Rural Broadband Task Force Meeting
September 8, 2021

Meeting Documents for Rural Broadband Task Force Report

Meeting Document	Page	Task Force Report	Sept. 8, 2021 Meeting
Progress Report on 2019 Recommendations and Metrics	2	Highlights will be included in the introductory section of the plan. The complete document will be included in appendix	Comments and suggestions are welcome.
Rural Broadband Availability in Nebraska	11	Information from this document will be included in the plan.	Comments and suggestions are welcome.
Broadband Data and Mapping Findings and Recommendations	18	Information from this document will be included in the plan.	Needs approval
Alternative Technologies and Providers Findings	20	Information from this document will be included in the plan.	Needs approval
Nebraska Universal Service Fund and Reverse Auction Findings and Recommendations	21	Information from this document will be included in the plan.	Needs approval
Broadband Technician Workforce Findings and Recommendations	24	Information from this document will be included in the plan.	Needs approval
Public-Private Partnerships and Broadband Planning Findings and Recommendations	25	Information from this document will be included in the plan.	Needs approval
Agriculture Findings and Recommendations	29	Information from this document will be included in the plan.	Needs approval
Digital Inclusion, the Homework Gap, and Leveraging E-Rate Funding Findings and Recommendations	32	Information from this document will be included in the plan.	Needs approval
Appendix: Broadband Technologies		Will be included as an appendix to the plan	Comments and suggestions are welcome
Appendix: NUSF Overview		Will be included as an appendix to the plan	Comments and suggestions are welcome
Appendix: Agriculture Findings and Recommendations		An updated version will be included as an appendix to the plan https://ruralbroadband.nebraska.gov/reports/2021/AgricultureSubcommitteeInitialFindings.pdf	Comments and suggestions are welcome

Rural Broadband Task Force

Progress on Recommendations and Metrics

August 31, 2021

The Rural Broadband Task Force would like to thank Governor Ricketts, the Nebraska Legislature, the Nebraska Public Service Commission, Nebraska Department of Economic Development, Office of the Chief Information Officer, Nebraska Information Technology Commission, Nebraska Library Commission, Nebraska Department of Education, and other entities in Nebraska for their efforts to implement recommendations of the Rural Broadband Task Force.

Highlights

$29.5 million in grants was awarded to 60 projects bringing broadband to 17,600 households through the Remote Access Rural Broadband Grant Program. The grant program was funded by the CARES Act and administered by the Nebraska Department of Economic Development.

LB 388 which was passed by the Legislature and signed by Governor Ricketts on May 26, 2021 created the Broadband Bridge Grant Program. $20 million a year for two years was appropriated for the program. The deadline for the first round of applications is Oct. 1, 2021.

Since 2019, 19,583 households have been connected through broadband projects funded through the Nebraska Universal Fund.

LB 338 improved the accountability of the Nebraska Universal Service Fund by specifying build out requirements of 100 Mbps down and 100 Mbps up and by requiring recipients to conduct and submit speed tests.

Reforms to the NUSF contribution method for residential services increased remittances from $32.8 million in 2018 to $46.8 million in 2020. On May 11, 2021, the Nebraska Public Service Commission approved an order reforming the NUSF contribution method for business services to a per connection surcharge of $1.75 effective Jan. 1, 2022.

The Public Service Commission is taking steps to initiate a reverse auction of $3 million in NUSF support allocated to Frontier.

The Nebraska Public Service Commission established the E-Rate Special Construction Matching Program in 2020. Public libraries in Bancroft, Bayard, Beatrice, Clay Center, Verdigre, and Wymore and the Southwest Public Schools' Elementary School at Indianola were successful in getting fiber for the first time in 2021-22 through the program.

Governor Ricketts, the Nebraska Department of Education, Educational Service Units, and local school districts coordinated federal funding to purchase computing devices, hot spots, and internet-enabled devices as well as implement connectivity projects.

LB 992 made the process of leasing dark fiber less burdensome. LB 992 also specified that leases of dark fiber to provide broadband in unserved areas do not need to contribute a portion of the proceeds

to the Nebraska Universal Service Fund**.** LB 992 was passed by the Legislature and signed by Governor Ricketts on August 15, 2020.

LB 992 established a process to use private utility easements for communications.

Progress on Public-Private Partnership Recommendations and Metrics

Identify funding for public-private partnerships.

- ***$29.5 million in grants was awarded to 60 projects bringing broadband to 17,600 households through the Remote Access Rural Broadband Grant Program.*** *The grant program was funded by the CARES Act and administered by the Nebraska Department of Economic Development.*
- ***LB 388 which was passed by the Legislature and signed by Governor Ricketts on May 26, 2021 created the Broadband Bridge Grant Program.*** *$20 million a year for two years was appropriated for the program. The deadline for the first round of applications is Oct. 1, 2021.*

Establish a state broadband coordinator position to provide assistance to local and regional broadband coordinators and to coordinate with state agencies, telecommunications providers, local governments and other stakeholders.

- ***LB 992 which was passed by the Legislature and signed by Governor Ricketts on August 15, 2020 established a state broadband coordinator effective on July 1, 2022.*** *The Legislature did not include funding for the coordinator position in the OCIO's general funds.*

Encourage local and regional broadband planning.

- ***Broadband planning resources have been developed.*** *Several entities including the Nebraska Information Technology Commission Community Council, Nebraska Library Commission, Nebraska Department of Economic Development, Nebraska Public Service Commission, and the University of Nebraska partnered to develop resources to encourage broadband planning, including:*
  - *Broadband case studies (NITC Community Council)*
  - *County broadband fact sheets (Nebraska Library Commission and NITC Community Council)*
  - *Six Steps to Better Broadband (NITC Community Council and Nebraska Broadband Initiative)*
  - *Digital Inclusion Planning Guide and Workbook (NITC Community Council)*

Retain the existing prohibition on retail provision of broadband service by public entities.

- ***LB 992 retained the existing prohibition on retail provision of broadband by public entities****.*

The public power industry, telecommunications industry, and the Transportation and Telecommunications Committee should work together to reach an agreement on what steps which should be taken to make it less burdensome for public entities to lease dark fiber.

- ***LB 992* made the process of leasing dark fiber less burdensome.** *LB 992 also specified that leases of dark fiber to provide broadband in unserved areas do not need to contribute a portion of the proceeds to the Nebraska Universal Service Fund.*

The NREA and NPPD should work with the members of the Transportation and Telecommunications Committee to explore legislation clarifying communications as an approved use for private easements set up for telephone and electric use.

- ***LB 992* established a process to use private utility easements for communications.**

Encourage communications planning between telecommunications providers and public entities, such as public power districts and other private entities, such as cooperatives. This could be done in a number of ways, including:

- Convening local or regional meetings of telecommunications providers and public power districts to explore how the communications needs of public power could be leveraged to improve broadband availability in rural areas.
- Developing a joint RFP for public power districts which could be put out for bid by Network Nebraska or the Nebraska Office of the CIO.
    - ***NPPD and NRTC have worked with Loup Power District/Cornhusker Public Power District, South Central Public Power District, and NPPD's Retail Division to issue an RFI and complete feasibility studies.***

Encourage each county or region to have a broadband coordinator to facilitate broadband planning and coordination.

- *No action taken*

Explore the creation of broadband cooperatives in unserved and underserved localities.

- *No action taken*

Explore the creation of a statewide broadband association. The association could include telecommunications providers, public power districts, schools, hospitals, municipalities, counties, and other stakeholders interested in advancing broadband in Nebraska. The association could convene regional and statewide discussions and develop and distribute resources such as model or sample agreements.

- *No action taken*

Encourage local governments to review their rights of way and permitting processes and take steps if necessary to make the processes less burdensome for telecommunications providers.

- *No action taken*

Public-Private Partnership Metrics

Measure	2019 Report	2021 Report
Number of leases of dark fiber from public entities	1 July 2019, Nebraska Public Service Commission	1 August 2021, Nebraska Public Service Commission
Number of projects funded through state grant programs*	N/A	60 Remote Access Rural Broadband Grant Program 2020
Number of households and businesses connected through state grant programs*	N/A	17,600 households Remote Access Rural Broadband Grant Program 2020
Total amount of grant funding awarded*	N/A	$29.5 million Remote Access Rural Broadband Grant Program 2020

**New Metric for 2021*

Progress on NUSF Recommendations and Metrics

Support the Nebraska Public Service Commission's efforts to stabilize the Nebraska Universal Service Fund by modernizing the contribution system.

- **Reforms to the NUSF contribution method for residential services increased remittances from $32.8 million in 2018 to $46.8 million in 2020.** *On May 11, 2021, the Nebraska Public Service Commission approved an order reforming the NUSF contribution method for business services to a per connection surcharge of $1.75 effective Jan. 1, 2022.*

Support the Nebraska Public Service Commission's efforts to modernize the distribution method and improve provider accountability through the system of grant-like awards for broadband infrastructure projects.

