corp fellows program (Americorp/Vista), the state should provide supplemental funding of $225,000 to support work in Minnesota communities on broadband expansion projects (15 more fellows @ $15,000 per fellow).

Summary of Progress on Past Recommendations

2020 - Excerpt	
Continue to fund the Border-to-Border (B2B) grant program at a biennial amount of $120 million from the base budget each year and ensure that all future expenditures must be on service that meets or exceeds the 2026 speed goal of 100 Mbps download and 20 Mbps upload.	The legislature allocated $70 million from the Federal ARP Capital Projects Fund to the Border-to-Border grant program. Because these were federal funds, they could not be utilized until guidance for accessing the funds was issued by Treasury, and application made to release the funds. Consequently, no grant applications could be approved or funded in 2021, and depending on program application approvals from Treasury in 2022, may further delay B2B grants being approved / funded
The Task Force recommends the Office of Broadband Development (OBD) receive an appropriation of $700,000 per biennium from the base budget. That figure is OBD's estimate of funding needed to maintain current operations.	The Office of Broadband Development received an appropriation to maintain current operations
Create an OBD operating annual fund of $1.5 million to promote broadband adoption and use and redress digital inequity.	No action was taken on this recommendation
Given the condensed construction season in Minnesota, it is critical that permits are issued promptly. The state should convene a working group comprised of all state agencies relating to broadband construction permitting to streamline the process, both in time to issue the permits as well as the permit application process.	No action was taken on this recommendation
There needs to be more oversight of railroad facilities by the Office of Pipeline Safety. Railroads need to be required to locate their own facilities and need to be encouraged to issue permits promptly.	No action was taken on this recommendation

Economic Impact of Broadband

Universal, ubiquitous high speed internet (broadband) is proven to be a key foundation for every single business and household in the state of Minnesota. Even the smallest restaurant, local merchant, and household relies on a high speed internet connection to function in daily life. Our economy, and the tax revenue it produces at all levels of government in Minnesota is heavily reliant and impacted (positively or negatively) by access, *and affordability/adoption* of broadband for every Minnesotan.

"It's essential we get federal infrastructure dollars to the communities that need them most. The challenge is however, the places most in need are also those with the least staffing capacity to organize, prepare, and apply for these dollars. In many rural places, the same person in charge of administering all COVID relief applications for businesses is also the same person charged with bringing broadband to their county. Investing in rural capacity-building is a key factor to investing in broadband."

*- Benya Kraus, ED, **Lead for MN***

Land O'Lakes convened a group of 145 major companies, trade associations and others from across the country to work on closing the digital divide because it impacts not only economic outcomes, but also health care, education, and workforce development outcomes.

*Read more about CEO Beth Ford's Initiative **here***

Economic Impact of Broadband

The Brookings Institute issued a report in August 2021 with these findings:

Increasing access & adoption of broadband in rural areas (including digital skills, online education, & job search opportunities that come with it) lead to higher property values, increased job & population growth, higher rates of new business formation, & lower unemployment rates (findings from the Federal Reserve Bank, Richmond)

Broadband expansion also increases health and life outcomes, as it improves what the healthcare community refers to as the "social determinants of health" (e.g. offering remote access to providers, health education, social networks, etc.)

A cost-benefit analysis in Indiana that focused on rural area expansion showed 3 to 4-fold returns (not including cost savings to state and local governments medical spending, or increases in tax revenues from increased incomes)

Importantly, while _access_ to broadband services in urban areas is nearly 100%, non-use of broadband is _3 times higher_ due to _affordability and adoption_ issues for lower income users, further restricting the economic benefits to the state as a result

Inter/Intra Agency Cooperation/Coordination

The DEED Office of Broadband Development (OBD) staff lead and manage key aspects of the state's broadband program:

- Conducts and administers the Border-to-Border grant program
- Coordinates and oversees the mapping program that governments and industry use to better determine served and unserved areas of the state

- Coordinates and guides the work of the Governor's Task Force on Broadband
- Advises DEED senior leaders and the legislature on policy and funding issues as they arise (e.g. application for federal ARP dollars)

Inter/Intra Agency Cooperation/Coordination

OBD staff have taken the initiative to invite other state agency leaders to participate in an interagency group to identify areas for further cooperation and coordination to improve the state's digital equity strategies. For instance, there are many small yet successful digital navigation activities happening in communities across the state that would benefit from guidance and support. This is a growth area for OBD, and the office is in a unique position to increase the impact of digital equity and navigation initiatives around the state given its experience and connections.

