EMPLOYMENT AND ECONOMIC DEVELOPMENT

Office of Broadband Development

Annual Report
January 15, 2020

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Table of Contents

Introduction and 2019 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 sixth 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. Border-to-border high speed Internet access is the goal throughout Minnesota. The Broadband Office connects communities, policy makers, providers, regional support organizations, and state and federal programs with each other and the resources they need to improve broadband access and use in Minnesota.

2019 milestones for the Office included: closing out 41 projects from the last two rounds of the grant program; conducting 43 broadband infrastructure grant project site visits; coordinating the K-12 Connect Forward Work Group that assisted schools in achieving fiber connectivity; continuing 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 2019 include:

- Launched a $20 million grant round and evaluated 78 applications for the Border to Border Broadband Infrastructure grant program. Grant awards to be announced in January 2020.
- Launched a new program: Telecommuter Forward! Community certification program.
- Updated broadband availability maps in April and October.
- Participated in 34 state and 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 the permitting process for broadband construction.
- Assisted in planning and executing the Blandin Conference, *Border to Border Broadband: Innovation: Putting Broadband to Work.*
- Conducted 43 site visits to review Border to Border grant projects in process, from Bejou to Balaton and Fayal to Fountain.
- Met with four local groups to provide technical assistance on broadband issues, including the state grant program.
- Provided broadband availability analysis to over 115 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.
- Assisted the Governor's Office in establishing the Walz/Flanagan administration's Governor's Task Force on Broadband and provided support for the first meeting in December 2019.
- Supported policy makers on broadband discussions throughout the 2019 legislative session.
- Continued outreach with electric coops and how they might help their customers overcome rural broadband challenges.
- 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 Programs

OBD administers two specific programs that support infrastructure development: the Minnesota Border to Border Broadband Development Grant program and the new Telecommuter Forward! Communities Certification program.

Border to Border Broadband Development Grant Program

2019 Grant Program Update

OBD received 80 applications for the $20 million in broadband grant funding appropriated during the 2019 legislative session; Two applications were received after the application deadline, 78 applications were evaluated. Grant awards were not yet announced as of the drafting of this report; however, awards will be announced by the end of January 2020.

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

Four rounds of funding were awarded by the legislature between 2013 and 2018. No funding was appropriated for this program in 2018, consequently, the grant program was not offered.

- 2014 and 2015: All projects have been constructed and closed out.
- 2016: 40 projects have been constructed and 36 projects closed out. Four projects will close out by January 31, 2020.

- 2017: Five projects were constructed and closed out. 34 projects are in process and scheduled to be complete in 2020.

Telecommuter Forward! Community Certification Program

OBD launched the Telecommuter Forward! Community Certification program in December 2019 and will begin certifying communities in 2020. Telecommuter Forward! certification recognizes communities that meet criteria for promoting telecommuting opportunities in partnership with broadband providers, economic development professionals, and OBD.

Any political subdivision (city, township, or county) in Minnesota that supports and commits to promote the availability of telecommuting options is eligible for the Telecommuter Forward! Community Certification and may apply through the Office of Broadband Development. The political subdivision must demonstrate compliance with the statutory requirements under Minn. Stat. 116J.9923. The Office of Broadband Development has created a model resolution that satisfies the minimum statutory requirements to assist communities in this effort.

Monitor and Measure

Minnesota Broadband Mapping Program

The OBD engaged in its fifth year of independently mapping broadband access and speeds across Minnesota in 2019. 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).

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.