- ***LB 338 improved the accountability of the Nebraska Universal Service Fund by specifying build out requirements of 100 Mbps down and 100 Mbps up and by requiring recipients to conduct and***

submit speed tests. *LB 338 was passed by the Legislature and signed by Governor Ricketts on May 5,2021*

Encourage the Nebraska Public Service Commission to continue to investigate, through their Rules and Regulations 202 docket, a state-run reverse auction as a mechanism to spur broadband build out in rural areas.

- ***The Public Service Commission is taking steps to initiate a reverse auction of $3 million in NUSF support allocated to Frontier.*** *On November 4, 2020, the Commission approved an order initiating a challenge process. The order required carriers to provide notice of projects that use 95% of their available buildout support for that year. If that threshold is not met, any remaining support would be forfeited to fund a reverse auction to bring 25/3 broadband to exchanges within that carrier's territory that do not have projects planned.*

  Price cap carriers were required to notify the Commission how they planned to use their broadband deployment support for 2021 by July 16, 2021. Approximately $3 million of support allocated to Frontier is expected to be redirected in 2022.

Encourage the Nebraska Public Service Commission to explore alternate methods for redirecting support that allow for more collaboration between not only the incumbent and competitive carriers, but also the local business community, both main street and agriculture, as well as hospitals, schools, libraries, municipalities, counties, and public power providers.

- ***LB 338 authorized redirection of support via rural-based plan.***

Monitor the implementation of the FCC's Connect America Fund II Reverse Auction to evaluate the success of the program and to identify any key lessons learned.

- ***The NUSF Subcommittee received update on CAF II buildouts.*** *Members of the Rural Broadband Task Force's NUSF Subcommittee met with representatives of NextLink on February 2, 2021 to get an update on NextLink's build out of its CAF II reverse auction requirements. NextLink representatives told subcommittee members that NextLink is on schedule to meet its buildout requirements.*

NUSF Metrics

NUSF		
Measure	**2019 Report** Nebraska Public Service Commission	**2021 Report** Nebraska Public Service Commission
Annual contributions to the Nebraska Universal Service Fund (By Calendar Year)	2017 - $35,321,380 2018 - $32,796,228 2019 - $18,333,749 (Through 1st Half, 2019)	2019 - $43,915,240 2020 - $46,796,572 2021 - $22,951,506 (Through June, 2021)
Annual allocations from the Nebraska Universal Service Fund (By Calendar Year)	2017 – $40,087,483 2018 - $33,139,591	2019 – $42,040,143 2020 - $45,674,733 2021 - $45,300,854
NUSF-108 (Rate of Return Carrier) project-specific households covered, by year		2019 – 500 2020 – 1,020 2021 – 367 (for project notices received through July, 2021)
NUSF-99 (Price Cap Carrier) project-specific households covered, by year	2017 – 643 2018 – 1,981	2019 – 7,769 2020 – 6,833 2021 – 3,094

Progress on Broadband Mapping Recommendations

Leverage the FCC's Digital Opportunity Data Collection program or an alternate broadband mapping program created through federal legislation to improve Nebraska's broadband map.

- The ***FCC and Congress have taken steps*** ***to improve broadband data collection, but the FCC has not yet begun collecting broadband deployment data from all providers.***
  - *Congress passed the Broadband Data Act in March 2020 and provided the FCC with funding in late December 2020.*
  - *The FCC is working with a number of broadband providers to obtain data to expedite the development of the IT systems and data structures and to help develop training and outreach for providers.*
  - *The FCC has launched a demo of a new mobile wireless map with coverage information from AT&T, T-Mobile, U.S. Cellular and Verizon.*

The Nebraska Information Technology Commission, Nebraska Public Service Commission and other stakeholders should explore strategies to encourage Nebraskans to participate in crowdsourcing efforts developed to enhance federal broadband mapping.

- ***LB 996* authorized the PSC to collect crowdsourced data and implement the Broadband Data Improvement Program.** *LB 996 was passed by the Legislature and signed by Governor Ricketts on July 24, 2020.*
- ***The Nebraska Regional Officials Council, UNK Rural Measures Project and the FCC have established speed test programs.***

Progress on Homework Gap Recommendations and Metrics

Encourage school districts, ESUs, public libraries, and communities to implement programs such as Wi-Fi on buses, hotspot lending programs, low cost pay-by-the-month internet access, or TV White Space deployments for student access on school-issued devices in order to reduce the number of unserved and underserved students.

- ***Governor Ricketts, the Nebraska Department of Education, Educational Service Units, and local school districts coordinated federal funding to purchase computing devices, hot spots, and internet-enabled devices as well as implement connectivity projects.***
  - *The ESU Coordinating Council has estimated that the Governor's Emergency Education Relief (GEER) Fund has reimbursed for 30,209 computing devices for public and nonpublic schools, 3,862 computing devices for exempt (home) schools and 3,411 hotspots overall.*
  - *Omaha Public Schools and other school districts have secured an additional 60,000 internet-enabled computing devices using ESSER funding.*
  - Nebraska public school districts submitted 92 applications for the FCC's Emergency Connectivity Fund, totaling $19,896,915 in potential reimbursements, with a majority of the requests going for internet-enabled computing devices.
  - *Pilot projects of wireless internet service for student homes included:*
    - *Nebraska Indian Community College, in partnership with the school districts of Bancroft-Rosalie, Pender, Santee, Umo N Ho Nation, and Walthill, created the Northeast Nebraska Tribal Educational Broadband Services (NNTEBS) project which brought Private LTE over EBS (2.5GHz) to over 750 student households in a two-county area;*
    - *ESU 10 in Kearney tested TV White Space transmission technologies using conventional height and power restrictions but found the throughput insufficient for educational purposes;*
    - *Grand Island Public Schools installed a Private LTE over CBRS (3.5GHz) base station for the economically challenged students living in proximity to one of their elementary schools;*
    - *ESU 5 in Beatrice assisted Tri County Public Schools with a 5GHz wireless transport and internet sharing project with Plymouth Public Library, for Tri County Public Schools students and Plymouth Public Library patrons.*
- ***The Nebraska Library Commission awarded seven public libraries with up to $165,000 in CARES Act grants to start and/or expand their library hotspot lending programs.***

- ***Thirteen public libraries were connected to fiber for the first time funded by the Remote Access Rural Broadband grant program administered by the Nebraska Department of Economic Development.***

Encourage the Nebraska Public Service Commission to implement an E-Rate Special Construction matching fund program with funding from the Nebraska Universal Service Fund to incentivize new fiber construction to public libraries and schools, starting in FY 2021-22.

The Nebraska Public Service Commission established the E-Rate Special Construction Matching Program in 2020. Public libraries in Bancroft, Bayard, Beatrice, Clay Center, Verdigre, and Wymore and the Southwest Public Schools' Elementary School at Indianola were successful in getting fiber for the first time in 2021-22 using the NUSF-117 E-rate Matching Fund program.

- *LB 992 established the Nebraska E-Rate Special Construction Matching Fund Program and the Nebraska Public Service Commission approved the program in 2020, allocating $1 million over four years. Public libraries in Bancroft, Bayard, Beatrice, Clay Center, Verdigre, and Wymore and the Southwest Public Schools' Elementary School at Indianola were successful in getting fiber for the first time in 2021-22 using the NUSF-117 E-rate Matching Fund program.*

Support the efforts of the Nebraska Library Commission to increase the number of public libraries applying for Category 1 and Category 2 E-Rate support in FY 2020-21 and beyond.

- *The percent of libraries applying for Category 1 (external connections) E-rate dropped slightly from 25% in2019-2020 to 24% in 2021-22.*

Encourage education leaders and public library staff to be part of local community discussions involving broadband services and digital inclusion.

- *The Nebraska Information Technology Commission Community Council has developed a Digital Inclusion Planning Guide and Workbook to help communities, counties and regions develop digital inclusion plans.*

Support funding for four regional technicians to assist public libraries with technology support, upgrades, digital literacy training, and E-Rate filing, starting in FY2020-21.

- *LB 992 as introduced included a section establishing four regional technician positions within the Nebraska Library Commission but was not included in the amended version of the bill enacted.*

Network Nebraska should map its fiber Ethernet circuits showing the location, name of the provider, bandwidth capacity, monthly recurring costs, cost per Mbps, number of bidders, and kbps per student in order to determine areas where advanced services would be cost prohibitive.