"Since 2014, the Border-to-Border Broadband Development Grant Program has invested $126 million across Minnesota," said Office of Broadband Development Executive Director Angie Dickison. "These 179 projects have helped connect over 57,000 homes, businesses and farms."

As indicated in the recommendations section earlier, allocating the balance (~$110M) from the federal Capital Projects Fund budget to OBD would provide them additional resources to increase capacity to expand the Border-to-Border grant program and support its ability to lead in the Digital Equity strategy arena.

Household Wireline Broadband Availability

123,150

more households in MN have access to 25/3 Mbps broadband than in 2015

171,000

households in MN without access to internet speeds of 25/3 Mbps in 2021

6%

increase of available 25/3 Mbps broadband service in MN between 2015-2021

8%

of households in MN are without access to internet speeds of 25/3 Mbps in 2021

Household Wireline Broadband Availability

1 Million

more households in MN have access to 100/20 Mbps broadband than in 2015

239,600

households in MN are without access to internet speeds of 100/20 Mbps in 2021

49%

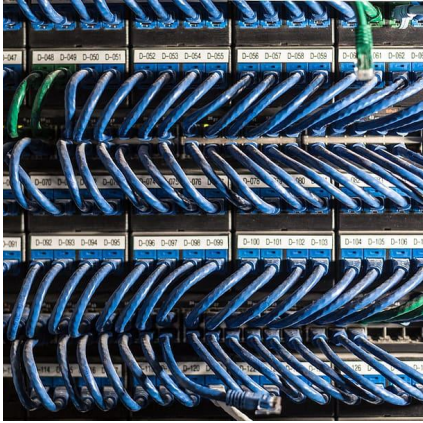increase of available 100/20 Mbps broadband service in MN between 2015-2021

11.5%

of households in MN are without access to internet speeds of 100/20 Mbps in 2021

Household Wireline Broadband Availability

329,000

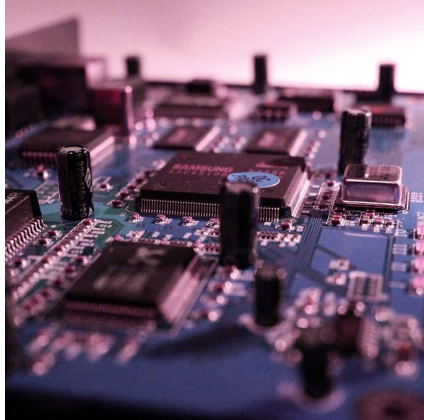more households in MN have access to 1/1 Gbps broadband than in 2015

1.67 million

households in MN are without access to internet speeds of 1/1 Gbps in 2021

16%

increase of available 1/1 Gbps broadband service in MN between 2015-2021

80%

of households in MN are without access to internet speeds of 1/1 Gbps in 2021

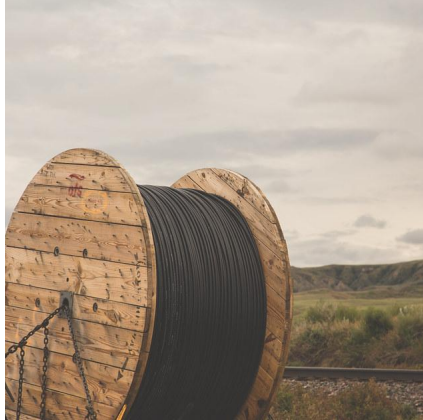# Household Wireline Broadband Availability: Rural

1 out of 4 rural households
in MN do not have access to 100/20 Mbps internet speeds

161,080
households in rural MN are without access to internet speeds of 25/3 Mbps in 2021

2.20x
rural households are over twice as likely to not have access to 25/3 Mbps internet speeds when compared to the state average

15% slower growth
the availability of 100/20 Mbps internet in rural MN grew at a slower rate than the state average

