NEBRASKA

# Rural Broadband Task Force

## Findings and Recommendations

October 2019

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# Executive Summary

The Rural Broadband Task Force was created to "review issues relating to availability, adoption, and affordability of broadband services in rural areas of Nebraska" by LB 994, which was passed by the Legislature and signed by Governor Ricketts on April 17, 2018.[1] The bill was introduced by Senator Curt Friesen, Chair of the Transportation and Telecommunications Committee. The task force is chaired by Ed Toner, CIO for the State of Nebraska and Chair of the Nebraska Information Technology Commission. This report presents the findings and recommendations of the task force as required by LB 994.


## Findings and Recommendations

### Broadband Availability

Eighty-nine percent of Nebraskans—but only 63% of rural Nebraskans—have fixed broadband of at least 25 Mbps down/3 Mbps up available, according to the latest data available from the FCC (June 2018).

### Broadband Data and Mapping

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. Using Form 477, fixed broadband providers report the type of technology and maximum advertised speeds in Mbps up and down by census block to the FCC. The use of census block reporting can overstate broadband availability in large census blocks. Mobile wireless providers provide polygons of their service area and the minimum speeds that are publicly available. The FCC is currently investigating at least one national mobile wireless provider for overstating coverage.

The FCC's Digital Opportunity Data Collection[2] program which was approved on August 1, 2019 and federal legislation being considered would largely address the shortcomings of the current fixed broadband data collection method.

#### Key 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.
- To the extent possible, encourage the FCC and/or Congress to improve data collection of mobile wireless coverage data.
- Encourage Nebraskans to participate in crowdsourcing efforts developed to enhance federal broadband mapping.

### Alternative Technologies and Providers

Several emerging technologies may be well-suited for rural areas, including fixed wireless using mid-band spectrums, TV white space, and low Earth orbit satellites. However, higher speed technologies like 5G will likely be deployed first in urban areas, potentially exacerbating the speed gap between rural and urban areas.

[1] *See Appendix 1 for the text of the statutes pertaining to the Rural Broadband Task Force.*

[2] *The Report and Order and Second Further Notice of Proposed Rulemaking on establishing the Digital Opportunity Data Collection is available at https://docs.fcc.gov/public/attachments/FCC-19-79A1.pdf*

### Nebraska Universal Service Fund and Reverse Auction

The Nebraska Universal Service Fund (NUSF) provides support to price cap (Windstream, CenturyLink, and Frontier), rate of return (rural carriers), and mobile wireless carriers in Nebraska. In 2019, the Nebraska Public Service Commission allocated $12,049,546 in high cost support to price cap carriers and $14,100,058 in high cost support to rate of return carriers. In 2018, $3,200,000 was allocated for support for mobile wireless carriers. The Nebraska Public Service Commission has taken steps to move the fund toward a grant-like method of distribution whereby carriers must build first before receiving reimbursement.

The total remittances to the NUSF have decreased from $52 million in 2013 to about $33 million in 2018. However, the Nebraska Public Service Commission has taken steps to stabilize the fund by modernizing the contribution methodology.

Broadband availability varies by incumbent carrier. Approximately 79% of those rural households which do not have broadband available reside in Windstream, CenturyLink, Great Plains or Frontier (Citizens) exchanges.[3] Addressing the rural broadband divide in Nebraska will require strategies which address areas without broadband access served by both price cap and rate of return carriers.

#### Key Recommendations

- Support the Nebraska Public Service Commission's efforts to modernize the NUSF contribution system and to improve provider accountability by moving to a grant-like system of distribution.
- Encourage the Nebraska Public Service Commission to continue to investigate a state-run reverse auction as a mechanism to spur broadband build out in rural areas.

### Public-Private Partnerships and Broadband Planning

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.

