



Office of Broadband Development

Annual Report
January, 2019

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Introduction and 2018 Annual Highlights

The Office of Broadband Development (Office or OBD) is located in the Minnesota Department of Employment and Economic Development (DEED). The Office was created by statute in 2013 and just completed its fifth year of work on its mission to improve access to broadband service that meets the state's speed goals, serving the needs of anchor institutions, and expanding the skills and knowledge needed to use these services. Responsibilities of the OBD are outlined in statute at Minn. Stat. § [116J.39](#).

2018 milestones for the Office included: closing out 16 projects from the first three rounds of the grant program; conducting 70 broadband infrastructure grant project site visits; coordinating the K-12 Connect Forward Work Group that assisted schools in achieving fiber connectivity; continued work with our broadband mapping vendor to ensure the state accurately measures progress towards the state's broadband speed goals; continuing work on digital inclusion and equity activities; and contributing to the national discussion on broadband availability.

Specific highlights for 2018 include:

- Wrote and executed 39 grant contracts with Round 4 recipients.
- Updated broadband availability maps in April and October.
- Participated in 37 state and 15 multi-state/national meetings or conferences to continue to promote the broadband resources available from state and federal sources, and to highlight Minnesota's work to advance broadband service in the state.
- Worked with broadband providers and the Minnesota Department of Transportation and Department of Natural Resources to address delays in permitting for broadband construction.
- Assisted in planning and executing the Blandin Conference, *Border to Border Broadband: Transforming Minnesota*.
- Participated on the FCC's Broadband Deployment Advisory Commission (BDAC) through appointment by the FCC to the full BDAC.
- Conducted 70 site visits to review Border to Border grant projects in process, from Roseau to Rushford and Canby to Carlton.
- Met with 10 local groups to provide technical assistance on broadband issues, including the state grant program.
- Provided broadband availability analysis to over 106 constituents.
- Continued our lead work with a multi-agency working group and the non-profit EducationSuperhighway to document and provide support in closing the K12 broadband connectivity gaps.

- Engaged Minnesota Congressional staff and federal agencies in work to maximize impacts of federal broadband programs in Minnesota.
- Provided support for eight meetings of the Governor’s Task Force on Broadband, including one meeting in Greater Minnesota.
- Supported policy makers on broadband discussions throughout the 2018 legislative session.
- Continued outreach with electric coops and how they might help their customers overcome rural broadband challenges.
- Developed and promoted a speed test for consumers to measure their broadband speed.
- Developed two new maps, one showing cities in Minnesota served with gigabit speed broadband and another showing areas eligible for the U.S. Department of Agriculture E-Connectivity program that should roll out in 2019.
- Updated the broadband availability by township map to continue to engage township supervisors in the discussion of how to improve broadband availability for their residents.
- Updated the broadband availability by school district map to document the homework gap in Minnesota.

Broadband Infrastructure Availability

OBD activities that support infrastructure development include the administration of the Minnesota Border to Border Broadband Development Grant program, monitoring and measuring consumer broadband availability, analyzing community anchor connectivity, assisting providers in obtaining necessary state permits, and coordinating with federal programs to achieve maximum benefits for Minnesotans.

Border to Border Broadband Development Grant Program

Four rounds of funding were awarded by the legislature between 2013 and 2017. No funding was appropriated for this program in 2018, so the grant program was not offered. OBD’s focus in 2018 was on administering the 81 remaining active grants, including executing 39 contracts from the Round 4 grants awarded late in 2017, site visits to 70 grant project locations, processing 210 reimbursement requests and closing out 16 projects from Rounds 2 and 3 (all Round 1 and 2 projects are closed, and 13 Round 3 projects have closed).

Progress on Projects Awarded with 2014, 2015, 2016 and 2017 Appropriations

- 2014 and 2015: All projects have been constructed and closed out.
- 2016: Awards were announced in January, 2017. 13 projects have been completely constructed and closed out. The remaining 27 projects are in process and all are scheduled to complete no later than June, 2019.

- 2017: Awards were announced in November, 2017. Given the unusually short 2018 construction season, all 39 projects are still in process and all are scheduled to complete no later than June, 2020.

Monitor and Measure

Minnesota Broadband Mapping Program

The OBD engaged in its fourth year of independently mapping broadband access and speeds across Minnesota in 2018. This work continues to be performed through a contract with Connected Nation, a non-profit organization that has considerable experience working with Minnesota broadband providers. The requirement to conduct these mapping activities was codified into law (Minn. Stat. § [116J.397](#)). It must be noted that funding for mapping activities comes from the administrative allowance of the Border to Border Grant program per Minn. Stat. § [116J.396](#) at subd. 2(3). While the grant program was not funded in 2018, the office was able to fund mapping activity for the year but the Office lacks a sustainable funding source to continue this mapping work in the future if the Border to Border Grant program is not funded.

The state broadband speed goals are articulated at Minn. Stat. §[237.012](#). They call for achieving border-to-border access by all homes and businesses in the state to a service that offers speeds of at least 25 Mbps download by 3 Mbps upload by the year 2022. A second goal to be achieved by the year 2026 seeks to have broadband service offering 100 Mbps download and 20 Mbps upload from at least one provider available to all homes and businesses.

The most recent round of data collection shows that progress is being made towards these goals.