- *2019-20 Network Nebraska Ethernet circuit map is available at: https://gis.ne.gov/portal/apps/webappviewer/index.html?id=b21631e9bdc947fc82f7a7ef45c79b86*

Homework Gap and Digital Inclusion Metrics

Percent of Nebraskans Lacking Home Internet Subscriptions or Subscribing to Mobile Only		
Measure	**2019 Report**	**Report**
Percent of Nebraskans who lack a home internet subscription	16% 2017, ACS 5-Year	11.9% 2019, ACS 5-Year
Percent of Nebraskans under 18 years of age who lack a home internet subscription	12% 2017, ACS 5 Year	9.5% 2019, ACS 5-Year
Percent of Nebraska households with a smart phone only*	3.7% 2017 ACS 5-Year	6.2% 2019, ACS 5-Year
Percent of Nebraska households with mobile only broadband subscription*	7.9% 2017, ACS 5-Year	10.1% 2019, ACS 5-Year
Percent of U.S. adults with a mobile only broadband subscription	17% 2019, Pew Research Center	15% 2021, Pew Research Center

**New Metric for 2021*

Percent Nebraska Libraries and School Districts Applying for E-rate		
Measure	**2019 Report**	**2021 Report**
Percent of Nebraska **Libraries** Applying for **Category 1** (External Connections) E-rate	25% 2019-20, USAC	24% 2021-22,USAC
Percent of Nebraska **Libraries** Applying for **Category 2** (Internal Connections) E-rate funding	3% 2015-20, USAC	2% 2021-22,USAC (Year 1 of a 5 year budget period)
# of Libraries Applying for Special Construction E-rate Matching Program*	N/A	6
Percent of Nebraska **K-12 public school districts** Applying for **Category 1** (External Connections) E-rate	100% 2019-20, USAC	100% 2020-21, USAC
Percent of Nebraska **K-12 public school districts** Applying for **Category 2** (Internal Connections) E-rate funding	98% 2015-20, USAC	49% 2021-2022, USAC (Year 1 of a 5 year budget period)

Nebraska Library Broadband		
Measure	**2019 Report**	**2021 Report**
Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of **Less than 12 Mbps**	42% FY 2017-2018, Nebraska Library Commission	23% 2020, Nebraska Library Commission
Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of **Greater than 24 Mbps**	16% FY 2017-2018, Nebraska Library Commission	48% 2020, Nebraska Library Commission
Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of **100 Mbps or Greater**	.6% FY 2017-2018, Nebraska Library Commission	6.4% 2020, Nebraska Library Commission
# of Nebraska Libraries Servicing Populations of Less than 2,500 with **fiber connections***	——	26 2020, Nebraska Library Commission

Broadband Availability in Nebraska

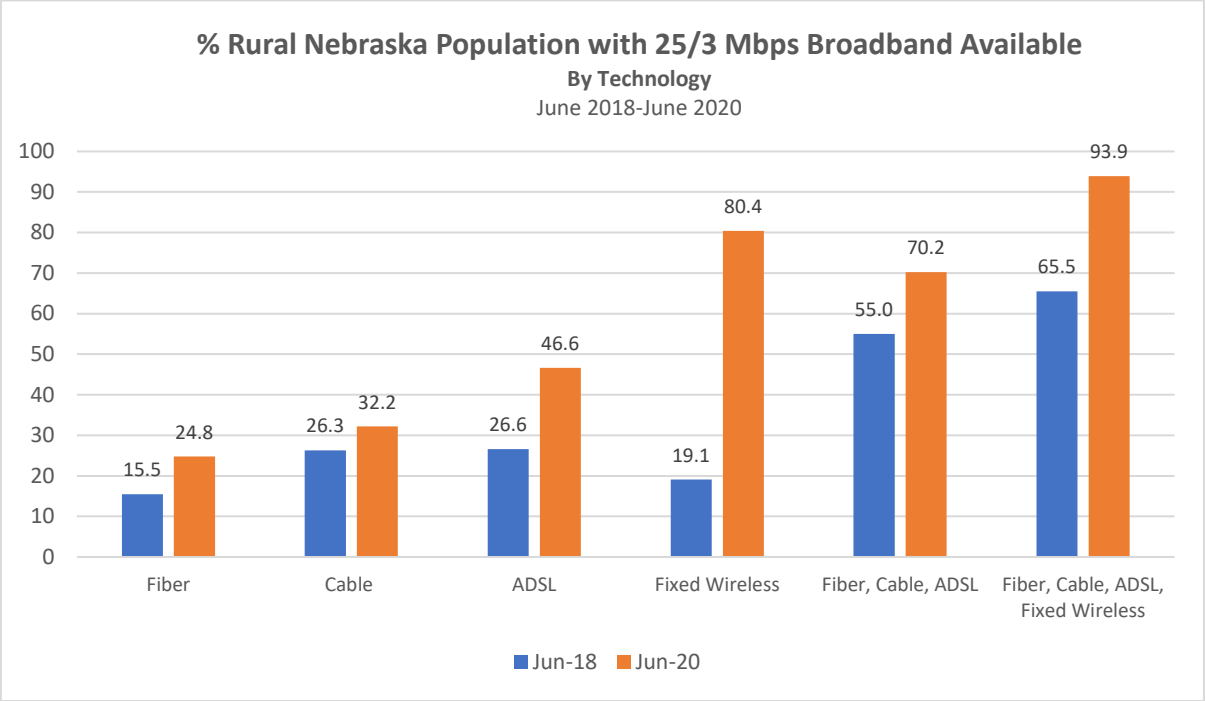
August 31, 2021

Rural Nebraska sees increase in fiber deployment, broadband availability

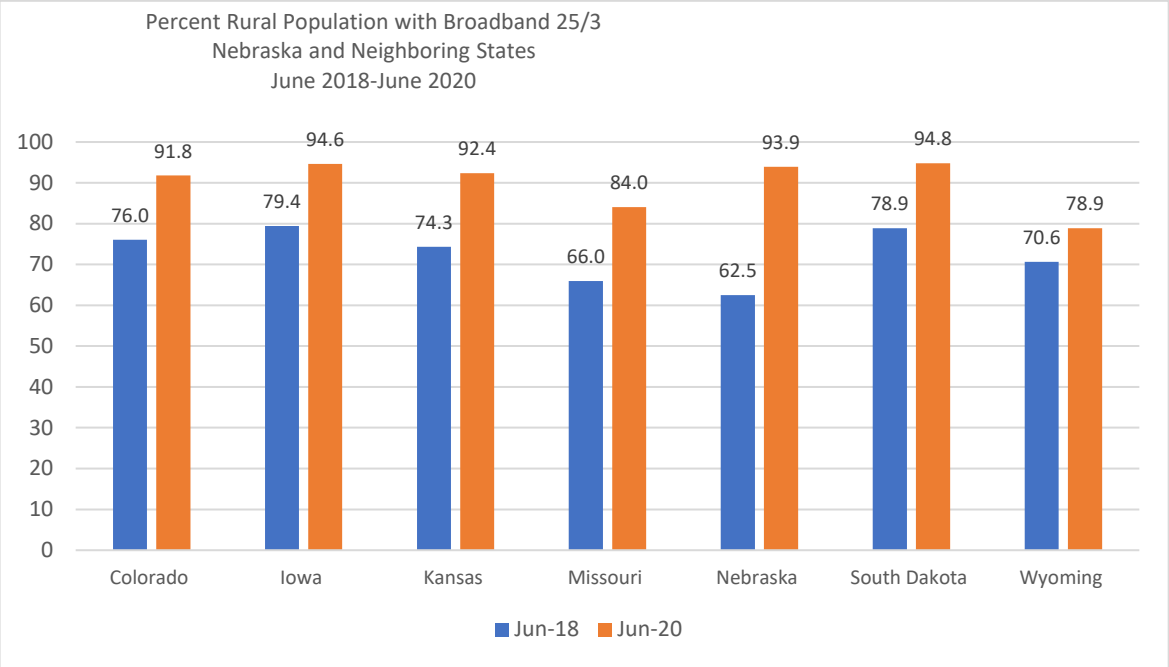
Data from the FCC's Form 477 data indicates that fiber deployment and broadband availability at both 25 Mbps down/3 Mbps up and 100 Mbps down/10 Mbps up increased. The Task Force recognizes that this data likely overstates availability. Other data such as speed tests, checks with providers on broadband availability by address, or information collected from challenge processes will be needed to identify areas lacking broadband and which may be eligible for funding.

- According to the FCC's Form 477 data, 93.9% of rural Nebraskans have broadband at 25 Mbps down and 3 Mbps up available as of June 2020, up from 65.5% in June 2018.
- 68.2% of rural Nebraskans have broadband at 100 Mbps down and 10 Mbps up available, up from 34.8% in June 2018.
- 24.8% of rural Nebraskans have fiber broadband available at 25/3 Mbps available, up from 15.5% in June 2018.
- The availability of fixed wireless broadband at 25/3 Mbps in rural Nebraska dramatically increased from 19.1% in June 2018 to 80.4% in June 2020.
- The availability of ADSL and cable broadband at 25/3 Mbps in rural Nebraska also increased.

The chart below shows broadband availability in rural Nebraska by technology.



- Nebraska's ranking for rural broadband availability among neighboring states improved from 7th to 3rd with Nebraska slightly behind South Dakota and Iowa. See the chart below.