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

## Key Definitions

**Broadband—** *High-speed internet access at 25 Mbps down and 3 Mbps up or greater.*

**Connect America Fund (CAF)—** *The FCC's universal service high cost program which provides support to carriers for broadband.*

**Competitive Local Exchange Carrier (CLEC)—** *A telecommunications provider competing with the incumbent local exchange carrier (ILEC).*

**Fixed Broadband—** *Any broadband transmission method to a home or business including Digital Subscriber Line (DSL), cable modem, fiber, fixed wireless, and satellite. Fixed broadband does not include mobile (cellular) broadband.*

**Fixed Terrestrial Broadband—** *Any broadband transmission method to a home or business including Digital Subscriber Line (DSL), cable modem, fiber, and fixed wireless. Fixed broadband does not include mobile (cellular) broadband and satellite.*

**Incumbent Local Exchange Carrier (ILEC)—** *A local telephone company which provided landline service before the market was opened to competitive local exchange carriers.*

**Price Cap Carriers—** *Include the three largest incumbent exchange carriers in the state: CenturyLink, Windstream, and Frontier (also known as Citizens Telecommunications of Nebraska).*

**Rate of Return Carriers—** *Smaller, rural incumbent local exchange carriers.*

**Rural Area—** *Open countryside with population densities less than 500 people per square mile or places with fewer than 2,500 people.*

**Terrestrial Broadband—** *Land-based methods of broadband transmission (DSL, cable modem, fiber, fixed wireless and mobile wireless). Terrestrial broadband does not include satellite.exchange carrier (ILEC).*

**Unserved Areas—** *Areas with internet service at less than 10 Mbps down/1 Mbps up.*

**Underserved Areas—** *Areas which have internet service at 10 Mbps down/1 Mbps up or greater but less than 25 Mbps down/3 Mbps up.*

[3] *See Appendix 7 Broadband Coverage by ILEC Including Fixed Wireless Coverage by Rural Households Not Covered*

electric grid. The communications network could be leveraged to facilitate the deployment of broadband in rural areas.

**Key Recommendations**

- Encourage local and regional broadband planning, including communications planning between telecommunications providers and public power districts and cooperatives.
- Explore the creation of broadband cooperatives in unserved and underserved localities.
- Retain the existing prohibition on retail provision of broadband service by public entities.
- Explore ways to make it easier for public entities to lease dark fiber.
- Explore legislation clarifying communications as an approved use for private easements set up for telephone and electric use.
- 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.

## Digital Inclusion, Homework Gap and Leveraging E-Rate Funding

As more services move online, internet access is becoming a necessity. Students who need to use the internet to complete homework are especially impacted. The term "homework gap" is used to describe the challenge that students who lack home internet access face in completing online assignments.

Libraries are key community partners in providing internet and computer access to students and the general public—especially in rural areas. However, 84% of Nebraska public libraries serving populations less than 2,500 reported internet speeds of less than 24 Mbps down.[4] The E-Rate program, which provides support for telecommunications services by schools and libraries, is underutilized by Nebraska libraries with only 25% of public libraries in Nebraska applying for E-Rate funding in 2019-20.

**Key Recommendations**

- Increase the number of public libraries applying for E-Rate support;
- Fund four regional technicians to assist public libraries with technology support, upgrades, digital literacy training, and E-Rate filing;
- 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.
- 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.
- Encourage education leaders and public library staff to be part of local community discussions involving broadband services and digital inclusion.

## Broadband Infrastructure Funds

**Key Recommendation**

- Funding opportunities should be monitored and communicated to interested stakeholders, including communities.

[4] *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*

# Introduction

*Broadband and telecommunications service in rural areas of the state should be comparable in download and upload speed and price to urban areas.*

**-Vision of the Rural Broadband Task Force, adopted September 24, 2018**

The Rural Broadband Task Force was created to "review issues relating to availability, adoption, and affordability of broadband services in rural areas of Nebraska" by LB 994, which was passed by the Legislature and signed by Governor Ricketts on April 17, 2018.[5] This report presents the findings and recommendations of the task force.

## Importance of Broadband

Rural broadband is important to Nebraska's economy and to the state's businesses, consumers, agricultural producers, students, educators, patients and health care providers. Rural broadband availability and adoption are associated with:

- Attraction and retention of millennials
- Greater economic growth
- Attraction of new firms
- Higher household incomes
- Small business growth[6]

## Definitions and Prioritization

In order to clarify terms and prioritize those areas in most need of assistance, the task force adopted the following definitions and priorities:

**Rural areas** are defined as open countryside with population densities less than 500 people per square mile or places with fewer than 2,500 people.