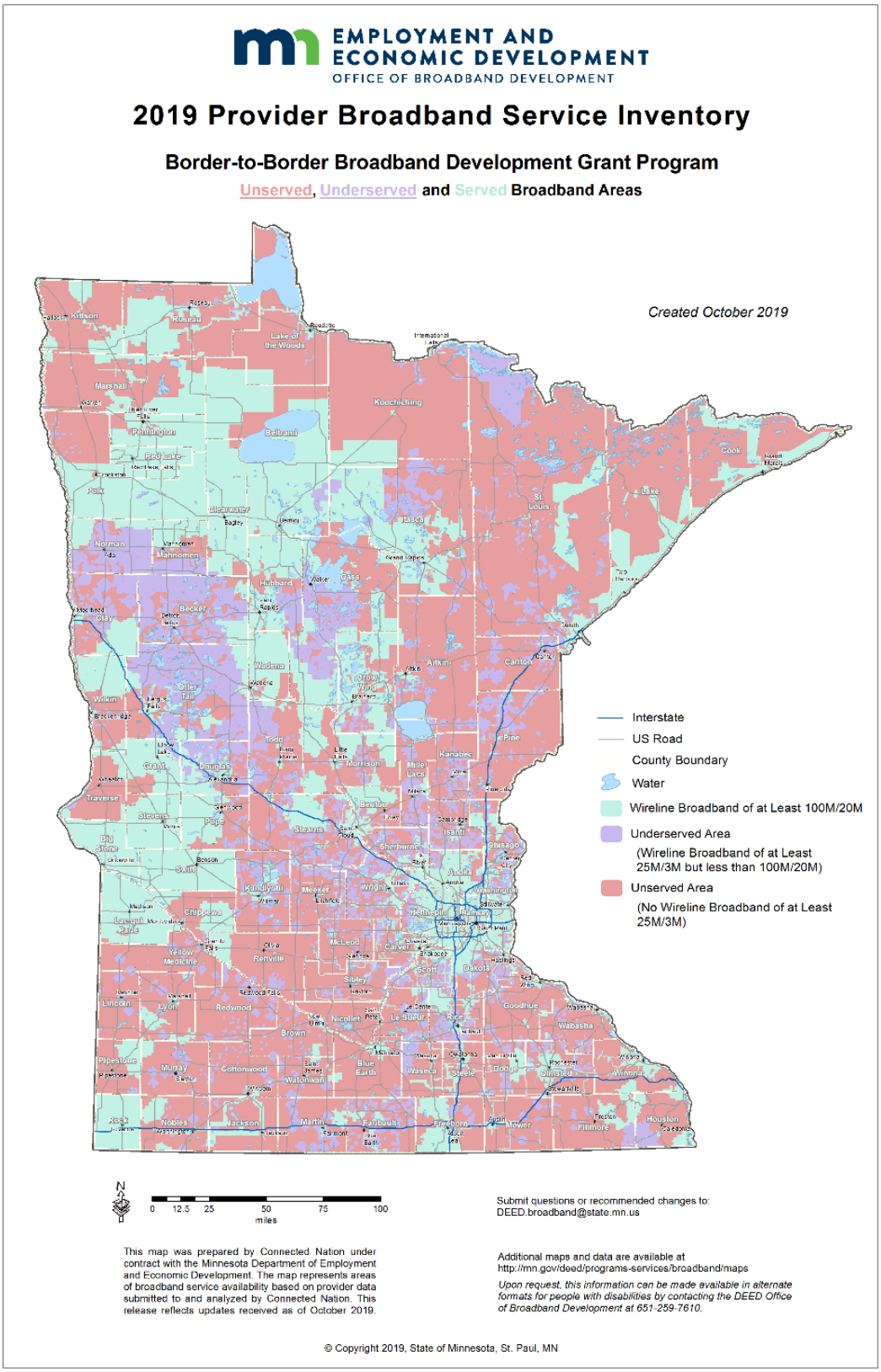
The most recent round of data collection shows that progress is being made towards these goals.

Table 1 – Wireline Broadband Availability

Statewide 25/3 % of HH: **# of HH without:**	**85.83% covered** **296,000 HH w/o**	**87.53% covered** **260,000 HH w/o**	**88.11% covered** **248,000 HH w/o**	**91.13% covered** **185,000 HH w/o**	**92.79% covered** **150,000 HH w/o**
Non-metro 25/3 % of HH: # of HH without:	68.08% covered 286,000 HH w/o	72.03% covered 251,000 HH w/o	73.45% covered 238,000 HH w/o	80.07% covered 179,000 HH w/o	83.92% covered 144,000 HH w/o
Statewide 100/20 % of HH: # of HH without:	39.14% covered 1,270,000 HH w/o	68.53% covered 657,000 HH w/o	70.04% covered 625,000 HH w/o	74.11% covered 540,000 HH w/o	86.10% covered 290,000 HH w/o
Non-metro 100/20 % of HH: # of HH without:	40.68% covered 532,000 HH w/o	49.33% covered 455,000 HH w/o	52.88% covered 423,000 HH w/o	60.05% covered 358,000 HH w/o	68.74% covered 280,000 HH w/o

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

Figure 1 – 2019 Map of Broadband Availability in Minnesota



The 2019 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 2020.