Appendix

- **Task Force Members**
- **Technology Updates**
  - Advances in technologies used to deploy services
  - Types of technologies in use for high-speed internet
- **Maps Showing Broadband Coverage**
  - Broadband availability and accessibility for unserved and underserved populations
- **Reference Material**
- **Glossary**
  - Unserved area
  - Underserved area
  - High-speed internet

Task Force Members

Member Name	Title	Organization
Teddy Bekele	SVP & Chief Technology Officer	Land O'Lakes Technology
Yvonne Cariveau	CEO / President	Internet Connections
Nolan Cauthen	Broadband Technician	CenturyLink; CWA Crew Steward
Dale Cook	CEO	Learn to Live
Steve Fenske	General Counsel	Minnesota Association of Townships
Steve Giorgi	Former Executive Director, retired	Range Association of Municipalities & Schools
Jason Hollinday	Director of Planning	Fond du Lac Band of Lake Superior Chippewa
Marc Johnson	Executive Director	East Central MN Educational Cable Cooperative
Bernadine Joselyn	Director Public Policy and Engagement	Blandin Foundation
Brian Krambeer	President/CEO	MiEnergy Cooperative
Micah Myers	IT Director	City of St. Cloud
Theresa Sunde	Senior Manager, Government Relations	Mediacom
James Weikum	Executive Director	Arrowhead Library System
Paul Weirtz	President	AT&T Minnesota
David Wolf	CEO	Gardonville Coop Telephone Association

Technology Updates

Advances in technologies used to deploy services

Every existing technology in use today continues to improve and advance, from the equipment customers use (the end point) to the hardware and software providers deploy on their networks. Providers are being creative, seeking ways to improve services to existing customers, and expand services to those most in need.

Types of technologies in use for high-speed internet

Cable

Cable broadband internet services are most commonly provided over hybrid fiber coaxial (HFC) networks. An HFC network is comprised of a fiber portion which connects a regional hub to an optical node in a neighborhood. The coaxial portion then connects the neighborhood optical node to each home receiving cable broadband internet service. The Data Over Cable Service Interface Specification (DOCSISTM technology) is the international telecommunications standard, and optional features could allow 10 Gbs download and 2 Gbs upload.

DSL

DSL technology is an asymmetrical service delivering internet by using existing copper telephone lines for the "last mile". Since the foundation of this technology is the legacy telephone infrastructure covering the continental United States, it is the most widely available wired technology to connect homes, especially in rural areas. High speeds meeting the statutory speed goals are only available to customers very close to a DSLAM (phone company network device) with speed degrading quickly after approximately 1-2 miles from this device.

Types of technologies in use for high-speed internet

Fiber Optic

Fiber-optic technology delivers high-speed internet using light through transparent glass fibers to transmit data from fiber broadband. The download and upload speed for fiber depends on the electronics attached to the fiber and ranges widely from 250 Mbps to 5 Gbps, far exceeding the needs of the typical user. The speed experienced by the user depends on a multitude of factors including transmitters, receivers and amplifiers used in route to connect the "last mile" as well as the in-home connection a user chooses (e.g. Wi-Fi, direct to modem, etc.).

Wireless Technologies

There are increasingly more hi-speed wireless options available to users today, including 4G/5G mobile devices ('hotspots), Fixed Wireless systems (tower to home) and satellite. While fiber to the home is often considered the 'gold standard', fixed and mobile wireless can offer attractive solutions particularly in areas where there are very low density populations or where physical barriers make fiber difficult to deploy.

Satellite Technologies

Traditional satellite options (Dish, Direct, Hughes, Viasat, etc.) offer users varying speeds (typically less than 25/3). Of the many existing technologies, one receiving more attention recently is the fast expansion of Low Earth Orbit (LEO) satellite networks by companies like Starlink, OneWeb, Telesat and Amazon. The LEO satellite networks may offer lower-latency (delay) and 200-300Gb+ speeds as they grow, and perhaps most importantly, the ability to reach very difficult remote (often rural) locations that are currently unserved. These systems, like all systems, have their challenges and users are discovering some of those now during beta testing (like Starlink is doing with select clients). As more satellites are deployed, coverage, speed, and reliability have improved. Whether they will be affordable and sustainable for a typical underserved or unserved user is not yet clear.