**Unserved areas** are defined as areas with internet service at less than 10 Mbps down/1 Mbps up.

**Underserved areas** are areas which have internet service at 10 Mbps down/1 Mbps up or greater but less than 25 Mbps down/3 Mbps up.

The task force recommends that policies and available funding target areas based on the following prioritization:

1. Unserved Areas Outside City/Town/Village Limits
2. Unserved Areas Within City/Town/Village Limits
3. Underserved Areas Outside City/Town/Village Limits
4. Underserved Areas Within City/Town/Village Limits

The task force's definition of rural recognizes that some efforts—particularly those involving public-private partnerships and digital inclusion—may require the participation of both small communities and surrounding areas outside municipal boundaries. The definition also recognizes that some small communities may be unserved or underserved.

The Nebraska Public Service Commission allocates high cost funding from the Nebraska Universal Service Fund using a more specific definition of rural. The Nebraska Public Service Commission defines rural areas as areas which meet the following criteria:[7]

- Census blocks that contains fewer than 20 households with a density below 42 households per square mile
- Census blocks not classified as a city or village per census
- Census blocks not within census-designated city limits

The use of this definition to distribute NUSF funds is consistent with the task force's prioritization.

[5] *See Appendix 1 for the text of the statutes pertaining to the Rural Broadband Task Force.*

[6] Gallardo, R., Whitacre, B. and Grant, A. (January 2018). Research and Policy Insights: *Broadband's Impact. Available at https://www.pcrd.purdue.edu/files/media/Broadbands-Impact-Final.pdf*

[7] *Some information provided by the Nebraska Public Service Commission on broadband availability, including the information in Appendix 7 and metrics related to the Nebraska Universal Service Fund, utilize the PSC's definition of rural. Information on broadband availability from the FCC utilizes the U.S. Census Bureau definition of rural which is similar to the Rural Broadband Task Force's definition.*

# Findings and Recommendations

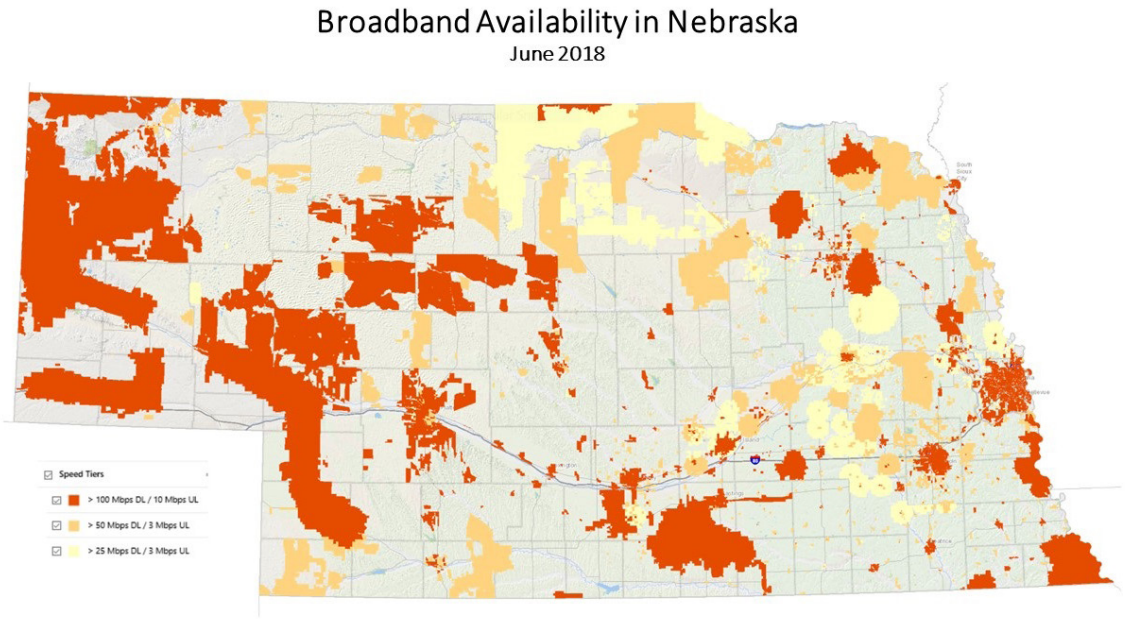
## Broadband Availability in Nebraska

*Determine how Nebraska rural areas compare to neighboring states and the rest of the nation in average download and upload speeds and in subscription rates to higher speed tiers, when available.*