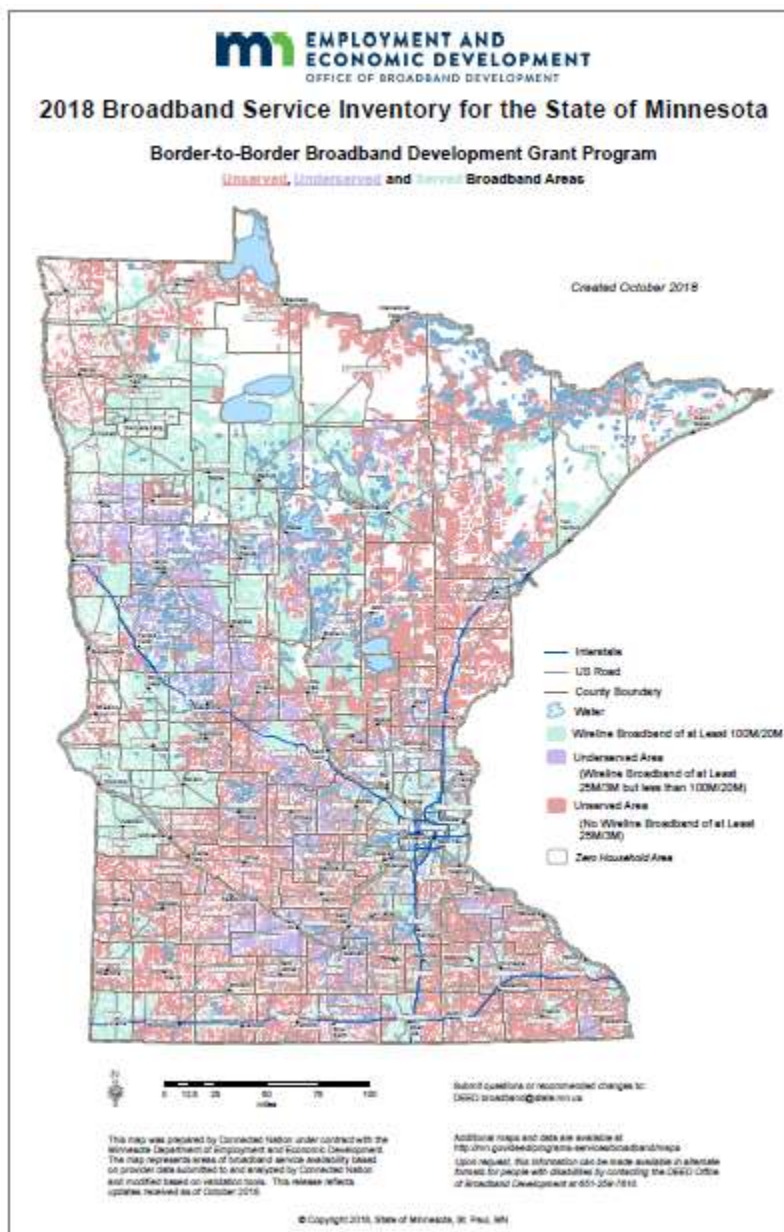
Table 1 – Wireline Broadband Availability

	2015	2016	2017	2018
Statewide 25/3 % of HH:	85.83% covered	87.53% covered	88.11% covered	91.13% covered
# of HH without:	296,000 HH w/o	260,000 HH w/o	248,000 HH w/o	185,000 HH w/o
Non-metro 25/3 % of HH:	68.08% covered	72.03% covered	73.45% covered	80.07% covered
# of HH without:	286,000 HH w/o	251,000 HH w/o	238,000 HH w/o	179,000 HH w/o
Statewide 100/20 % of HH:	39.14% covered	68.53% covered	70.04% covered	74.11% covered
# of HH without:	1,270,000 HH w/o	657,000 HH w/o	625,000 HH w/o	540,000 HH w/o

	2015	2016	2017	2018
Non-metro 100/20 % of HH:	40.68% covered	49.33% covered	52.88% covered	60.05% covered
# of HH without:	532,000 HH w/o	455,000 HH w/o	423,000 HH w/o	358,000 HH w/o

The following is an update of the detailed coverage map of broadband across the state:

Figure 1 – 2018 Map of Broadband Availability in Minnesota



The 2018 Broadband Service Inventory map reflects the statutory goal of 25 Mbps download by 3 Mbps upload and 100 Mbps download by 20 Mbps upload. This map is also used for preliminary screening for the Border to Border Broadband Grant program. As state grant funded projects are completed, they are reflected on this map (projects in Benton, Big Stone, Fillmore, Mille Lacs, Rock, Roseau, Swift and Winona Counties are large enough areas to be evident on the map). Additional state grant and federally funded CAF II projects (including ACAM) will be reflected in the next mapping round, due to be published in April 2019.

Township Heat Map

The township heat map was initially created in 2016 and has been updated with each subsequent data collection process. This configuration provides a clearer view of where the actual areas of unserved territory are located within each county.

Figure 2 – 2018 Township Heat Map of % HH Served at State Border to Border Broadband Speed Goal for 2022