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 – 2019 Township Heat Map of % HH Served at State Border to Border Broadband Speed Goal for 2022

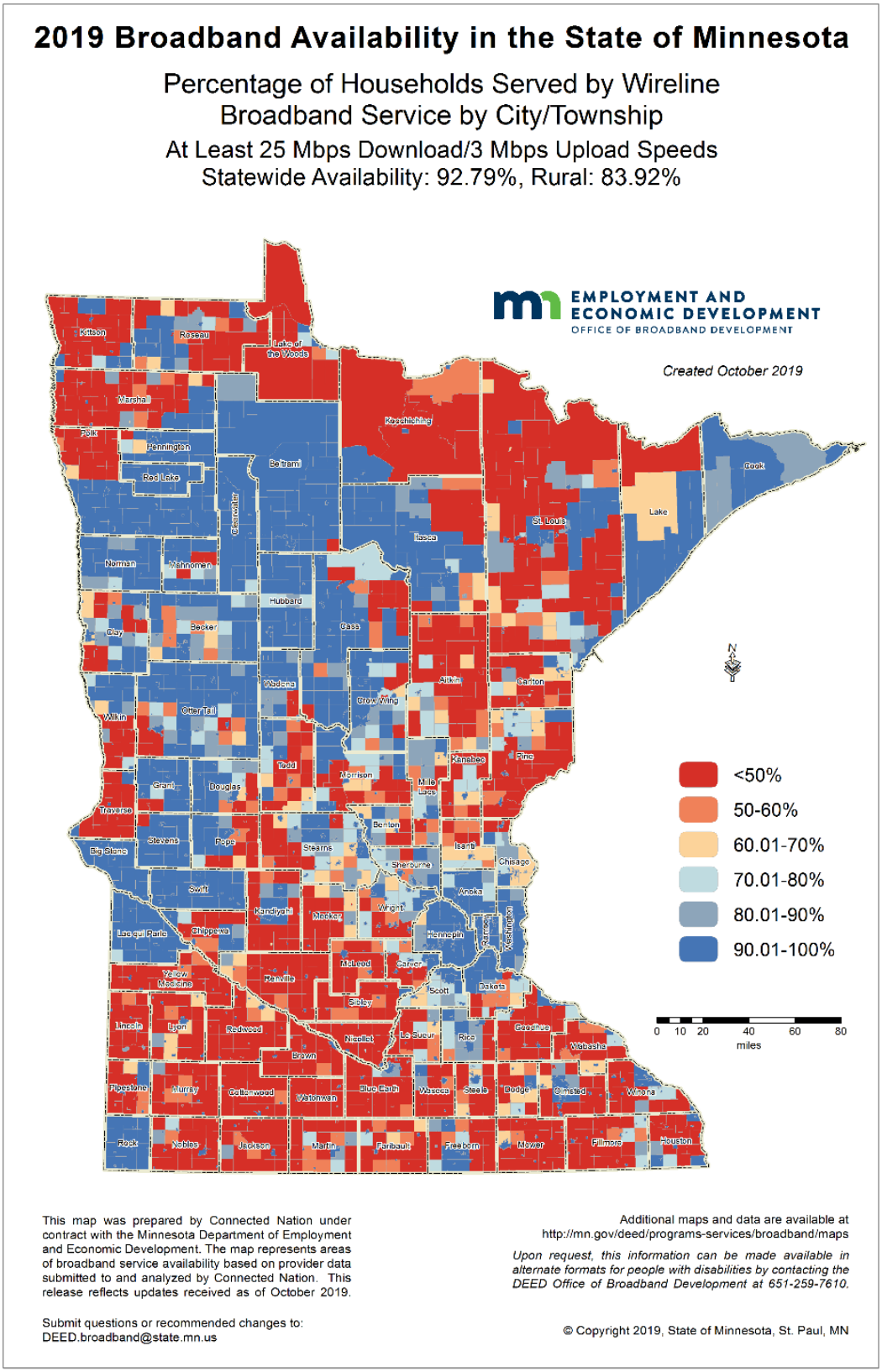
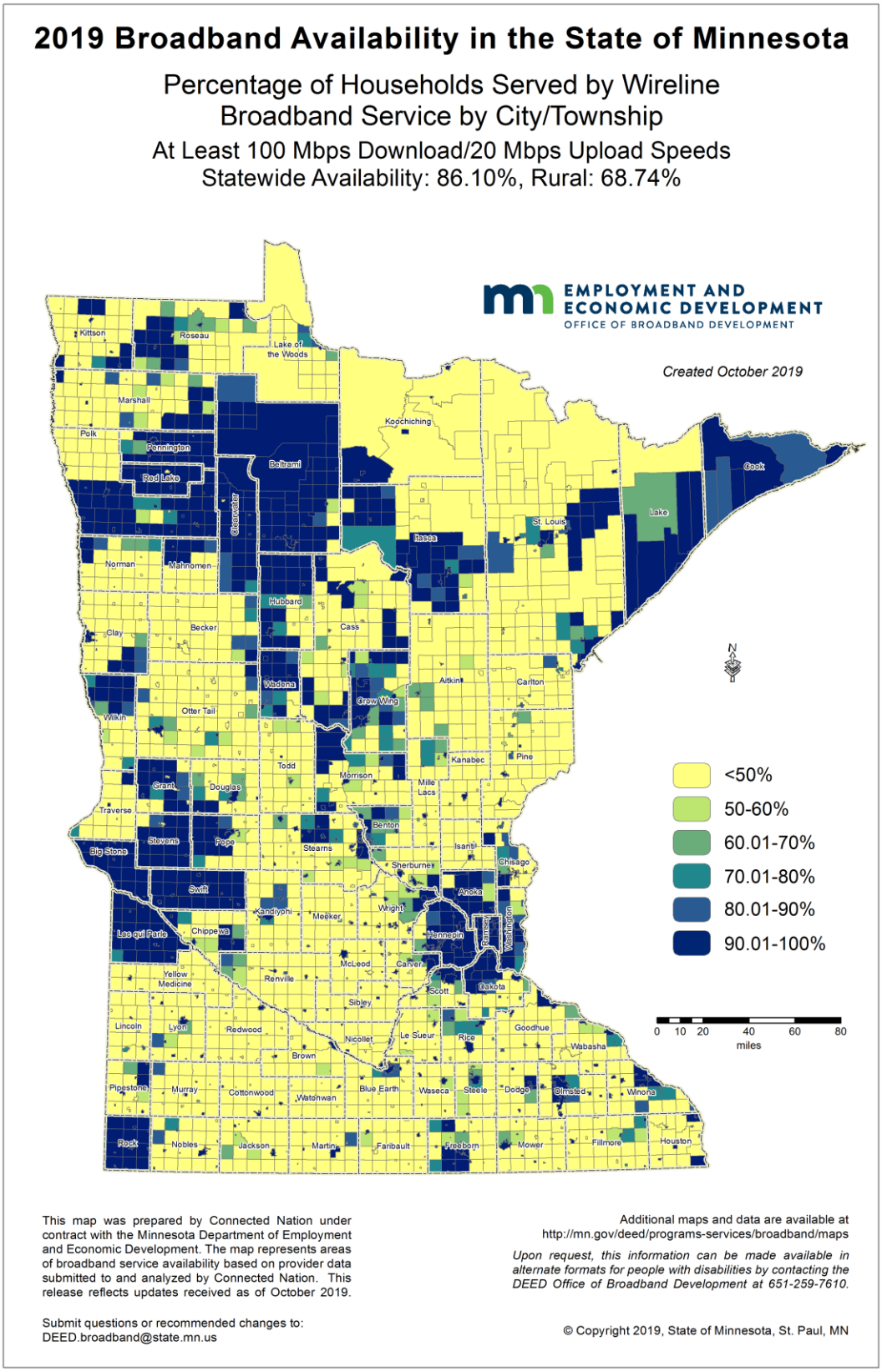


Figure 3 – Township Heat Map of % HH Served at State Border to Border Broadband Speed Goal for 2026



As of 2019, 86.10 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 68.74 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 2020.