**–Nebraska Revised Statutes 86-1102(3)(a)**

### Findings

**Rural Nebraskans are less likely to have broadband available.** Eighty-nine percent of Nebraskans—but only 63% of rural Nebraskans—have fixed broadband of at least 25 Mbps down/3 Mbps up available.[8] The map below shows where providers reported broadband being available as of June 2018.




Nebraska Broadband Map using June 2018 FCC Form 477 data, broadbandmap.nebraska.gov

## Key Findings

- Rural Nebraskans are less likely to have broadband available.
- Nebraska lags the U.S. and neighboring states in fixed and mobile broadband availability.
- Broadband availability in Nebraska varies by incumbent local exchange carrier.
- Average fixed download and upload speeds increased dramatically from 2016 to 2018.
- Rural consumers are likely to pay more for broadband.

*[8] FCC Broadband Map (June 2018 Form 477 Data) available at https://broadbandmap.fcc.gov. See Appendix 2 for additional data on broadband availability. Using Form 477, fixed broadband providers report the type of technology and maximum advertised speeds in Mbps up and down by census block to the FCC . The use of census block reporting can overstate broadband availability in large census blocks. Mobile wireless providers provide polygons of their service area and the minimum speeds that are publicly available.*

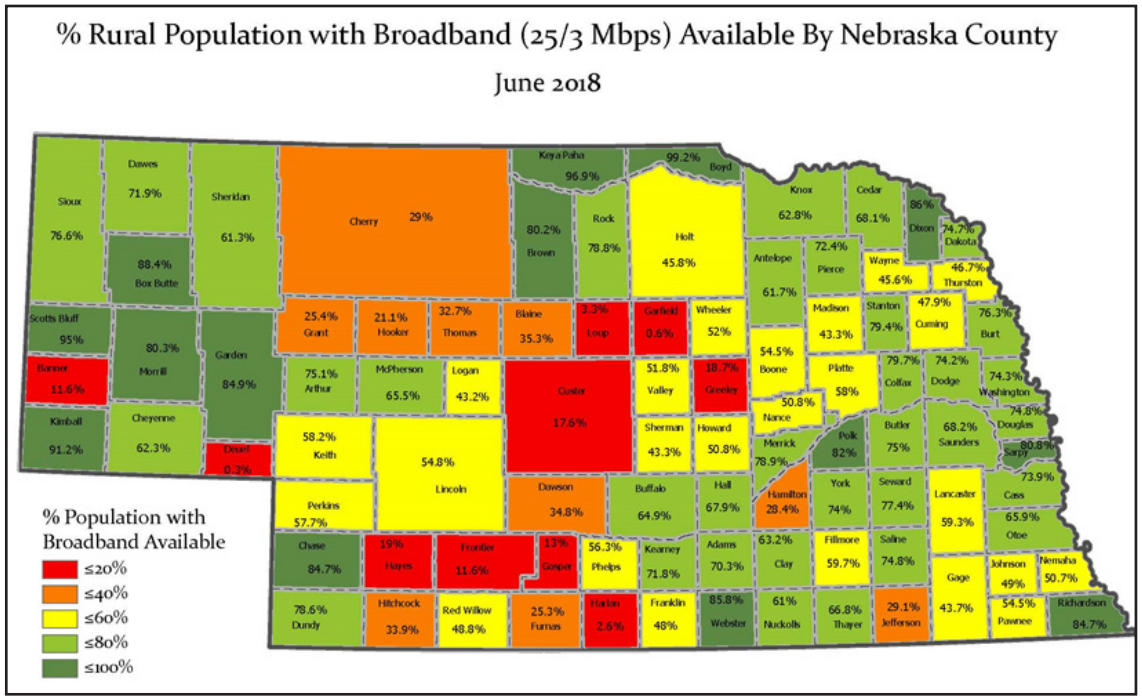
**Nebraska lags the U.S. and neighboring states in fixed and mobile broadband availability.**[9]