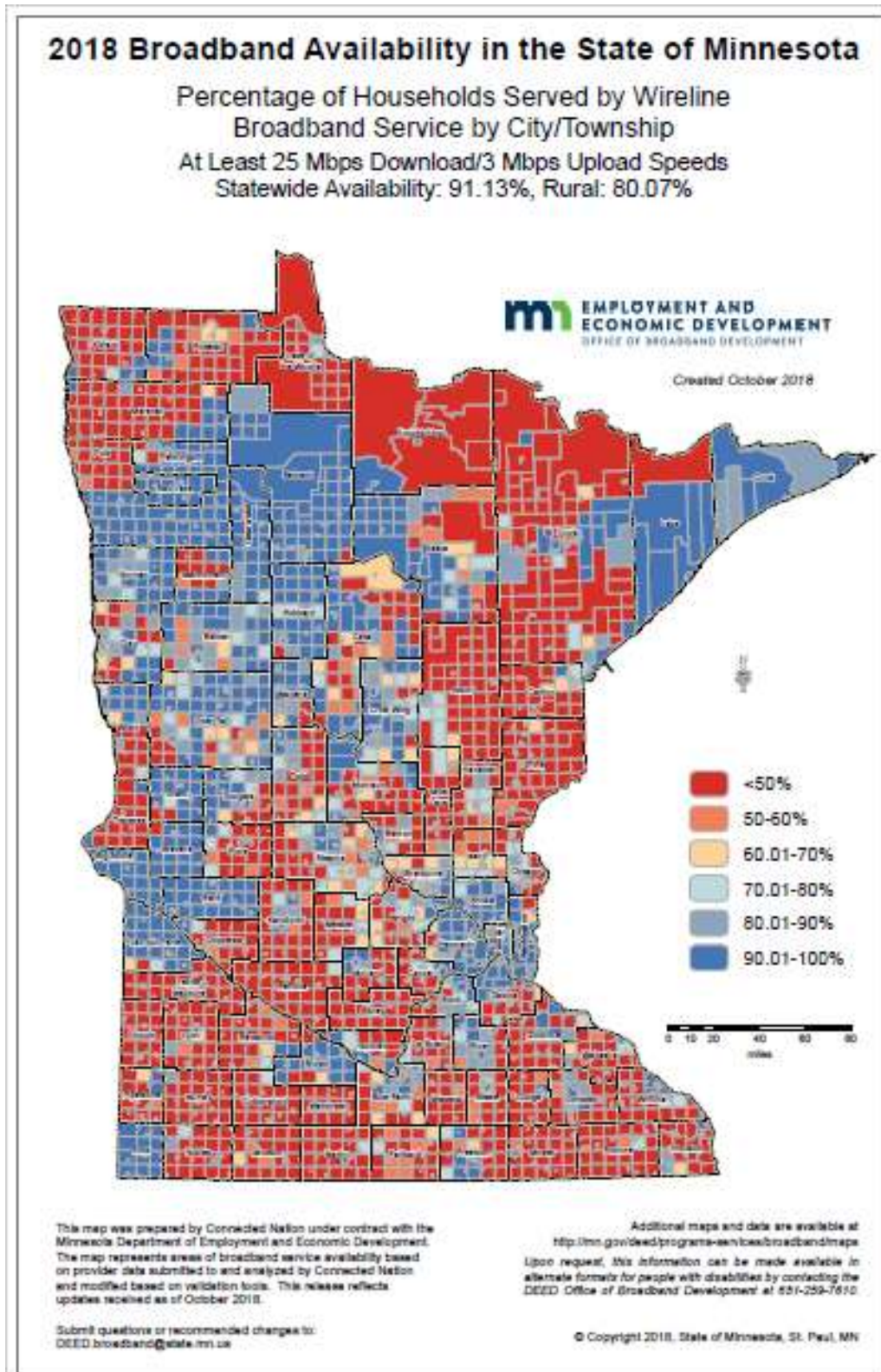
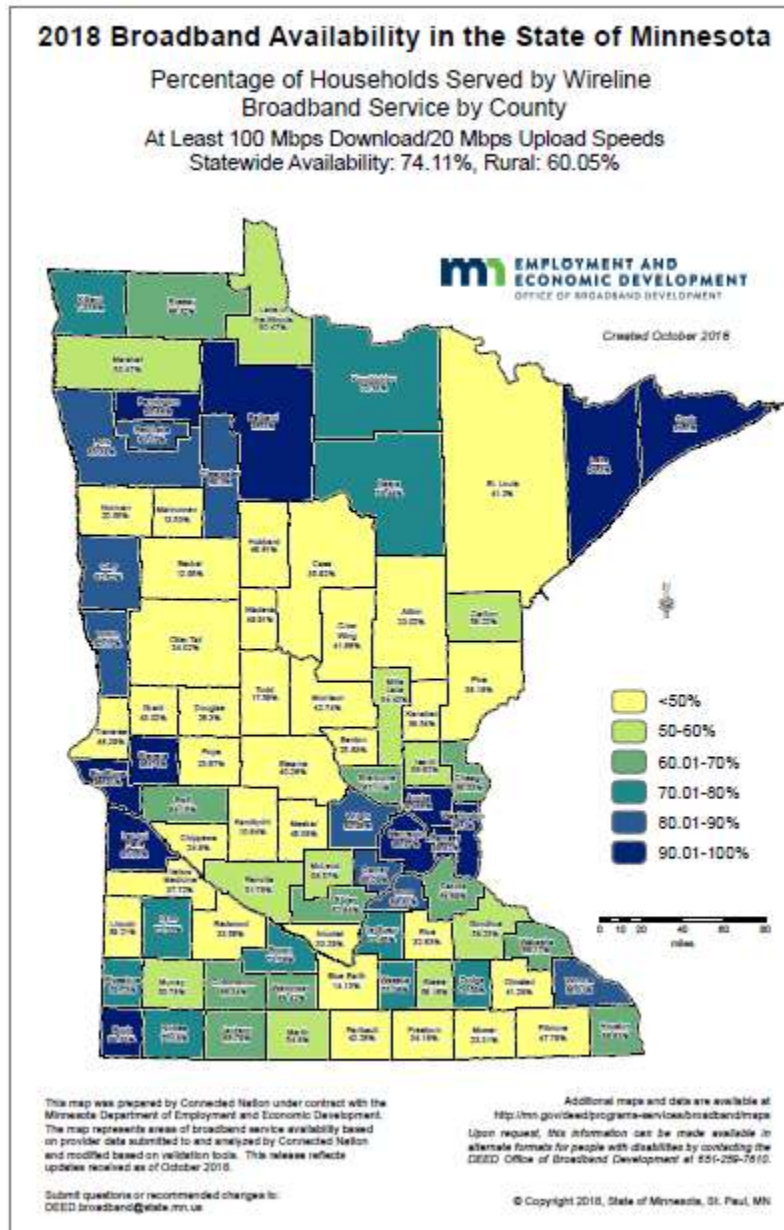


Figure 3 – County Heat Map of % HH Served at State Border to Border Broadband Speed Goal for 2026



As of 2018, 74.11 percent of households and businesses had access to service that meets or exceeds the state’s speed goal for 2026, which is 100 Mbps download by 20 Mbps upload from at least one provider. When looking at just non-metro areas, that number drops to 60.05 percent. While the broadband grant program has largely focused on achieving the 2022 goal, investments can only be funded under state law if they are scalable to deliver speeds at the 2026 goal. The Office will continue to track this data and produce both a county and township level map of this information in 2019.

Next Steps and Recommendations – Mapping

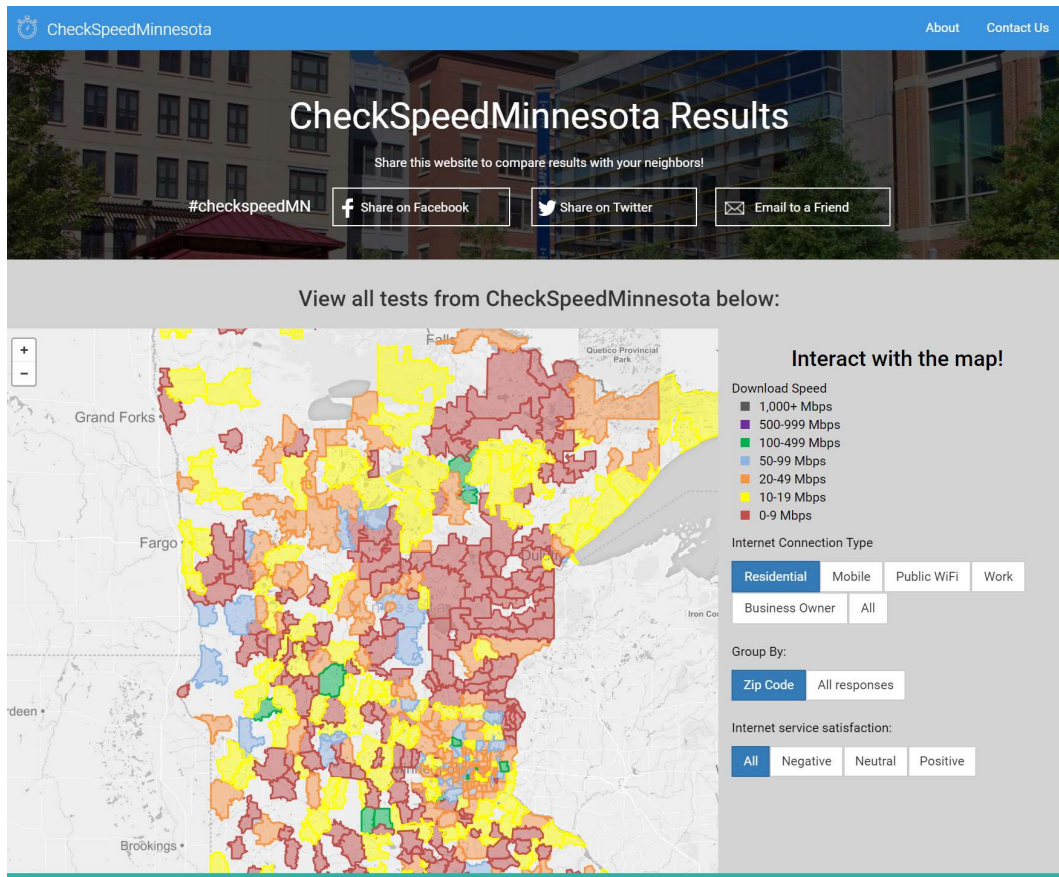
The mapping program was codified into law in 2016 via Minn. Stat. § [116J.397](#) and will continue on an annual basis as long as funding is available. The Office negotiated a new two year contract with the provider for 2017-18 and a one year extension for 2019. The Office continues to work with the contractor, providers and citizens to produce the most accurate and detailed maps possible. Maps are used by all stakeholders, policymakers, constituents and providers and improvements are constantly being considered.