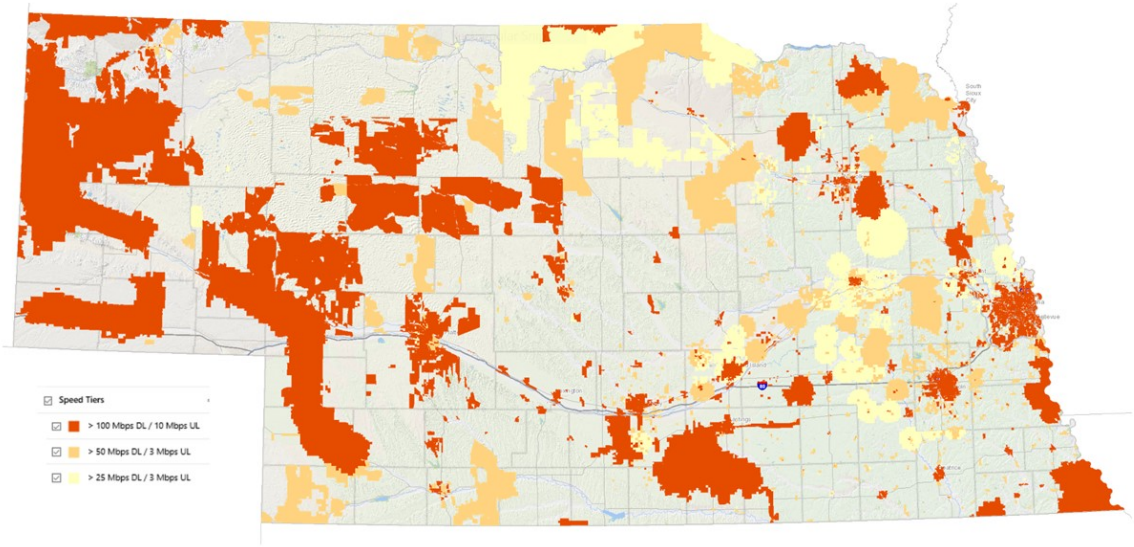
Broadband availability varies by county. Ten Nebraska counties have broadband available to 75% or less of their population. See the table below.

Percent Population with 25/3 Broadband Available Bottom 10 Nebraska Counties		
Area	**Entire County**	**Rural Areas**
Custer County, NE	75.3	64.7
Thayer County, NE	71.6	71.6
Grant County, NE	69.3	69.3
Cherry County, NE	62.6	47.4
Webster County, NE	58.3	58.3
Greeley County, NE	56.4	56.4
Sheridan County, NE	52.1	52.1
McPherson County, NE	51.8	51.8
Brown County, NE	28.2	28.2
Logan County, NE	27.8	27.8

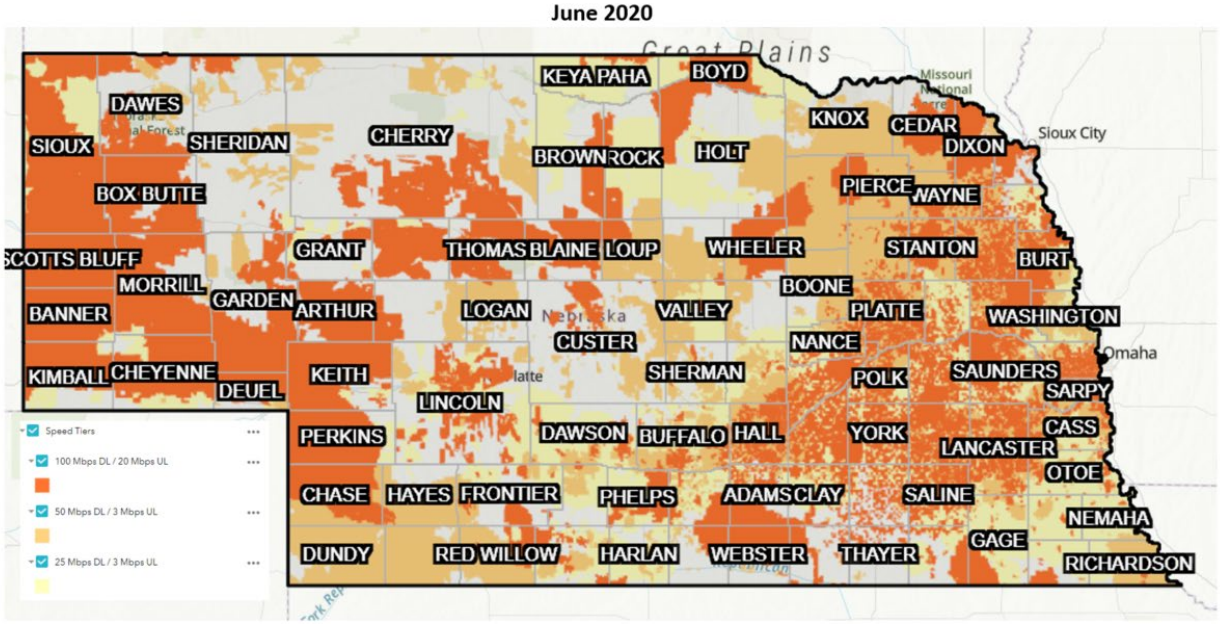
Approximately 94% of the population in tribal areas in Nebraska have broadband available. The tribal population in Knox County is the only notable exception with on 52% of the tribal population having broadband available.

The maps below show improvements in the availability of broadband of at least 25 Mbps down and 3 Mbps down in Nebraska from June 2018 to June 2020.

Broadband Availability in Nebraska
June 2018



Broadband Availability in Nebraska
June 2020



Nebraska leads most neighboring states and the U.S. in the adoption of broadband at higher speed tiers. Approximately 52% of Nebraska households subscribe to broadband service of 100 Mbps down and 10 Mbps up or greater. Nebraska ranks seventh in the adoption of broadband at 250 Mbps down and 25 Mbps up or greater, with approximately 15% of Nebraska households subscribing to this speed tier.

Adoption Rate for Fixed Terrestrial Services

December. 2019

Adoption Rate for Fixed Terrestrial Services Dec. 2019			
Area	**At Least 25/3 Mbps**	**At Least 100/10 Mbps**	**At least 250/25 Mbps**
Colorado	73.2%	36.1%	7.7%
Iowa	54.1%	31.0%	4.9%
Kansas	58.6%	46.1%	14.7%
Missouri	57.1%	50.0%	9.7%
Nebraska	62.2%	52.1%	14.9%
South Dakota	70.4%	56.9%	4.6%
Wyoming	63.1%	49.6%	0.5%
United States	68.9%	50.4%	9.0%

FCC 2020 Communications Marketplace Report https://docs.fcc.gov/public/attachments/FCC-20-188A1.pdf

Nebraska ranks 34th in fixed broadband and 47th in mobile broadband speed test results. See the following tables.

Ookla Fixed Median Download and Upload Speeds

July 2021

Area	**Down (Mpbs)**	**Up (Mbps)**
Colorado (19th)	114.0	12.8
Iowa (41st)	87.4	19.7
Kansas (28th)	103.5	19.3
Missouri (30th)	101.4	16.0
Nebraska (34th)	98.9	15.5
South Dakota (43rd)	84.8	16.7
Wyoming (51st)	50.8	10.6

Ookla Mobile Median Download and Upload Speeds

July 2021

Area	Down (Mbps)	Up (Mbps)
Colorado (27th)	40.7	6.9
Iowa (44th)	33.2	7.4
Kansas (23rd)	42.1	7.3
Missouri (17th)	44.1	6.4
Nebraska (47th)	31.1	7.7
South Dakota (22nd)	42.2	8.2
Wyoming (50th)	27.5	5.3

Broadband Metrics

Fixed Broadband Availability		
Measure	**2019 Most Recent Data** 25 Mbps down/3 Mbps up June 2018, FCC Form 477	**2021 Most Recent Data** 25 Mbps down/3 Mbps up June 2020, FCC Form 477
The percent of Nebraskans with access to fixed broadband	89%	98%
The percent of rural Nebraskans with access to fixed broadband	63%	94%
How Nebraska compares with neighboring states on fixed broadband availability	6th out of 7 (state) 7th out of 7(rural)	2nd out of 7 (state) 3rd out of 7 (rural)
How Nebraska compares with the U.S. on fixed broadband availability	Nebraska lags the U.S. 94% of Americans and 76% of rural Americans have access to fixed broadband.	Nebraska beats the U.S. 96% of Americans and 85% of rural Americans have access to fixed broadband.