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 subsequent one year extensions for both 2019 and 2020. 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. Minnesota was one of eight initial states that collaborated with NTIA to create a pilot version of the map, a geographic information system platform that allows for the visualization of federal, state, and commercially available data sets. The map will be made available exclusively to state and federal partners, as it includes non-public data that may be business sensitive or have licensing restrictions. 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. Congress is also considering legislation that would modify how the FCC prepares its map of broadband coverage, which may pass in 2020.

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.

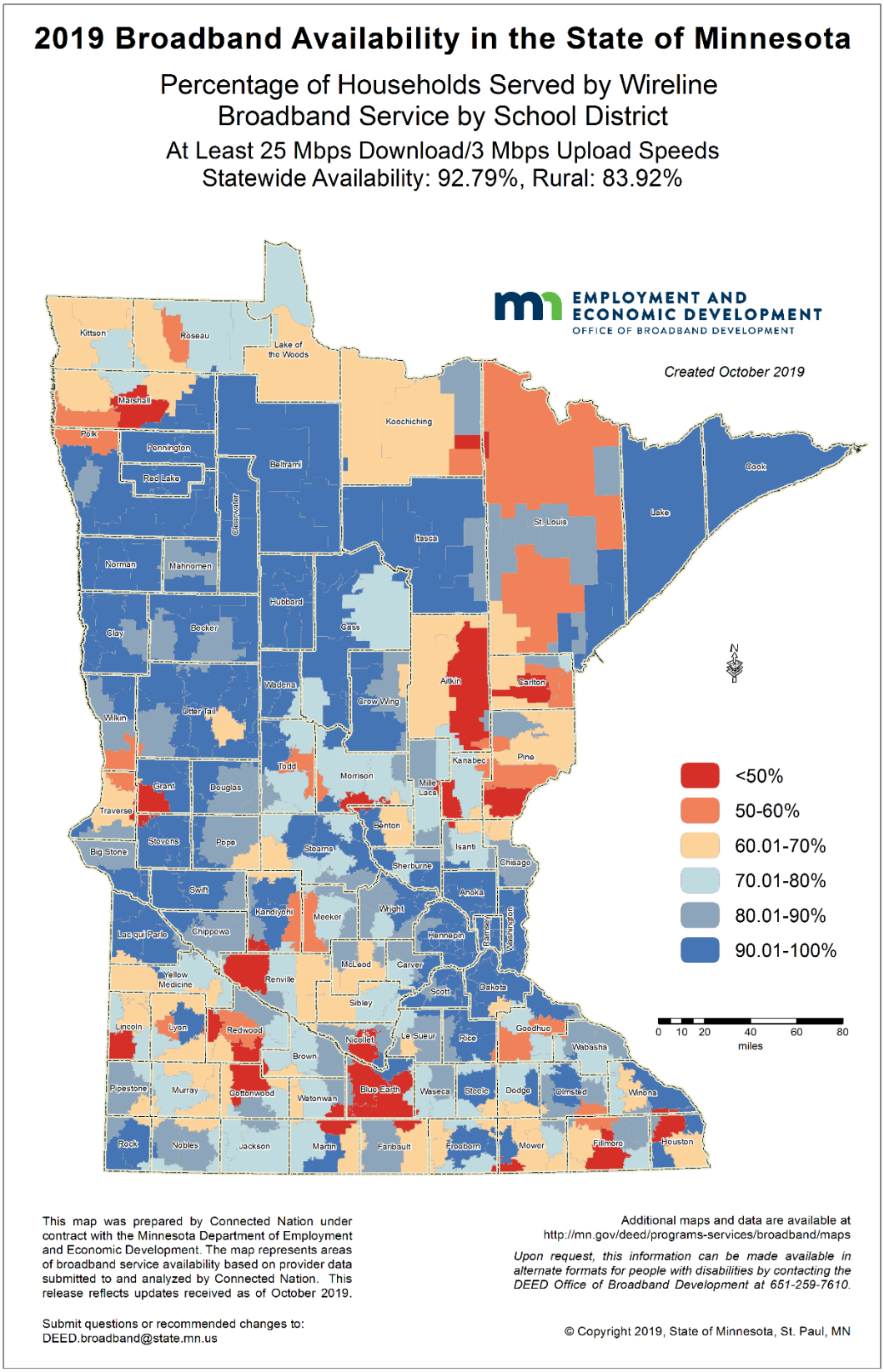
Significant progress has been made to increase the number of schools with fiber broadband connections; ensuring they can scale service to meet increasing demand often at a lower cost per megabit. Only a handful of districts remain that lack fiber access to one or more buildings and EducationSuperHighway's resources are offered in these situations.