The Federal Communications Commission also maintains a map of broadband coverage based on provider submitted data, however concerns have been raised with the accuracy of that map. The federal government also allocated \$7.5 million to the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce to assist in creating a more accurate map of broadband availability. Several other states are also considering or in the process of establishing their own state broadband maps. The Office has been consulted by several federal entities and other states regarding the process used to create Minnesota's broadband maps.

CheckspeedMN

The Office is charged by law with measuring and monitoring broadband internet access levels throughout the state (See [116J.39](#) at subd. 5(b)(1)). In order to increase policymakers understanding of the consumer experience, a website was established to enable the public to report on the type and speed of internet in their homes and businesses. That speed testing site is available at www.checkspeedminnesota.com

Figure 4 – Map of CheckspeedMinnesota Map



Next Steps and Recommendations – Monitoring

The checkspeed map was launched in the fourth quarter of 2018. The map will remain available for residents to test their speeds throughout 2019 so that a more robust data set can be obtained for analysis.

Connectivity for Community Anchor Institutions

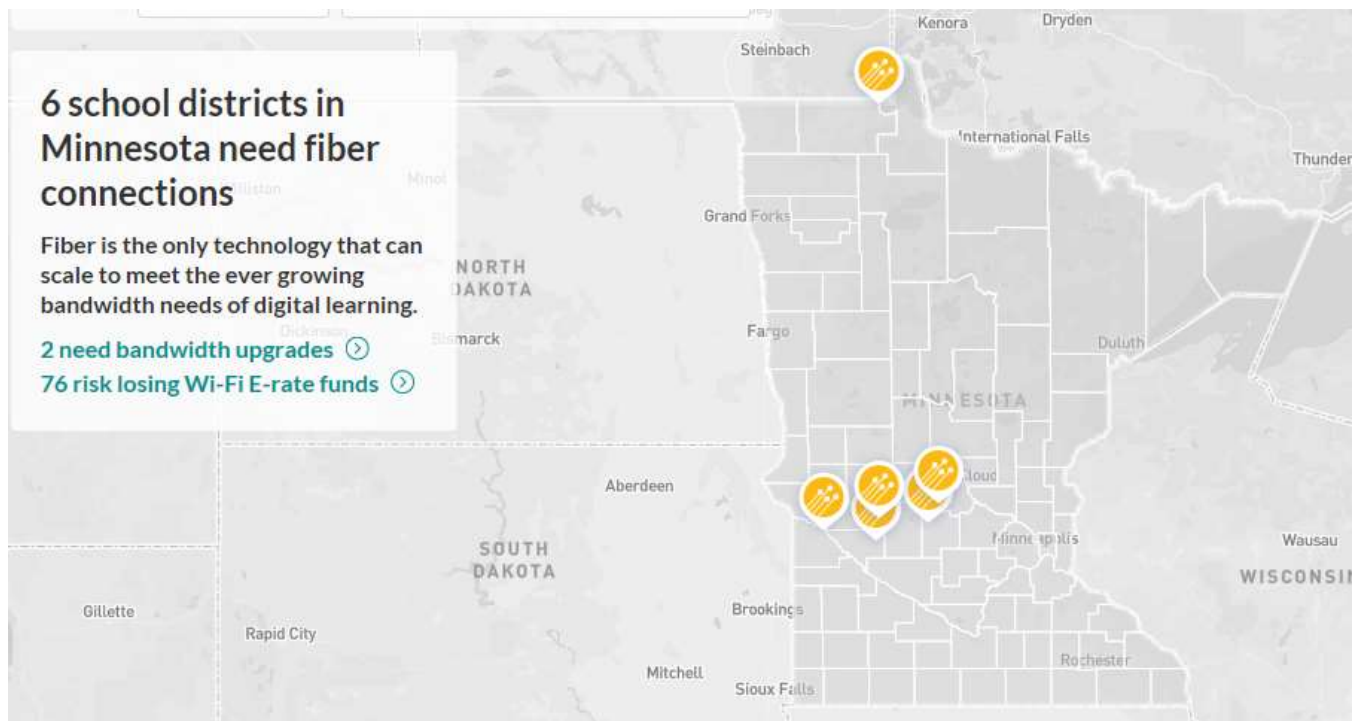
A core part of the mission of the Office of Broadband Development is to measure and report on the status of connectivity for community anchor institutions, including K-12 schools, libraries, higher education institutions, healthcare facilities, public safety sites, town halls and government facilities. The importance of measuring and analyzing community institution connectivity levels is twofold. First, high speed broadband is important for anchor organizations to deliver next generation services in rural areas. Additionally, these institutions act as anchor tenants in areas where networks may otherwise be financially difficult to sustain without them.