- Eighty-nine percent of Nebraskans and 63% of rural Nebraskans have fixed broadband at 25 Mbps down/3 Mbps up available, compared to 94% of Americans and 76% of rural Americans. Nebraska ranks below five of our neighboring states (Colorado, Kansas, Iowa, South Dakota, and Missouri) on broadband availability.
- Nebraska also lags behind the U.S. and most of our neighboring states in the availability of mobile broadband at 10 Mbps down/3 Mbps up. Eighty-three percent of Nebraskans and 56% of rural Nebraskans have mobile broadband available, compared to 89% of Americans and 69% of rural Americans. Among our neighboring states, Nebraska ranks only above Wyoming.

Photo Credit Mary Ridder

**Broadband availability in Nebraska varies by incumbent local exchange carrier.** Broadband is available to over 90% of households in the exchanges served by nine incumbent carriers, but is available to less than 25% of households in the exchanges served by seven incumbent carriers.[10]

**Broadband availability in Nebraska varies by county.** Broadband availability in Nebraska ranges from 99.2% in Boyd County to 0.3% in Deuel County.[11] See the map below.




Source: FCC Broadband Map (June 2018 Form 477 Data) available at https://broadbandmap.fcc.gov

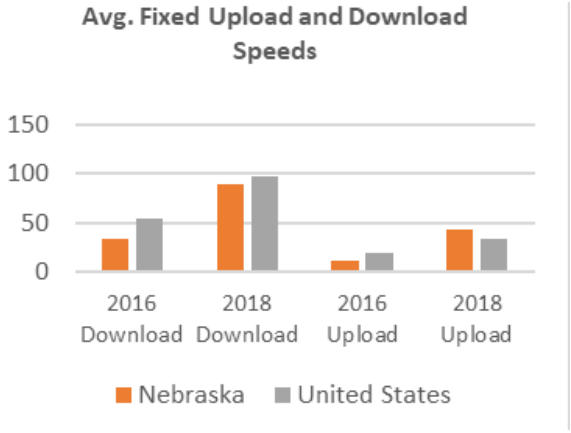
[9] *2018 FCC Communications Marketplace Report Appendix D-1 available at https://docs.fcc.gov/public/attachments/FCC-18-181A9.pdf.*

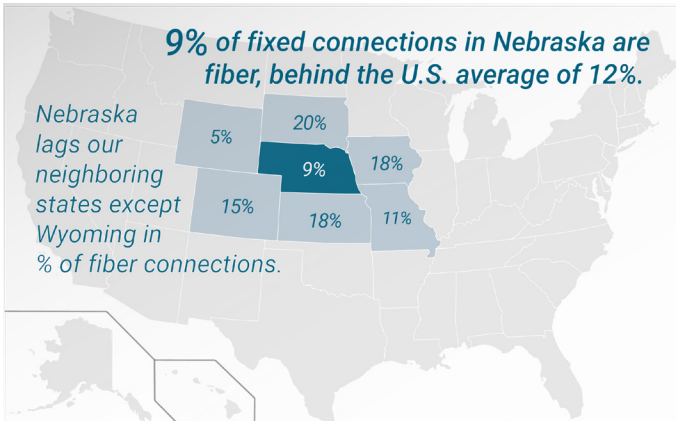
[10] *Based on June 2018 FCC Form 477 data. More information is available in Appendix 7.*

[11] *FCC Broadband Map (June 2018 Form 477 Data) available at https://broadbandmap.fcc.gov.*

*More information is available in Appendix 2 and FCC Broadband Map (June 2018 Form 477 Data) available at https://broadbandmap.fcc.gov.*

**Average fixed download and upload speeds increased dramatically from 2016 to 2018.** The average fixed download speed in Nebraska increased from 34 Mbps in 2016 to 89 Mbps in 2018. Average fixed upload speeds in Nebraska increased as well from 11 Mbps in 2016 to 44 Mbps in 2018. Nebraska ranked in the middle of our neighboring states in average download speeds, but behind the U.S. average of 96 Mbps in 2018. Nebraska ranked second among neighboring states in average upload speeds and was above the U.S. average of 33 Mbps.[12] Unfortunately, recent data on average download and upload speeds in rural areas is not available.