In 2019, the Office 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.

Minnesota's K-12 Connect Forward Initiative was included as a case study in the State Educational Technology Directors Association's (SETDA's) recent white paper "Broadband Imperative III" at page 19: https://www.setda.org/wp-content/uploads/2019/11/SETDA_Broadband-Imperative-III_110519.pdf

Separate from connectivity at school facilities, and recognized as critically important, is the issue of students' home broadband access, often referred to as the homework gap. 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 4 – Heat Map of Percentage of HH Served at the 2022 State Goal by School District



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 July 2019 report, Minnesota Public Library Report, 2018 Key Statistics, the data shows that libraries provided 6,702 internet computers—5,739 desktops and 963 mobile devices—for public use. Ninety-nine percent of public libraries offered wireless internet service. Library customers went online during 11.3 million computer and wireless sessions. 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, but they are reviewing eligible expenditures.

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.

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. 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 (EHR) 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. When the e-Health Initiative was established in Minnesota approximately 17% of clinics and 9% of hospitals in the state had adopted EHRs. Now 100% of Minnesota Hospitals and 99% of clinics are using EHRs, and numbers are growing for health providers from other settings. 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 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.

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

In awarding Border to Border Broadband grants, DEED requests 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]

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

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 2019, the Office continued to monitor this process and worked with both MNDOT and MNDNR when broadband providers believed the issuance of their permits was unreasonably delayed.

In 2019 OBD participated in Connected and Automated Vehicle (CAV) meetings coordinated by MNDOT. OBD involvement is related to planning for the broadband infrastructure necessary to support this technology.

[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.

Connected vehicles use technology to either communicate with each other, connect with traffic signals, signs, and other road items, or obtain data from a cloud. This information exchange will help with safety and improve traffic flow. Automated vehicles will use technology to steer, accelerate, and brake with little to no human input. Some vehicles still require a human to monitor the roadway, while other vehicles require no human intervention. This work will continue in 2020.

Broadband and Tribal Outreach

With the grant program again being funded in 2019, the Office was able to reach out to tribal representatives to inform them of the availability of grant funding for broadband infrastructure. Outreach also included presenting at the Minnesota Indian Affairs Council's (MIAC's) quarterly meeting on June 4, 2019. Four of the 78 grant applications filed in 2019 included deploying broadband infrastructure on tribal lands.

DEED has also been actively encouraging MIAC to refer a candidate to the Governor's Office for appointment to the broadband task force. It is anticipated that a tribal representative will be named to the task force in 2020.

The Office is also working with DEED's tribal liaison to ensure that broadband in tribal areas is accurately reflected on Minnesota's broadband service inventory maps.

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 increasing interest by Minnesota's electric coops, including:

- 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 in 2019 applying for a Border to Border broadband grant to deploy fiber to the home in several townships in St. Louis County;
- Meeker Coop constructing a fixed wireless broadband offering marketed under the name Vibrant Broadband and applying for state grant funding to provision fiber to the home.
- MiEnergy Cooperative partnering with Mabel Cooperative Telephone Company and Spring Grove Communications to deploy fixed wireless service in portions of southeastern Minnesota and in 2019 applying for state grant funding;
- 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 and applying for an additional grant in 2019: and

- Roseau Electric being named a winning bidder to serve 326 locations with fiber to the home in the FCC's CAF II auction that concluded in August 2018 and applying for state grant funding in 2019.