K-12 Connectivity Update

The Office has continued its work with the non-profit, EducationSuperhighway (ESH), to document K-12 public and charter school connectivity using federal E-Rate filings with follow-up to education consortia and individual school districts. The interactive broadband map on OBD’s website shows the location of all K-12 public and private schools in Minnesota and now links back to connectivity data for the public schools. Last fall, ESH began a concerted effort to review and acquire comparable data for Minnesota’s charter schools to assist them with filing for federal E-Rate funding.

Significant progress has been made to increase the number of schools with fiber broadband connections; ensuring they can scale service to meet increasing demand often at a lower cost per megabit. Only a handful of districts now remain that lack fiber access to one or more buildings and EducationSuperhighway’s resources are offered in these situations. The map below shows school districts without fiber connectivity.

Figure 4 – Minnesota School Districts without Fiber Connectivity

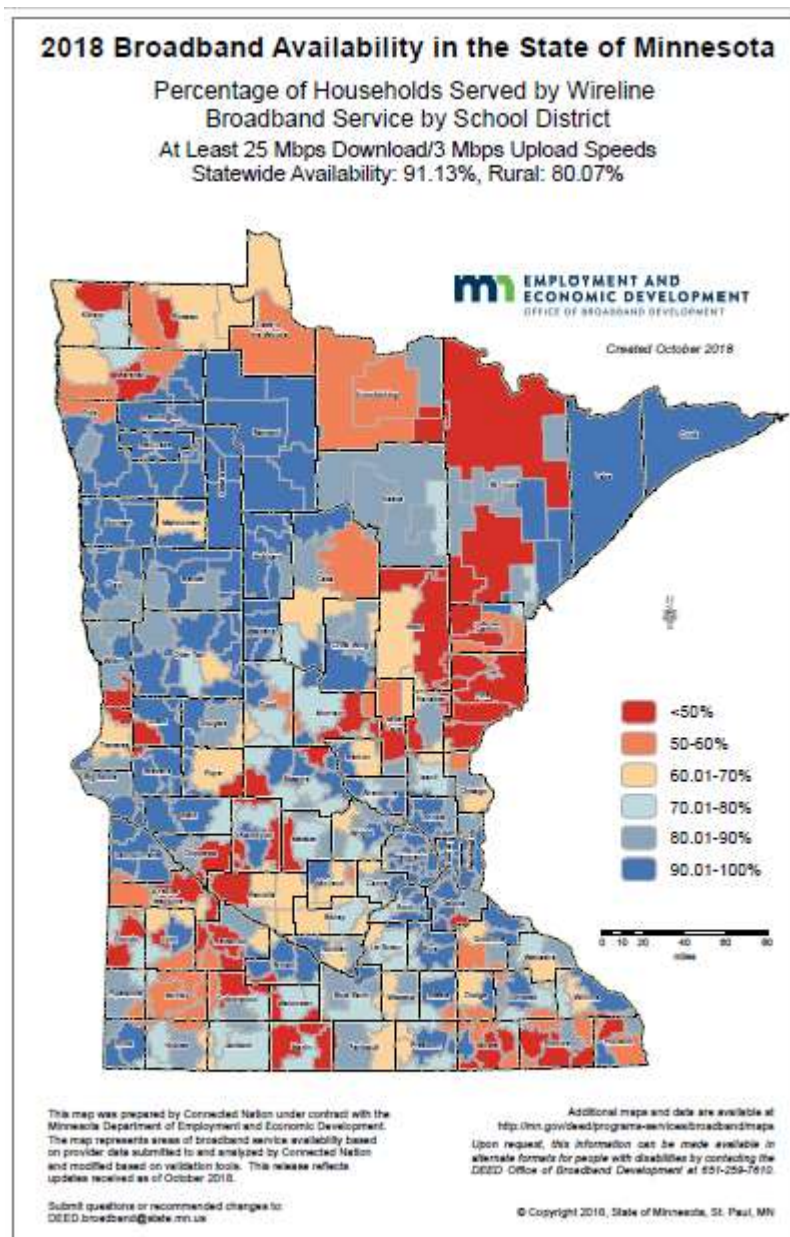


In 2018, the office has continued to lead the K-12 Connect Forward work group comprised of representatives from the Governor’s Office, the Minnesota Department of Education, K-12 education consortia, the Minnesota School Boards Association, the Minnesota Superintendents Association, and EducationSuperhighway. The work group examines K-12 connectivity gaps and potential policy and program solutions. The work group also continues to encourage the Legislature to fully fund the Telecom Equity Aid (TEA) fund, which helps overcome the geographic disparity in pricing that exists in providing broadband access to districts across the state.

Monitoring K-12 connectivity levels is an ongoing project with significant growth in demand documented across the state. One K-12 school consortium in Minnesota has seen demand for bandwidth grow 40 to 50 percent per year, for the past several years.

Separate from connectivity at school facilities, is the issue of students' home broadband access. Students need broadband availability at home to complete assignments, make full use of 1:1 device initiatives, or to successfully implement an E-learning day as authorized by Minn. Stat. § 120A.414 passed in 2017. To assist school officials, the office took the broadband availability data collected as part of the mapping effort and created the below map showing household availability at the school district level.

Figure 5 – Heat Map of Percentage of HH Served at the 2022 State Goal by School District



Next Steps and Recommendations -- K-12 Broadband

The K-12 Connect Forward work group will continue to work with EducationSuperhighway to address gaps and recommend policy that will target areas in need. The current effort to ensure that all districts are aware of, and making use of, federal E-Rate funding will also continue. The office recommends the state continue to monitor K-12 connectivity, the associated costs, and to evaluate methods for increasing available speeds and lowering per megabit costs to districts. Creating the formal position of State E-Rate Coordinator within the Minnesota Department of Education would also assist in monitoring, aid in the development of best practices, and provide Minnesota with a point person to engage in discussions with the federal government on E-Rate policy issues and concerns.

Other Community Anchor Institutions

Library Update

The Minnesota Department of Education captures connectivity data of libraries and reports that back out in an annual report. In its report, [Minnesota Public Library Internet Connectivity, 2017](#), they found that 243 library branches, or 67 percent, have fiber connectivity. About 120 branches are without scalable fiber based service. Most public library locations have internet speeds above 20 Mbps, with the greatest number of locations having service between 50 and 100 Mbps as determined by self-conducted speed testing. Ninety-eight percent of public library locations offer free access to wireless internet service. Like K-12 schools, Minnesota libraries are eligible for federal E-rate program dollars to off-set a percentage of their out-of-pocket costs for connectivity. Also like K-12 schools, the state provides equity aid to further defray the remaining costs of these connections. State library representatives report that current state funding levels are adequate to meet their needs in this area.