Fiber Broadband Availability*		
Measure	**2019 Most Recent Data** 25 Mbps down/3 Mbps up June 2018, FCC Form 477	**2021 Most Recent Data** 25 Mbps down/3 Mbps up June 2020, FCC Form 477
The percent of Nebraskans with access to fiber broadband (25/3 Mbps)	23.9%	45.8%
The percent of rural Nebraskans with access to fiber broadband (25/3 Mbps)	14.4%	24.8%
How Nebraska compares with neighboring states on fiber broadband (25/3 Mbps) availability	5th out of 7 (state) 5th out of 7(rural)	3rd out of 7 (state) 5th out of 7(rural)
How Nebraska compares with the U.S. on fiber broadband (25/3 Mbps) availability	Nebraska lags the U.S. 30.8%% of Americans and 15.8% of rural Americans have access to fiber broadband (25/3 Mbps).	Nebraska beats the U.S. 43.7% of Americans and 23.7% of rural Americans have access to fiber broadband (25/3 Mbps).

*New Metric for 2021

Mobile Broadband Availability		
Measure	**2019 Most Recent Data** 10 Mbps down/3 Mbps up December 2017, FCC Form 477	**2021 Most Recent Data** 10 Mbps down/3 Mbps up December 2019, FCC Form 477
The percent of Nebraskans with access to mobile broadband	83%	96.9
The percent of rural Nebraskans with access to mobile broadband	56%	93.3%
How Nebraska compares with neighboring on mobile broadband availability	6th out of 7	3rd out of 7
How Nebraska compares with the U.S. on mobile broadband availability	Nebraska lags the U.S. 89% of Americans and 69% of rural Americans have access to broadband.	Nebraska lags the U.S. with . 97.4% of Americans having mobile broadband available. Nebraska beats the U.S. in rural mobile broadband availability with 90.8% of rural Americans having mobile broadband available.

Average/Median Fixed Broadband Speeds		
Measure	**2019 Most Recent Data** 2018, Ookla	**2021 Most Recent Data** July 2021, Ookla
Average/median fixed download speed in Nebraska	89 Mbps	98.9 Mbps
How Nebraska compares with neighboring states on average/median fixed download speeds	4th out of 7	4th out of 7
Average/median fixed upload speed in Nebraska	44 Mbps	15.5 Mbps
How Nebraska compares with neighboring states on average/median fixed upload speeds	2nd out of 7	5th out of 7
Ookla reported average speeds in 2018 and median speeds in 2021.		

Average/Median Mobile Broadband Speeds		
Measure	**2019 Most Recent Data** 2018, Ookla	**2021 Most Recent Data** May 2021, Ookla
Average/median mobile download speed in Nebraska	20.8 Mbps	31.7 Mbps
How Nebraska compares with neighboring states on average/median mobile download speeds	5th out of 7	6th out of 7
Average/median mobile upload speed in Nebraska	7.72 Mbps	7.7Mbps
How Nebraska compares with neighboring states on average/median mobile download speeds	5th out of 7	2nd out of 7
Note: Ookla reported average speeds in 2018 and median speeds in 2021.		

Broadband Data and Mapping

Draft August 26, 2021

Determine other issues that may be pertinent to the purpose of the task force.

–Nebraska Revised Statutes 86-1102(3)(g)

Findings

- Current state and federal broadband mapping efforts likely overstate broadband coverage and need to be improved.
- Nebraska's broadband map currently utilizes Form 477 data released by the FCC. Providers of fixed broadband (which includes providers of services via DSL, coaxial cable, fiber optic cable, fixed wireless, and satellite) report the type of technology, maximum advertised speeds in Mbps up and down, and whether the service is residential, business, or both by census block to the FCC. Providers must report every census block where service is provided or could be provided within a reasonable amount of time without an extraordinary commitment of resources.
- The use of census block reporting can overstate broadband availability in large census blocks. Census blocks are statistical areas that can be as small as 1/1,000 of a square mile up to 200 square miles. Census blocks which are greater than two square miles cover about 50% of Nebraska geographically.
- The FCC collects the data twice per year (March 1 for broadband availability as of Dec. 30 and September 1 for broadband availability as of June 30). There is not a set schedule for data releases, but data is usually released a year or more after the reporting date.
- The FCC and Congress have taken steps to improve broadband data collection. The new method of collection will require carriers to provide broadband availability at the address level. However, the FCC has not yet begun collecting broadband deployment data from all providers. It is not known when the FCC will implement the new data collection method or when the data will be made available.
- The FCC has launched a demo of a new mobile wireless map with coverage information from AT&T, T-Mobile, U.S. Cellular and Verizon which implements the increased cell edge probability and cell loading factors specified in the Broadband Data Act passed in March 2020.
- Supplementing data from providers with speed test data or other sources of data such as the challenge process required by the Nebraska Broadband Bridge Program can help verify data submitted by providers. The Nebraska Regional Officials Council, UNK Rural Measures Project and the FCC have established speed test programs. Additionally, broadband providers receiving support from the NUSF or grants from the Nebraska Broadband Bridge Program are required to conduct and submit speed tests to the Nebraska Public Service Commission.
- Broadband providers are more willing to provide coverage availability data to the State given the attention that broadband availability is receiving and the availability of grant funding through the Nebraska Broadband Bridge Grant Program.

- With an influx in federal funding expected for broadband deployment, the State of Nebraska needs more accurate maps of broadband availability to identify areas that lack broadband, develop plans, and to award available broadband funding to unserved and underserved areas.
- In 2019, the task force recommended waiting for the FCC to improve its broadband data collection. The State of Nebraska can no longer wait for the FCC to provide more accurate broadband availability data and mapping.

Recommendations

- Initiate a program to map broadband availability for serviceable locations in the state augmented by speed test data.
- To the extent possible, encourage the FCC and/or Congress to continue to improve more accurate data collection of mobile wireless coverage data.
- Urge the FCC to accelerate the implementation of the Digital Opportunity Data Collection program to improve the accuracy of the broadband availability collected. Once the improved data is available, the State of Nebraska may be able to leverage this data.
- The Nebraska Information Technology Commission, Nebraska Public Service Commission and other stakeholders should explore strategies to encourage Nebraskans to participate in crowdsourcing efforts developed to enhance federal and state broadband mapping.

Alternative Technologies and Providers

Review the feasibility of alternative technologies and providers in accelerating access to faster and more reliable broadband service for rural residents.

–Nebraska Revised Statutes 86-1102(3)(c)

Findings

A review of alternative broadband technologies found that several emerging technologies may be well-suited for rural areas:

- Fixed wireless technologies using mid-band spectrums could potentially provide service of 100 Mbps or greater in rural areas.
- Starlink is the first company to provide broadband service via Low Earth orbit satellites and is now offering its beta service to users at some locations in Nebraska. Starlink states that users during the initial beta service can expect speeds from 50 to 150 Mbps down and latency from 20 ms to 40 ms. Starlink requires a clear view of the sky to connect. During the beta period, users experience brief periods of no connectivity. Starlink has over 1,600 satellites in orbit as of August 2021. When fully deployed, Starlink expects to have approximately 30,000 satellites in orbit. Some industry groups have raised concerns that Starlink may experience a capacity shortfall in 2028.
- TV white space has received significant attention. However, it may be better suited for lower bandwidth or non-line-of-sight applications.

For more information, see Appendix: Broadband Technologies

Nebraska Universal Service Fund and Reverse Auction Findings

Examine the role of the Nebraska Telecommunications Universal Service Fund in bringing comparable and affordable broadband services to rural residents and any effect of the fund in deterring or delaying capital formation, broadband competition, and broadband deployment.

–Nebraska Revised Statutes 86-1102(3)(b)

Examine alternatives for deployment of broadband services to areas that remain unserved or underserved, such as reverse auction programs described in section 4 of this act, public-private partnerships, funding for competitive deployment, and other measures, and make recommendations to the Public Service Commission to encourage deployment in such areas.

–Nebraska Revised Statutes 86-1102(3)(d)

The Nebraska Universal Service Fund (NUSF) provides support to price cap, rate of return, and mobile wireless carriers in Nebraska. A total of $36,545,562 is available for broadband projects in high cost areas through the NUSF in 2021. This amount includes $16,402,282 allocated for price cap carriers and $8,388,571 allocated for rate-of-return carriers. Additionally, $11,753,709 in unallocated 2017-2020 support was made available for price cap carriers in 2021.

Since 2019, 19,583 households have been connected through broadband projects funded through the Nebraska Universal Fund.

The total remittances to the NUSF have increased from approximately $32.8 million in 2018 to $46.8 million in 2020. The increase is due to the Nebraska Public Service Commission's actions to reform the contribution methodology for residential services to a per connection fee starting on April 1, 2019. In 2021, the Commission made further changes to the contribution mechanism by moving to a connections-based methodology for business services. This modification is projected to increase the size of the fund to approximately $52 to $55 million.

Even with steps to stabilize the fund, however, the size of the fund is not sufficient to provide support for fiber deployment to all Nebraska residences and businesses.