Maps Showing Broadband Coverage

Broadband Service Inventory for the State of Minnesota

- Infrastructure Grants Map - displays areas unserved by wireline broadband at 25Mbps download/3Mbps upload and underserved at 100Mbps download/20Mbps upload
- Infrastructure Grants Map with Populated Census Blocks
- Unserved/Underserved/Served areas by Tribal Nations
- Wireline service of at least 25Mbps download and 3Mbps upload (2022 goal)
- Wireline service of at least 100Mbps download and 20Mbps upload (2026 goal)
- Fixed, non-mobile broadband service of at least 10Mbps download and 5Mbps upload (final results for 2015 goal)
- Fixed, non-mobile broadband service at state speed goals

Percentage of Households Served by Wireline Broadband Service in Minnesota

- With speeds of at least 25Mbps download and 3Mbps upload - 2022 goal
- With speeds of at least 25Mbps download and 3Mbps upload - 2022 goal (Township map)
- With speeds of at least 25Mbps download and 3Mbps upload - 2022 goal (School district map)
- With speeds of at least 100Mbps download and 20Mbps upload - 2026 goal
- With speeds of at least 100Mbps download and 20Mbps upload - 2026 goal (Township map)
- With speeds of at least 100Mbps download and 20Mbps upload – 2026 goal (School district map)
- With speeds of at least 10Mbps download and 5Mbps upload (final wireline results for 2015 state broadband goal)

Interactive Broadband Map of Minnesota

- Minnesota Map - Tools and layers to examine broadband availability at your address, town, township, county, etc.

Other Maps

- I3 Connectivity Explorer (connectivity coverage-may require creating an account)
- FCC RDOF l Winning Bid Areas
- Digital Equity Scores by State (access/affordability) NDIA
- Cooperative Network Services (GIS overlays)
- Geo Partners St. Louis County

Reference Material & Reports

- [Fiber Broadband Assn Launches Tech Training Program](#)
- [Fiber Minnesota Creates Statewide Network Through Merger](#)
- [Institute of Self Reliance Muni Network report](#)
- [Blandin Broadband Blog](#)
- [Blandin Broadband Home Page](#)
- [Supply Chain Issues not Effecting Everyone the Same](#) (BBB, Aug. 2021)
- [Interactive maps by census block showing by % of wireline households](#) (NDIA, Dec. 2018)
- [Limiting Broadband investment to "Rural Only" discriminates](#) (NDIA, June 2020)
- [2021 Policy Priorities Outline](#) (NDIA, Oct. 2021)
- [Indiana Connectivity Program](#) (Overview 1 pager) ([Website](#))
- [2020 Broadband Deployment Report](#) (FCC, June 2020)
- [14th Broadband Deployment Report](#) (FCC, Jan. 2021)
- [Broadband Now Data](#) (Comparison Report 2021)
- [The Benefits and Costs of Broadband Expansion](#) (Brookings, Nov. 2021)
- [Minnesota State ARP info](#)
- [Minnesota State Broadband Statute](#)
- [March 30th, 2021 DEED Roundtable in the Arrowhead](#)
- Minnesota [OBD Map Database](#)
- [Minnesota State ARP Recovery Fund info](#)
- [Land O'Lakes Plays Key Role in Securing $65B in Funding for Broadband](#) (TCB, Dec. 2021)
- [Congress Tells FCC to Fix Broadband Maps](#) (Benton, March 2020)
- [Home Connectivity Study Report](#) (Consortium for School Networking, Spring 2021)
- [UNESCO Country by Country broadband penetration](#)
- [2019 American Community Survey](#) - devices / broadband (US Census Bureau)

Glossary

DEFINITIONS

- **Unserved area:** any area of Minnesota in which households or businesses lack access to wire-line broadband service at speeds that meet the FCC threshold of 25 megabits per second download and 3 megabits per second upload.
- **Underserved area:** an area of Minnesota in which households or businesses do receive service at or above the FCC threshold (25/3) but lack access to wire-line broadband service at speeds 100 megabits per second download and 20 megabits per second upload.
- **High-speed Internet**: broadband, or high-speed internet (typically equal to or greater than 25 megabits per second download and 3 megabits per second upload), commonly refers to access that is always on and faster than the traditional dial-up access.