Public Safety

The Office continues to work with the Department of Public Safety's Office of Emergency Communication Networks to complete the picture of public safety broadband needs and use across the state. There are 102 Public Safety Answering Points or PSAPs in Minnesota that each maintain two separate diverse connections to provide emergency fail-over capabilities during a provider network outage. About half of the PSAPs are connected using fiber for one of the two diverse routes. The second diverse route is a T-1 copper facility. The remaining PSAPs have T-1 connections for both diverse routes. The Department of Public Safety will be working with MN-IT to provision more fiber connectivity to PSAPs. The move to fiber lines will provide more available bandwidth and in most cases lower the per megabit cost of these connections.

While connectivity of PSAPs is determined at the state level, connectivity for the many police and fire stations across Minnesota are made at the local level. The interactive broadband map maintained by the office, which can be found here: [Minnesota Map](#), includes the locations of all such facilities by activating the "Anchor Institutions" layer on the map. Work remains to be done to devise a reliable means of gathering robust connectivity data for these anchor institutions.

Additionally, construction of the nationwide first responder network, known as FirstNet, is underway. The federal government awarded the FirstNet contract to AT&T in 2017. Minnesota's participation is coordinated by

the Minnesota Department of Public Safety's Emergency Communication Networks division. Additionally, Hennepin County Sheriff Rick Stanek serves as vice-chair of FirstNet's 15 person board. The purpose of FirstNet is to build, operate, and maintain a high speed, nationwide wireless broadband network dedicated to public safety and operable across the country.

Rural Healthcare

The need for connectivity of healthcare institutions grew with the adoption of electronic health record systems and other health information technology. E-Health is needed to exchange patient information to support coordinated care. Minnesota's health community has achieved considerable e-Health progress since the e-Health initiative was established in 2004. As of the last report (February 2017), 100% of hospitals, 98 percent of clinics, 97 percent of local health departments, 97 percent of clinical labs and 69 percent of nursing homes had adopted electronic health record systems. E-prescribing is available to 97 percent of pharmacies, 89 percent of hospitals and 88 percent of clinics. In terms of information exchange, 69 percent of clinics are exchanging with unaffiliated hospitals and clinics, 72 percent of hospitals are exchanging with unaffiliated hospitals and clinics, and 56 percent of hospitals are sending alerts to primary care practitioners. The ability to share patient records can greatly assist in proper diagnosis and treatment, whether a patient is in-network or out-of-network. More recently, e-Health has been identified as one method to assist in the opioid crisis by increasing the rate of electronic prescribing of controlled substances (EPCS).

The federal government, as one of its Universal Service programs, has funding to assist rural health care providers address their connectivity needs. The Rural Health Care Program, or RHC, receives funding of \$400 million annually and is administered by the Universal Service Administrative Company (USAC). Broadband services and network equipment can receive up to a 65 percent discount for eligible applicants. Since 2013, Minnesota health facilities have received over \$4.5 million in funding through RHC.

As with public safety anchors, the Office includes the locations of hospitals on the interactive broadband map and continues to work on locating a reliable data source to map connectivity levels to individual healthcare facilities.

Next Steps and Recommendations – Other Community Anchor Institutions

From 2014-2017, in awarding Border to Border Broadband grants, DEED requested that applicants provide information on whether community anchor institutions would be served as part of the grant funded area. Additional points were awarded if that was the case. DEED staff has also found a number of incidences when an anchor institution was not part of the project but because the project brought fiber closer to the location, it became affordable to extend fiber to the anchor institution not included in the grant project area.¹

¹ The Big Lake police department was connected to fiber that was placed as part of the Palmer Big Lake industrial park grant project and the Big Fork Valley Hospital was able to gain access to fiber at an affordable price as a result of the 2016 Paul Bunyan Communications grant project.

Should the Border to Border Broadband Development Grant program be funded in the 2020-2021 budget, DEED would continue to provide additional points for applications that would support connectivity to anchor institutions.

Where data sources can be found and validated, the office will work to incorporate connectivity type and speeds on the interactive broadband map.

Initial analysis suggests that eligible rural healthcare facilities in Minnesota may be underutilizing federal Universal Service Fund Rural Healthcare Connect funding in comparison to neighboring states and national averages. Assuming there is federal resolution regarding funding available and eligibility for that funding, work will be done in 2019 to support eligible facilities in accessing these dollars.

Coordinating Broadband Infrastructure Development with MNDOT

Under Minn. Stat. § [116J.391](#), the Office is to collaborate with the Minnesota Department of Transportation (MNDOT) and private entities to encourage and coordinate “Dig Once” efforts. The office met several times with MNDOT to make progress in this area and MNDOT posts notice of its regional meetings to discuss upcoming road construction projects and invites broadband providers and utilities. Discussions have been held regarding the placement of conduit in rights-of-way but has run into barriers with lack of funding to deploy, track and manage the conduit.

In late 2017, the office convened meetings of broadband providers with MNDOT and Minnesota Department of Natural Resources (MNDNR) personnel responsible for issuing right-of-way and crossing permits. Productive discussions were held on how both sides can best manage the process to ensure applications are issued and received in a timely manner. In 2018, the Office continued to monitor this process and worked with both MNDOT and MNDNR when broadband providers believed the issuance of their permits were unreasonably delayed.

Broadband and Tribal Outreach

Two Border to Border Broadband Development Grant projects awarded in late 2017 were to projects on tribal lands. On site visits this past summer, staff was able to see where these projects are being constructed to the benefit of White Earth and Fond du Lac tribal members living in these very rural areas.

Since the grant program was not funded in 2018, the office did not have the opportunity to engage in tribal outreach to encourage grant applications for areas that include tribal lands. Should the grant program be funded again in 2019, the Office would conduct a rigorous tribal outreach plan to ensure that applications that include tribal land are well represented in the pool of applications received.

Broadband and Electric Coops

In some Midwestern states, electric coops are stepping up to provide broadband service in rural areas in conjunction with their deployment of smart grid. The Office has seen some interest by Minnesota's electric coops but not as great as in other states. Projects previously mentioned include the Arrowhead Electric (in partnership with CTC) project to deploy fiber to the home in Cook County using an American Recovery and Reinvestment Act (ARRA) stimulus loan and grant; Cooperative Light and Power providing fixed wireless service to areas in St. Louis County with its own capital; and Mille Lacs Energy Coop (MLEC) in partnership with CTC, constructing fiber to the home in portions of Aitkin County with a state Border to Border Broadband Infrastructure grant awarded in 2016.