Key Recommendations

- Evaluate the results of the Nebraska Public Service Commission's expected reverse auction of NUSF support.
- Coordinate the distribution of NUSF support with other funding sources to avoid duplication of funding and to target funding to areas most in need of support.
- As funding from multiple sources is being utilized for broadband deployment projects, state and federal policymakers will need to develop mechanisms to ensure that these networks are supported.

Through the NUSF-99 and NUSF-108 dockets, the Nebraska Public Service Commission has established a preference for fiber deployment projects.

LB 338, passed by the Legislature and signed by Governor Ricketts on May 5,2021, requires that funds distributed from the NUSF for construction of new fixed broadband infrastructure shall go to projects that provide broadband service scalable to 100 Mbps or greater down and up beginning on January 1, 2022.

The Commission has also put accountability measures in place to ensure support is used for its intended purpose. The broadband buildout programs administered by the Commission have moved the fund toward a grant-like method of distribution whereby carriers must build first before receiving

reimbursement. LB 338 further improved accountability by requiring recipients of ongoing high-cost NUSF support to conduct and submit speed tests as determined by the commission.

In order for providers to make decisions about broadband infrastructure investments, support from the NUSF should be sustainable and predictable.

Nebraska Legislature has authorized the Nebraska Public Service Commission to redirect NUSF support through a reverse auction or community-based plan through LB 992 in 2018 and LB 338 in 2020.

The Nebraska Public Service Commission is establishing rules and procedures for a reverse auction and is expected move through the process of redirecting support in 2022, which could result in conducting a reverse auction. The Nebraska Public Service Commission has established a process by which 80% of the support for price cap carriers is allocated for broadband deployment projects. Price cap carriers were required to notify the Public Service Commission how they planned to use their support by July 16, 2021. Carriers which did not plan to use at least 95% of the support allocated to them would have their unused support redirected to other carriers. Approximately $3 million of support allocated to Frontier is expected to be redirected in 2022.

LB 338, passed during the 2021 legislative session, adds a community-based redirection of support option for support that goes unused by a price cap carrier. The Commission will open a docket to promulgate rules for that option.

The NUSF Subcommittee found no evidence that the Nebraska Universal Service Fund has deterred or delayed capital formation, broadband competition, and broadband deployment in conversations with stakeholders or in the subcommittee's research efforts.

Recommendations

- Monitor the Nebraska Public Service Commission's efforts to stabilize the Nebraska Universal Service Fund by modernizing the contribution system.
- Monitor the Nebraska Public Service Commission's efforts to modernize the distribution method and improve provider accountability through the system of grant-like awards for broadband infrastructure projects.
- Evaluate the results of the Nebraska Public Service Commission's expected reverse auction of NUSF support.
- Coordinate the distribution of NUSF support with other funding sources to avoid duplication of funding and to target funding to areas most in need of support.
- Monitor the implementation of the FCC's Connect America Fund II and Rural Digital Opportunity Fund reverse auctions to evaluate the success of the program and to identify any key lessons learned.
- As funding from multiple sources is being utilized for broadband deployment projects, state and federal policymakers will need to develop mechanisms to ensure that the costs of maintaining these networks are supported.

NUSF Metrics

NUSF		
Measure	**2019 Most Recent Data** Nebraska Public Service Commission	**2021 Most Recent Data** Nebraska Public Service Commission
Annual contributions to the Nebraska Universal Service Fund (By Calendar Year)	2017 - $35,321,380 2018 - $32,796,228 2019 - $18,333,749 (Through 1st Half, 2019)	2019 - $43,915,240 2020 - $46,796,572 2021 - $22,951,506 (Through June 2021)
Annual allocations from the Nebraska Universal Service Fund (By Calendar Year)	2017 – $40,087,483 2018 - $33,139,591	2019 – $42,040,143 2020 - $45,674,733 2021 - $45,300,854
NUSF-108 (Rate of Return Carrier) project-specific households covered, by year		2019 – 500 2020 – 1,020 2021 – 367 (For project notices received through July 2021)
NUSF-99 (Price Cap Carrier) project-specific households covered, by year	2017 – 643 2018 – 1,981	2019 – 7,769 2020 – 6,833 2021 – 3,094

For more information on the Nebraska Universal Service Fund, see the NUSF Overview and Support Allocations in the appendix.

Broadband Technician Workforce

Determine other issues that may be pertinent to the purpose of the task force.

–Nebraska Revised Statutes 86-1102(3)(g)

Findings

Nebraska, like the rest of the country, currently faces a shortfall of skilled workers needed to deploy broadband. Additional investments in broadband will likely increase the demand for skilled workers.

Industry trade associations estimate that there will be 850,000 more new direct broadband and 5G jobs through 2025.[i]

Recommendations

The telecommunications industry, the state's community colleges, local school districts, and economic development and workforce development agencies should engage in conversations about recruitment of technicians as well as developing training and apprenticeship programs.

---

[i] Industry trade associations letter to President Biden concerning telecommunications workforce available at https://wia.org/wp-content/uploads/workforce-letter-jan-2021_biden_final.pdf

Public-Private Partnerships and Broadband Planning

Examine alternatives for deployment of broadband services to areas that remain unserved or underserved, such as reverse auction programs described in section 4 of this act, public-private partnerships, funding for competitive deployment, and other measures, and make recommendations to the Public Service Commission to encourage deployment in such areas.

–Nebraska Revised Statutes 86-1102(3)(d)

Findings

Grant programs such as the Remote Access Rural Broadband Grant Program and the Nebraska Broadband Bridge program are essentially a form of public-private partnership in which public funds are used to provide funding to telecommunications companies or public-private partnerships for broadband deployment.

Nebraska's first broadband grant program, the Remote Access Rural Broadband Grant Program, demonstrated the impact of state broadband grant programs on broadband deployment. The program, which was funded by the CARES Act and administered by the Nebraska Department of Economic Development, provided $29.5 million in funding for 60 projects which brought broadband to 17,600 households.

With the support of Governor Ricketts, the Nebraska Legislature established the Nebraska Broadband Bridge Program grant program by enacting LB 388 in 2021 and appropriated $20 million a year for two years for the program. The first round of applications is due Oct. 1, 2021.

Federal funding from the American Rescue Plan Act received by the State of Nebraska could provide additional funding for broadband deployment projects. Governor Ricketts and the Legislature are expected to determine the amount of funding available for broadband in early 2022.

LB 388 created the Nebraska Broadband Bridge Fund for money appropriated by the Legislature and federal funds received for broadband enhancement purposes. The fund is to be administered by the Nebraska Public Service Commission to finance grants for qualifying projects under the Nebraska Broadband Bridge Act.

Counties and municipalities may be able to use funding from the American Rescue Plan Act Local Fiscal Recovery Funds as a match for broadband grant programs or to enter into a more traditional public-private partnership with a telecommunications provider.

Additional funding from the infrastructure bill which was passed by the Senate in August 2021 may also be available for broadband projects if the legislation is enacted.

A number of resources are available to help municipalities, counties or regions with broadband planning or developing broadband public-private partnerships:

- The Nebraska Regional Officials Council (NROC) and Nebraska Development Districts have launched a speedtest mapping project to help Nebraska communities and regions determine where broadband is not available and to develop plans for addressing broadband availability
- The Rural Impact Hub's Lead for Nebraska program is placing fellows in rural communities to work on projects related to economic development and broadband.

- LB 992 established a state broadband coordinator position housed in the Office of the CIO starting on July 1, 2022. A state broadband coordinator position was established by LB 992. However, the Legislature did not include funding for the position, however, in the Office of the CIO's general funds.
- Resource materials are also available at https://ruralbroand.nebraska.gov/resources

Traditional models of public-private broadband partnerships have primarily been utilized in communities, but not rural areas outside of city or town limits. Some models, however, could be adapted for use in rural areas. Stakeholders should take the following considerations into account:

- Public-private partnerships should include consumer protections and ensure quality of service.
- Stakeholders should be aware that forming a public-private partnership takes time.
- Stakeholders should be careful of forming a public-private partnership that addresses business needs only and leaves out residential and/or rural areas.

Public power districts and cooperatives could play a role in advancing the deployment of broadband services in rural Nebraska through public-private partnerships. Public power districts and cooperatives may own fiber rings to connect necessary electric controls and data points. The communications network enables public power districts to safely operate and manage the electric grid. The communications network could be leveraged to facilitate the deployment of broadband in rural areas in several ways:

- A public power district or cooperative could work with a local telecommunications provider to put fiber in to connect electric communication needs. The local telecommunications provider could sell some of the fiber to the public power district or cooperative. The telecommunications provider could also connect homes and businesses passed by the newly installed fiber.
- A public power district or cooperative could work with a local telecommunications provider to put fiber in to connect electric communication needs and could then lease services from the telecommunications provider. The telecommunications provider could also connect homes and businesses passed by the newly installed fiber.
- As public power districts replace aging infrastructure, fiber could be placed overhead at a cost of a few dollars per foot. The dark fiber could be leased to telecommunications providers.
- Public power districts and other public entities could aggregate their demand for telecommunications services through a joint RFP which could be put out for bid by the State of Nebraska Office of the CIO or Network Nebraska. Telecommunications providers could connect homes and businesses passed by the newly installed fiber.
- An electric cooperative could create a communications subsidiary and provide retail service, however a public power district could not.
- NPPD provided partial funding to have NRTC conduct rural broadband feasibility studies for several public power districts and is working with working with these power districts to explore developing public-private partnerships and identify funding opportunities.