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:

- OBD is 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.
- 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, as well as the offices of Minnesota's federal delegation.

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 takes 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
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 80 percent of the eligible locations by the end of 2019. 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. The ACAM program requirements are for the providers to deploy service at speeds of 25 Mbps download and 3 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
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.

ACAM II

Established by the 2018 Rate-of-Return Reform Order, the Alternative Connect America Cost Model (ACAM) II provides funding to rate-of-return carriers that voluntarily elected to transition to a new cost model for calculating High Cost support in exchange for meeting defined broadband build-out obligations. Carriers that elected this option receive predictable monthly payments based on support of up to $200 for each funded location over the program's 10-year support term (2017-2026). Participating carriers must meet annual deployment milestones starting in year four, 2022.

Table 4 – ACAM II for Rate of Return Companies

Company	# Locations to be Served by 2029	Annual Amount
Ace Telephone Association	2,625	$297,283
Albany Mutual Telephone Association	2,376	$174,183
Alliance Communications Cooperative, Inc.	667	$51,874
Benton Cooperative Telephone Company	3,724	$259,215
Consolidated Telephone Company	7,965	$516,285
City of Barnesville Municipal Telephone	545	$10,327
Emily Cooperative Telephone Company	1758	$77,442
Federated Telephone Cooperative	2,122	$339,287
Farmers Mutual Tel	1,094	$169,362
Gardonville Cooperative Telephone Association	3,090	$211,974
Garden Valley Telephone Company	10,737	$1,361,026
Halstad Telephone Company	707	$109,830
Harmony Telephone Company	583	$57,846
Johnson Telephone Company	3,063	$236,331
Kasson & Mantorville Telephone Company	1,574	$155,809
Lonsdale Telephone Company	710	$46,681
Lismore Cooperative Telephone Company	382	$57,697
Manchester-Hartland Telephone Company	79	$12,074
New Ulm Telecom, Inc.	834	$18,152
Paul Bunyan Rural Telephone Cooperative	13,727	$1,150,140
Polar Communication Mutual Aid Corporation	182	$26,192
Runestone Telephone Association	3,627	$442,921
Spring Grove Communications	531	$77,768
Tri-Co Technologies, LLC	678	$9,983
Upsala Cooperative Telephone Association	1,157	$120,771

Company	# Locations to be Served by 2029	Annual Amount
Woodstock Telephone Company	1,067	$141,671
Winnebago Cooperative Telephone Association	688	$78,248
West Central Telephone Association	3,712	$421,016

CAF II Auction

The Connect America Fund Phase II (Phase II) is part of the FCC's reform and modernization of its universal service support programs. In 2018, the FCC conducted an auction (Auction 903) to allocate Phase II support to certain eligible areas across the United States. 103 bidders won $1.49 billion over 10 years to provide fixed broadband and voice services to over 700,000 locations in 45 states.

During 2019, OBD tracked the winning bidders' progress in achieving ETC designation and completing required filings with the FCC. The Office looks forward to the construction that will occur in 2020 with CAF II auction funding.

Table 5– CAF II Auction Companies

Company Name	# Locations to be Served	Annual Funding Received
Broadband Corp	128	$42,812
Consolidated Telephone Company	358	$93,493
Farmers Mutual Telephone Company	163	$34,899
Federated Telephone Cooperative	808	$143,104
Fond du Lac Reservation Business Committee	13	$5,501
Garden Valley Telephone Company	95	$88,035
Halstad Telephone Company	7	$1,964
Interstate Telecommunications Cooperative, Inc.	209	$55,233

Company Name	# Locations to be Served	Annual Funding Received
Jaguar Communication, Inc.	672	$51,059
Johnson Telephone Company	47	$8,127
LTD Broadband LLC	840	$110,444
Midcontinent Communications	7,410	$2,797,728
Paul Bunyan Rural Telephone Cooperative	315	$131,354
Roseau Electric Cooperative, Inc.	326	$208,177
West Central Telephone Association	532	$61,193
Wikstrom Telephone Company	56	$53,256

USDA Community Connect Grants

The USDA also offers a Community Connect grant program to construct broadband services in rural areas lacking service of at least 10 Mbps download and 1Mbps upload. A portion of the funding is used to provision free broadband access at critical community facilities. The Fond du Lac Band of Superior Chippewa benefitted from this grant program in 2015 and 2017.