In 2018, two additional electric coops took steps to deploy broadband service. Roseau Electric was the winning bidder to serve 326 locations with fiber to the home in the FCC's CAF II auction that concluded in August 2018. Additionally, MiEnergy Cooperative partnered with Harmony Telephone Company and Spring Grove Communications to deploy fixed wireless service in portions of southeastern Minnesota. Staff from the Office also attended a conference by the Wisconsin Electric Cooperative Association to learn how other electric coops in the region are becoming broadband providers.

Monitoring the Future – Technology Scan of Current and Emerging Technologies

The OBD monitors broadband technology advancements to determine when new innovations in delivering broadband services are market-tested to the point of being considered as viable options in a broadband infrastructure investment portfolio. The advancements being monitored range from 5G to satellite, to new fixed wireless configurations to ultra-fast fiber deployments. The office will continue to track and study these and other emerging options for their use in closing Minnesota's connectivity gaps. At this time, we can report:

- In 2017, grant awards, we are closely tracking deployment, costs, speeds achieved, take rates and customer satisfaction with two fixed wireless projects that are being deployed, one in Pipestone County and the other in the rural portions of Grant, Stevens and Wilkins Counties.
- Three broadband providers that were winners in the FCC's CAF II auction that concluded in August 2018 have indicated they will be using fixed wireless in their deployments. Those providers are now in the process of seeking eligible telecommunications carrier (ETC) designation from the Minnesota Public Utilities Commission in order to qualify to receive the federal funding and begin construction. The Office will work to track deployment, speeds and customer satisfaction as these systems are deployed.
- Another type of fixed wireless deployment, using spectrum white spaces, with Microsoft as a partner has gained traction in states adjacent to Minnesota. The office will monitor the results from these trials.

- Regarding satellite technology, the Office continues to hear customer dissatisfaction expressed with the pricing, data caps and latency associated with satellite broadband service, including the higher speed services that have recently become available.
- For 5G service, the standards are yet to be developed and finalized. 5G appears to be a service that will be offered in urban areas where the fiber necessary for the backhaul from these dense cell sites is available. 5G will not likely be deployed in rural areas in the foreseeable future due to the short distance that the wireless portion can travel before needing a fiber connection.

Next Steps and Recommendations – Technology

As noted above, OBD will continue to track technologies available, and attempt to collect specific performance data where we have the ability.

Federal and Other State Broadband Policy

At the federal level, both Congress and the Executive Branch have been active on broadband. OBD frequently works with federal level counterparts including the independent FCC (and its universal service program administrator, the Universal Service Administrative Company or USAC), the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce, the Rural Utilities Service of the U.S. Department of Agriculture, the Offices of U.S. Senator Amy Klobuchar and U.S. Senator Tina Smith, as well as the offices of Representative Tom Emmer and Collin Peterson.

Specific federal activities OBD monitors or actively participates include:

CAF II

The Connect America Fund (CAF) is a program within the federal Universal Service Fund that is used to help pay for communications services, including broadband, in high cost, rural areas of the country provided by price cap companies (generally the large telephone companies, which in Minnesota includes CenturyLink, Frontier, Windstream and Consolidated Holdings.) Providers must deploy service of at least 10 Mbps download and 1 Mbps upload to count the location as served. The Border to Border Broadband Infrastructure grant program has taken these investments into consideration when determining eligible applications, and as such will continue to monitor construction of these CAF II projects to confirm that consumers receive the service that CAF II recipient companies committed to provide when challenging applications to the state grant program.

Table 2 – Connect America Fund II – Price Cap Carriers Offer of Support

Company Name	# Locations to be Served by 2020	Annual Funding Received
CenturyLink	114,739	\$54 million
Consolidated Holdings	4,266	\$2.5 million

Company Name	# Locations to be Served by 2020	Annual Funding Received
Frontier	46,910	\$27.5 million
Windstream	4,440	\$1.5 million

The office’s interactive map contains a layer showing the census blocks that are eligible for CAF II funding. The four carriers, under program requirements, are to have reached at least 60 percent of the eligible locations by the end of 2018. Locations served are reported to USAC. The office is monitoring that information as it is made public. The broadband mapping program should also capture the information as reported by these companies in their mapping submissions.

ACAM

The Alternative Connect America Cost Model is a revised method of providing high cost subsidies to smaller telephone companies, often referred to as “rate of return” carriers. These companies received their revised subsidy offer from the FCC in late 2016 with the option to accept it or retain the old high cost formula for a period of time. The funds allotted for this program were oversubscribed after a majority chose the new funding model. Minnesota’s small carriers are active nationally advocating that the ACAM program be fully funded.² The ACAM program requirements are for the providers to deploy service at speeds of 25 Mbps download and 3M Mbps upload to a majority of eligible locations, with provisions for service to also be deployed at 10 Mbps download and 1 Mbps upload or 4 Mbps download and 1 Mbps upload for a minority of locations. The end date for this program is 2026.

Table 3 – ACAM for Rate of Return Companies

Company Name	Locations to be Served by 2026		Annual Funding Received (2017-2026)
	At Least 25/3	Total Locations	
Arvig	21,578	33,455	\$22,466,968
Christensen Communications Co.	117	420	\$630,898
Hanson Communications	1,280	2,466	\$2,707,453
Interstate Telecommunications Coop.	166	779	\$1,036,877

² Additional changes were ordered by the FCC in mid-December 2018 but the details were not released in time to update Table 3. The result of the FCC decision will be to increase the locations receiving at least 25/3 service and the annual funding received by carrier.

Company Name	Locations to be Served by 2026		Annual Funding Received (2017-2026)
	At Least 25/3	Total Locations	
Larson Utilities	262	1,160	\$1,483,539
Mabel Coop. Tel. Co.	192	518	\$660,042
Northern Tel. Co./Wilderness Valley Tel. Co.	33	231	\$344,871
NU Telecom	4,831	7,913	\$7,648,208
Park Region Mutual Tel. Co.	2,841	4,351	\$3,255,069
Rural Communications Holding Co. (BEVCOMM)	3,320	6,035	\$5,542,366
Rothsay Telephone Co.	24	335	\$467,044
TDS	7,524	10,788	\$5,314,611
VNC Enterprises (Dunnell Telephone Co.)	36	302	\$274,969
Wikstrom Telephone Co.	1037	6,587	\$7,068,281

As with CAF II, the Border to Border Broadband Development Grant program has taken into account the federal funding that areas of the state receive through ACAM and the interactive broadband map contains a layer showing these areas. The broadband mapping program will also capture the investments made with ACAM as these companies submit updated mapping and data information. For example, the map prepared from data submitted in early 2018 shows that Norman County has gone from largely unserved (pink) to mainly underserved (purple) due to ACAM investments.