LB 992 enacted in 2020 made the process of leasing dark fiber by public entities less burdensome and established a process to use private utility easements for communications. LB 992 also specified that leases of dark fiber to provide broadband in areas lacking broadband of 25/3 Mbps do not need to contribute a portion of the proceeds to the Nebraska Universal Service Fund.

Fiber swaps between public power districts and providers are another form of public-private partnership and may be easier to implement than leasing dark fiber.

The formation of broadband cooperatives may be an option for unserved and underserved areas.

Recommendations

- **Express appreciation to Governor Ricketts and the Legislature for recognizing the importance of broadband to Nebraska and for providing funding for broadband through the Nebraska Broadband Bridge grant program and the Remote Access Rural Broadband Grant program.**
- **Review the initial round of awards from the Broadband Bridge Grant Program to determine the impact of the program.**
- **Encourage local and regional broadband planning.** Each community, county or region is different and will likely require a unique solution. Bringing stakeholders together to develop a local, county or regional plan can lay the groundwork for public-private partnerships.
- **Encourage each county or region to have a broadband coordinator to facilitate broadband planning and coordination.**
- **Encourage each county or region to leverage programs and resources such as the local economic development districts, the Rural Impact Hub's Lead for Nebraska fellows, and the state broadband coordinator expected to be staffed by July 1, 2022.**
- **Encourage communications planning between telecommunications providers and public entities, such as public power districts and other private entities, such as cooperatives.** This could be done in a number of ways, including:
    - Convening local or regional meetings of telecommunications providers and public power districts to explore how the communications needs of public power could be leveraged to improve broadband availability in rural areas
    - Developing a joint RFP for public power districts which could be put out for bid by Network Nebraska or the Nebraska Office of the CIO.
- **Explore the creation of broadband cooperatives in unserved and underserved localities.**
- **Explore the creation of a statewide broadband association.** The association could include telecommunications providers, public power districts, schools, hospitals, municipalities, counties, and other stakeholders interested in advancing broadband in Nebraska. The association could convene regional and statewide discussions and develop and distribute resources such as model or sample agreements.
- **Retain the existing prohibition on retail provision of broadband service by public entities.** The public power industry has stated that it is not interested in retail provision of broadband services. In some states, municipalities are providing retail broadband service. Public provision of broadband without regional planning may erode the business case for providing broadband in surrounding rural areas.

- **Encourage local governments to review their rights of way and permitting processes and take steps if necessary to make the processes less burdensome for telecommunications providers.**

Public-Private Partnership Metrics

Measure	2019 Most Recent Data	2021 Most Recent Data
Number of leases of dark fiber from public entities	1 July 2019, Nebraska Public Service Commission	1 August 2021, Nebraska Public Service Commission
Number of projects funded through state grant programs*	N/A	60 Remote Access Rural Broadband Grant Program 2020
Number of households and businesses connected through state grant programs*	N/A	17,600 households Remote Access Rural Broadband Grant Program 2020
Total amount of grant funding awarded*	N/A	$29.5 million Remote Access Rural Broadband Grant Program 2020

**New Metric for 2021*

Rural Broadband Task Force

Agriculture Subcommittee

Draft Findings and Recommendations

August 30, 2021

Findings

Agriculture is a significant part of Nebraska's economy. The market value of crops and livestock produced in Nebraska in 2017 was $21,983,430,000 with a per farm average of $474,476.[1]

Fully adopting next generation precision agriculture technologies in the United States would result in potential annual gross benefits of up to $13 billion for row crops and $20.6 billion for livestock and dairy with over a third of these benefits dependent on broadband.[2]

Farmers and ranchers need upload speeds of at least 30 Mbps to transfer the immense amount of data generated to the cloud. In the future even greater upload speeds may be required.

Rural areas of most Nebraska counties—including many of Nebraska's top-producing agricultural counties—lack broadband with upload speeds of greater than 25 Mbps or fiber connectivity. The table below shows broadband availability for the rural areas of Nebraska's top-producing agricultural counties.

% Rural Population with Broadband available (ADSL, Fiber, Cable, Fixed Wireless) Dec 2019 Top 10 Nebraska Counties by Agricultural Sales (2017)					
County	**Agricultural Sales**	**% Rural Pop with 25/3**	**% Rural Pop with 100/10**	**% Rural Pop with 250/25**	**% Rural Pop with 100/10 Fiber**
Cuming County	1,131,997,000	83.83	74.63	74.1	7.06
Custer County	781,155,000	53.02	7.21	0.13	3.25
Lincoln County	755,236,000	81.47	51.37	36.7	35.52
Dawson County	748,426,000	63.95	38.21	33.59	7.11
Platte County	688,562,000	95.06	72.08	56.61	1.26
Phelps County	578,241,000	85.9	62.42	60.18	37.16
Antelope County	529,502,000	80.12	44.25	8.46	17.45
Boone County	473,778,000	63.08	53.74	0	0
Holt County	453,539,000	75.41	16.31	0	16.31
Chase County	440,113,000	100	93.83	12.36	12.36

Source: USDA 2017 Census of Agriculture County Profiles data available at https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Nebraska/
Dec 2019 FCC Form 477 data from the FCC Broadband Map at https://broadbandmap.fcc.gov

[1] USDA NASS. 2017 Census of Agriculture State Profile. Available at https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Nebraska/cp99031.pdf

[2] USDA. A Case for Rural Broadband: Insights on Rural Broadband Infrastructure and Next Generation Precision Ag Technologies. (April 2019). Available at https://www.usda.gov/sites/default/files/documents/case-for-rural-broadband.pdf

Different methods of connectivity are required for agriculture, including:

- Low-bandwidth connectivity for devices like sensors or monitors often called internet of things (IoT) devices
- High speed, centralized broadband with upload speeds of at least 30 Mbps up for targeted agricultural operational headquarters such as a farm or ranch operations center
- High-speed decentralized coverage over large agricultural areas

The following connectivity profile provides additional details about types of internet connectivity needed.

Connectivity Profiles for Next Generation Precision Agriculture

	Low-Speed, Broad Coverage	**High-Speed, Centralized**	**High-Speed, De-centralized**
Geographic Coverage	Large areas (i.e., agricultural fields)	Targeted agricultural operational headquarters such as farm or ranch operations center, typically one site per producer.	Large areas (i.e., agricultural fields)
Network Speed	Slow (< 5 mb/sec)	Broadband and faster (25 mb/sec) +	Broadband and faster
Network Latency	High latency is tolerable	Low latency	Low latency
Upload/Download Speeds	Asymmetrical (faster download, slower upload) Expect small upload and downloads over time from many sensors and field devices	Symmetrical (same download and upload speeds) Expect large upload and downloads to support processing of large data files, and online training and support	Symmetrical Expect large uploads to transmit live video for remote monitoring and real-time decision making
Usage	• Transmit sensor data from fields • System automation and monitoring • Mobile access to systems and data for workers and decision makers	• Farm-level data aggregation and modeling • Raw data uploads for processing (drone and other sensor data) • Remote training and systems support • Online cattle auctions	• Field-level video streaming • Large uploads of HD videos and photos • Live video conferencing for support

Adapted from Examining Current and Future Connectivity Demand for Precision Agriculture Report Oct. 2020 by the Connectivity Working Group of the FCC's Precision Agriculture Committee pages 8-9
https://www.fcc.gov/sites/default/files/precision-ag-connectivity-demand-wg-report-10282020.pdf

Other Issues

Legal and technical issues—including data ownership and portability, right to repair, and technical standards and interoperability—may impede the full adoption of next generation precision agriculture technologies. Industry efforts to address these issues would likely accelerate the adoption of precision agriculture technologies.

Research and outreach efforts on best practices in connected agriculture technologies and the associated return on investment could accelerate adoption. Because farming varies from state to state and within regions of a state, research and outreach efforts should be localized and feature farmers and ranchers who are early adopters of next generation precision agriculture technologies

As farmers and ranchers are increasing their reliance upon next generation precision farming applications, the risk of cyberattacks is also increasing. Food processors are also at risk as the 2021 ransomware attack on meatpacker JBS demonstrated. Industry-wide efforts to increase the security of next generation precision farming technologies and the industrial control systems used in food production will likely be needed to improve the cybersecurity of agriculture and the food industry.