In November 2018, Consolidated Telephone Company received a $2.1 million grant to construct a fiber-to-the-home broadband system to bring high-speed internet service to 250 households, eight businesses and a community center in Todd County. Because of this project, the community center, located within Moran Township Town Hall, will be able to provide free public access to two computer terminals and a public WiFi network. Additionally, this project will ensure previously underserved residents and businesses better access to improved economic, healthcare, and education e-Connectivity services. Project construction began in the spring of 2019.

In October 2019, the USDA announced an award of $1,953,464 to Mille Lacs Energy Cooperative (MLEC) to construct a fiber-to-the-premises network to 235 establishments in portions of Rice River Township and Spaulding Township in Aitkin County, Minnesota. This includes tribal land and facilities of the Mille Lacs Band of Ojibwe. Mille Lacs Energy Cooperative, located in Aitkin, Aitkin County, Minnesota, will construct a broadband network to support service at levels up to 1 Gbps for each subscriber.

USDA ReConnect

The USDA's Broadband ReConnect Program offers federal financing and funding options in the form of loans, grants, and loan/grant combinations to facilitate broadband deployment in areas of rural America that don't currently have sufficient access to broadband, defined by the law as 10 Mbps (megabits per second) downstream and 1 Mbps upstream. While three applications for projects in Minnesota were submitted, as of the drafting of this report, no ReConnect funds have been awarded in Minnesota. The funding window for the second round of the ReConnect programs opens on January 31, 2020.

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. In 2019, the FCC permanently extended the Category 2 budget approach. Through its work with EducationSuperHighway noted above, the Office has been monitoring and advising school districts on the implications of these FCC orders and notifying districts that are not taking full advantage of this federal resource.

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.

Many states also award broadband grants: Alabama, Arkansas, California, Colorado, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New Mexico, New York, North Carolina, Pennsylvania, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin and 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.

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.

- In 2019, 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.[1]

- 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.[2]

- According to the USDA, digital technologies could create approximately $47–$65 billion annually in additional gross benefit for the U.S. economy. USDA estimates that rural broadband connectivity is the driver of more than one-third of that economic benefit or $18-$23 billion per year.[3]

- Fiber optic connections can add $5,437 to the price of a $175,000 home.[4] 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.[5]

- Rural areas need widely available and adopted broadband to attract millennials.[6]

- 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 are full time, averaging annual income of $3.588 which covers approximately 6.26% of household spending.[7]

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

[1] https://www.mnchamber.com/sites/default/files/2020%20Business%20Benchmarks.pdf at page 14.
[2] https://www.frs.org/sites/default/files/documents/2018-03/A-Cyber-Economy_The-Transactional-Value-of-the-Internet-in-Rural-America.pdf
[3] https://www.usda.gov/sites/default/files/documents/case-for-rural-broadband.pdf
[4] http://realtormag.realtor.org/daily-news/2015/07/02/study-speedy-internet-boosts-home-values
[5] https://www.wra.org/WREM/Oct16/Broadband/
[6] https://www.dailyyonder.com/comes-broadband-millennials-vote-feet/2018/04/11/24960/
[7] https://internetinnovation.org/wp-content/uploads/MultiplierEffectBroadbandWhitepaper.pdf

broadband access across all of Minnesota at the legislated speed goals can be achieved. The Office will, again, offer the Border to Border Broadband Development Grant program in 2020 with the $20 million appropriated in the 2019 legislative session for fiscal year 2021. The Office will also work with the Governor, the Legislature, the task force and other stakeholders in 2020 to ensure that progress toward state goals is facilitated.