Lifeline Reform

The FCC issued a decision in 2016 on reforms to its Lifeline program, which supports the purchase of telephone and broadband service by low income households. In that 2016 decision, broadband became a supported service, eligible for a monthly subsidy of \$9.25 and low income residents of tribal areas eligible for a subsidy of \$34.25. Under the 2016 decision, fixed providers must offer broadband service of at least 18 Mbps download and 2 Mbps upload and at least 100GB of usage per month and mobile broadband providers must offer speeds of at least 3G and 2 GB of data per month. The FCC is considering additional changes to the program and the office will continue to monitor those changes before making any additional decisions on how to promote the program for broadband adoption in Minnesota.

E-Rate Reform

The FCC issued two significant orders in 2014 reforming the E-Rate program to include broadband and additional support for broadband (including wireless) capacity. Through its work with EducationSuperhighway noted above, the Office has been monitoring and advising school districts on the status of meeting the goals established in those FCC orders and notifying districts that are not taking full advantage of this federal resource.

Federal Legislation

Several pieces of legislation were passed into law in 2018 that impact broadband. Changes to the tax code will negatively impact cooperative use of grant funding. Cooperatives could lose their tax-exempt status if they receive government grants to expand rural broadband that would cause them to exceed the requirement that 85 percent of a coop's income has to come from members.

Congress also passed the Consolidated Appropriations Act, 2018 (H.R.1625) which included \$600 million for a rural broadband pilot program of grants and loans managed by the U.S. Department of Agriculture, Rural Utilities Service (USDA RUS) under the Rural Electrification Act of 1936 intended to improve service to rural households lacking access to broadband services with speeds of 10/1 Mbps or faster. The Consolidated Appropriations Act, 2018 also included funding for the NTIA in the amount of \$7.5 million to update the National Broadband Map in consultation with the FCC and States. The Office has been involved in discussions with both the USDA RUS and the NTIA on how to formulate both programs.

BDAC

The Executive Director of the office has been actively participating on the Broadband Deployment and Advisory Committee (BDAC) formed by Chair Ajit Pai of the FCC, initially as a member of a BDAC working group but since mid-2018 as an appointed member of the full BDAC. The BDAC met in December 2018 and submitted final recommendations to the FCC.

State Policies across the United States

In addition to monitoring federal activities in order to better align state policy, OBD also monitors activities in other states to identify emerging models and determine best practices. Independent broadband mapping continues to occur in states active in the broadband policy arena, even after federal funding for mapping ended.

Several states also award broadband grants: Alabama, California, Colorado, Maine, Massachusetts, Nebraska, New Mexico, New York, North Carolina, Pennsylvania, Tennessee, Vermont, Virginia, West Virginia, Wisconsin and Wyoming. The office has provided information on Minnesota's Border to Border Broadband Grant program to several additional states that have developed or are looking to craft a legislative program (Alabama, Arizona, Idaho, Illinois, Indiana, Michigan, Missouri, Virginia, Ohio, Oregon, Kansas, Georgia, North Carolina, Rhode Island, Tennessee, Washington, Wyoming).

Next Steps and Recommendations – Federal and State Broadband Policies

The Office will continue to monitor activities at the federal level and make recommendations on options for aligning state broadband investment policy to achieve maximum benefits for Minnesotans. The Office is also a convener of state broadband office leaders and this group is used as a mechanism to share what is going on in states with an active broadband office.

Economic Impact of Broadband

In addition to the examples from the Border to Border Broadband Infrastructure grant projects which positively impact individual households and businesses as they are connected, national studies and reports show the benefits of and/or need for high speed broadband access.

- The Minnesota Chamber of Commerce identified broadband infrastructure as a component necessary for businesses to compete and succeed and noted that Minnesota needs to do more to build out broadband infrastructure in the state.³
- Internet-driven transactions account for almost 50% of the U.S. gross domestic product or \$9.6 trillion annually. These transactions are estimated to grow to over 65% by 2022 to \$14 trillion annually.⁴
- A study in Indiana found that if broadband service were extended to all locations served by rural electric coop members, the net benefit to the state would be \$12 billion (\$1 billion per year annuitized over 20 years at six percent interest). Approximately \$270 million of the \$1 billion annual benefit would be in the form of government revenue from higher tax collections and health care cost savings.⁵
- Fiber optic connections can add \$5,437 to the price of a \$175,000 home.⁶ And a study done by the University of Wisconsin – Whitewater found that the availability of internet service can add \$11,815 to the value of a \$439,000 vacation home in Door County, WI.⁷
- Rural areas need widely available and adopted broadband to attract millennials.⁸
- The Internet Innovation Alliance finds that the average American household can save \$12,019 every year by being online. The Alliance further found that while the number of “on-demand” workers was 3.8 million in 2016, it is expected to be 9.2 million workers in four years. Not all sharing economy workers

³ <http://www.mnchamber.com/benchmarks2018#2018benchmarks> at page 14.

⁴ https://www.frs.org/sites/default/files/documents/2018-03/A-Cyber-Economy_The-Transactional-Value-of-the-Internet-in-Rural-America.pdf

⁵ <https://www.pcrd.purdue.edu/files/media/006-RPINsights-Indiana-Broadband-Study.pdf>

⁶ <http://realtormag.realtor.org/daily-news/2015/07/02/study-speedy-internet-boosts-home-values>

⁷ <https://www.wra.org/WREM/Oct16/Broadband/>

⁸ <https://www.dailyonder.com/comes-broadband-millennials-vote-feet/2018/04/11/24960/>

are full time, averaging annual income of \$3.588 which covers approximately 6.26% of household spending.⁹

Next Steps and Recommendations – Economic Impact of Broadband

The office plans to document the economic impact in a more formalized process for the grant funded projects as they complete to measure economic gains.

Conclusion

This year rural communities continued to see the deployment of broadband services from the Border to Border Broadband Development Grant Program funding appropriated through 2017 as well as from federal programs such as the FCC's CAF II and ACAM funding. Despite these programs, and as documented in the mapping efforts by the office, there remain locations in Minnesota that are unserved by broadband. A state grant program continues to be necessary to help make the business case for providers to go into these unserved areas so that broadband access across all of Minnesota at the legislated speed goals can be achieved. The office looks forward to working with the Governor and Legislature in 2019 to ensure progress towards the state goals is facilitated.

⁹ <https://internetinnovation.org/wp-content/uploads/MultiplierEffectBroadbandWhitepaper.pdf>