Recommendations

- Establish a state goal of having broadband access to every farm or ranch headquarters.
- Focus a portion of broadband funding on the highest cost areas.
- Review the initial round of awards from the Broadband Bridge Grant Program to determine if adjustments to program requirements could aid in funding extremely high cost rural areas.
- Survey Nebraska farmers and ranchers on their broadband needs and broadband availability to their farms and ranches, including what percentage of their operations are covered by broadband and where broadband coverage is still needed.

For more information,

Digital Inclusion, Homework Gap and Leveraging E-Rate Funding

Determine other issues that may be pertinent to the purpose of the task force.

–Nebraska Revised Statutes 86-1102(3)(g)

Recommend state policies to effectively utilize state universal service fund dollars to leverage federal universal service fund support and other federal funding.

–Nebraska Revised Statutes 86-1102(3)(e)

Findings

Those without broadband connectivity at home struggled to learn, access health care and work remotely during the COVID-19 pandemic. Approximately 12% of Nebraskans or 215,000 individuals do not have a broadband subscription at home according to data from the U.S. Census Bureau American Community Survey 2019 5-Year estimates.

- The population without a home broadband connection includes 32,000 Nebraskans under 18 years old, 102,000 Nebraskans between 18 and 64 years old, and 81,000 Nebraskans 65 years or older.
- Those under 18 are the most likely to have a home broadband connection. 93% of Nebraskans under 18 have a broadband connection at home compared to 70% of Nebraskans 65 years and older.
- Those with lower incomes and lower levels of education as well as minority populations are also less likely to have an internet subscription.
- The percent of residents with a broadband subscription varies by county from a high of 94.2% in Sarpy County to a low of 67.6% in Garfield County. See the table below for a list of the 10 Nebraska counties with the lowest subscription rates.

Nebraska Counties with Lowest Subscription Rates
2019 American Community Survey 5-Year

	% Population with Broadband Subscription	Margin of Error
Deuel County	78.1%	5.0
Hitchcock County	76.1%	4.1
Loup County	75.4%	9.2
Cuming County	75.3%	3.3
Pawnee County	74.0%	4.8
Sioux County	73.9%	6.8
McPherson County	72.2%	9.4
Thurston County	70.2%	2.5
Hooker County	68.7%	9.9
Garfield County	67.6%	7.7

Federal funding helped close the device gap for students.

- The ESU Coordinating Council has estimated that the Governor's Emergency Education Relief (GEER) Fund has reimbursed for 30,209 computing devices for public and nonpublic schools, 3,862 computing devices for exempt (home) schools and 3,411 hotspots overall. Omaha Public Schools and other school districts have secured an additional 60,000 internet-enabled computing devices using ESSER funding.
- Nebraska public school districts submitted 92 applications for the FCC's Emergency Connectivity Fund, totaling $19,896,915 in potential reimbursements, with a majority of the requests going for internet-enabled computing devices,

Libraries are key community partners in providing internet and computer access to students and the general public—especially in rural areas, but just over half of Nebraska libraries serving communities with populations of less than 2,500 have internet access below 25 Mbps down and 3 Mbps up.[i]

Federal funding from the CARES Act and the Nebraska Universal Service Fund E-Rate Special Construction matching fund helped libraries improve their broadband connections and start/expand hotspot lending programs.

- The Nebraska Library Commission awarded seven public libraries with up to $165,000 in CARES Act grants to start and/or expand their library hotspot lending programs
- Thirteen public libraries were connected to fiber for the first time funded by the Remote Access Rural Broadband grant program administered by the Nebraska Department of Economic Development.
- Funding from the Nebraska Universal Service Fund E-Rate Special Construction matching fund and federal E-Rate program enabled 6 public libraries and one school to get fiber connections in the first year (2021-2022) of the matching fund program. The Nebraska Library Commission reports increased interest in the program and expects the number of libraries applying for funding through the E-Rate Special Construction matching program to increase.

The federal E-Rate program which provides support for broadband connections in schools and libraires is underutilized by Nebraska libraries. Only 24% of public libraries in Nebraska applied for Category 1 (external connections) funding in 2021-22, and 2% of Nebraska public libraries applied for Category 2 (internal connections) funding in year one of the latest 5-year funding period for this program. Reasons cited for not participating in the E-Rate program include the perceived difficulty in applying for funding, lack of time to learn the process and apply, and concerns about requirements for filtering internet content for children. If all Nebraska libraries fully participated in the E-Rate program, it would increase the level of USF support by:

- an estimated $210,000 in Category 1 E-Rate support per year;
- and an estimated $3.25 million in E-Rate support for Category 2 over the next five years.

Increased support for low-income households is currently being provided through the FCC Emergency Broadband Benefit Program. Over 15,000 Nebraska households enrolled in this temporary program. The federal infrastructure bill infrastructure bill currently pending in Congress includes provisions for a longer-term program which would provide a $30 per month subsidy for broadband for low-income households.

The Broadband Bridge Grant Program requires applicants proposing to provide service to underserved areas to include a digital inclusion plan. The plan must describe the carrier's efforts to ensure members of the community to be served will be able to afford the services offered, and must describe any discounts and/or support programs to be offered for low-income individuals.

Closing the connectivity gap—especially in rural areas without broadband access—remains a challenge.

Recommendations

- Support the efforts of the Nebraska Library Commission to increase the number of public libraries applying for Category 1 and Category 2 E-Rate support.
- Encourage public libraries and schools without fiber connections to apply for support for new fiber construction from the E-Rate Special Construction matching fund program administered by the Nebraska Public Service Commission.
- Encourage school districts, ESUs, public libraries, and communities to implement programs such as Wi-Fi on buses, hotspot lending programs, low cost pay-by-the-month internet access, or alternative wireless deployments for student access on school-issued devices in order to reduce the number of unserved and underserved students.
- Encourage education leaders and public library staff to be part of local community discussions involving broadband services and digital inclusion.
- Encourage communities and regions to develop digital inclusion plans to address multi-generational needs.
- Encourage higher education institutions, Network Nebraska, and other partners to pursue all available funding opportunities to increase the capacity and reach of the Network Nebraska backbone, build advanced cyberinfrastructure, and foster collaboration within the statewide research community to advance institutional research and economic development missions.

Homework Gap and Digital Inclusion Metrics

Percent of Nebraskans Lacking Home Internet Subscriptions or Subscribing to Mobile Only		
Measure	**2019 Report Data**	**2021 or Most Recent Data**
Percent of Nebraskans who lack a home internet subscription	16% 2017, ACS 5-Year	11.9% 2019, ACS 5-Year
Percent of Nebraskans under 18 years of age who lack a home internet subscription	12% 2017, ACS 5 Year	9.5% 2019, ACS 5-Year
Percent of Nebraska households with a smart phone only*	3.7% 2017 ACS 5-Year	6.2% 2019, ACS 5-Year
Percent of Nebraska households with mobile only broadband subscription*	7.9% 2017, ACS 5-Year	10.1% 2019, ACS 5-Year
Percent of U.S. adults with a mobile only broadband subscription	17% 2019, Pew Research Center	15% 2021, Pew Research Center

**New Metric for 2021*

Percent Nebraska Libraries and School Districts Applying for E-rate		
Measure	**2019 Report Data**	**2021 or Most Recent Data**
Percent of Nebraska **Libraries** Applying for **Category 1** (External Connections) E-rate	25% 2019-20, USAC	24% 2021-22,USAC
Percent of Nebraska **Libraries** Applying for **Category 2** (Internal Connections) E-rate funding	3% 2015-20, USAC	2% 2021-22,USAC (Year 1 of a 5 year budget period)
# of Libraries Applying for Special Construction E-rate Matching Program*	N/A	6
Percent of Nebraska **K-12 public school districts** Applying for **Category 1** (External Connections) E-rate	100% 2019-20, USAC	100% 2021-22, USAC
Percent of Nebraska **K-12 public school districts** Applying for **Category 2** (Internal Connections) E-rate funding	98% 2015-20, USAC	49% 2021-2022, USAC (Year 1 of a 5 year budget period)

Nebraska Library Broadband		
Measure	**2019 Report Data**	**2021 or Most Recent Data**
Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of **Less than 12 Mbps**	42% FY 2017-2018, Nebraska Library Commission	23% 2020, Nebraska Library Commission
Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of **Greater than 24 Mbps**	16% FY 2017-2018, Nebraska Library Commission	48% 2020, Nebraska Library Commission
Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of **100 Mbps or Greater**	.6% FY 2017-2018, Nebraska Library Commission	6.4% 2020, Nebraska Library Commission
# of Nebraska Libraries Servicing Populations of Less than 2,500 with **fiber connections***	——	26 2020, Nebraska Library Commission

[i] Information on library broadband availability is from the Nebraska Library Commission. See Appendix 9 for more information on Broadband Adoption Data and Broadband in Nebraska Libraries or the map at https://www.zeemaps.com/view?group=3499369&x=- 100.053561&y=43.439597&z=11