June 2017, FCC Form 477 Data

**Average mobile broadband speeds in Nebraska lag behind U.S. average and neighboring states except Iowa and Wyoming.** The average mobile download speed in Nebraska is 20.8 Mbps, compared to 27.3 in the U.S.[13]

**Nebraska lags the U.S in broadband subscriptions to 25 Mbps or greater service, but leads neighboring states in subscriptions to 100 Mbps service, resulting in a speed divide.[14]**

- Just over half (51%) of fixed terrestrial connections in Nebraska had speeds of at least 25 Mbps down in December 2017. Nebraska lags the U.S (60%), Colorado (68%), South Dakota (64%), and Wyoming (55%) in the percent of connections at 25 Mbps down or greater.
- Twenty-nine percent of fixed connections in Nebraska and the U.S. are at least 100 Mbps down. Nebraskans subscribe to broadband of at least 100 Mbps at a higher rate than all of our neighboring states.

**Rural consumers are likely to pay more for broadband.** U.S. households in zip codes in the bottom 10 percent of population density pay up to 37 percent more on average for wired broadband than those in the top 10 percent.[15]

[12] *2016 and 2018 Ookla Speed Tests available at https://www.speedtest.net/reports/united-states/2016/; https://www.speedtest.net/reports/united-states/2018/#fixed. More information is available in Appendix 2.*

[13] *2016 and 2018 Ookla Speed Tests available at https://www.speedtest.net/reports/united-states/2016/; https://www.speedtest.net/reports/united-states/2018/#mobile. More information is available in Appendix 2.*

[14] *2018 FCC Communications Marketplace Report, Appendix D-8 available at https://docs.fcc.gov/public/attachments/FCC-18-181A9.pdf. More information is available in Appendix 2.*

[15] *Based on data collected from October to December 2018 and reported in Broadband Research's Digital Divide: Broadband Pricing by State, Zip Code and Income Level (January 2019). Available at https://broadbandnow.com/research/digital-divide-broadband-pricing-state-zip-income-2019*

## Metrics

| Fixed Broadband Availability | |
|---|---|
| **Measure** | **2019 Most Recent Data**<br>**25 Mbps down/3 Mbps up**<br>**June 2018, FCC Form 477** |
| The percent of Nebraskans with access to fixed broadband | 89% |
| The percent of rural Nebraskans with access to fixed broadband | 63% |
| How Nebraska compares with neighboring on fixed broadband availability | 6th out of 7 |
| How Nebraska compares with the U.S. on fixed broadband availability | Nebraska lags the U.S.<br>94% of Americans and 76% of rural Americans have access to fixed broadband. |

| Mobile Broadband Availability | |
|---|---|
| **Measure** | **2019 Most Recent Data**<br>**10 Mbps down/3 Mbps up**<br>**December 2017, FCC Form 477** |
| The percent of Nebraskans with access to mobile broadband | 83% |
| The percent of rural Nebraskans with access to mobile broadband | 56% |
| How Nebraska compares with neighboring on mobile broadband availability | 6th out of 7 |
| How Nebraska compares with the U.S. on mobile broadband availability | Nebraska lags the U.S.<br>89% of Americans and 69% of rural Americans have access to broadband. |

| Average Fixed Speeds | |
|---|---|
| **Measure** | **2019 Most Recent Data**<br>**2018, Ookla** |
| Average fixed download speed in Nebraska | 89 Mbps |
| How Nebraska compares with neighboring states on average fixed download speeds | 4th out of 7 |
| How Nebraska compares with U.S. on average fixed download speeds | Nebraska lags the U.S. average fixed download speed of 96 Mbps. |
| Average fixed upload speed in Nebraska | 44 Mbps |
| How Nebraska compares with neighboring states on average fixed upload speeds | 2nd out of 7 |
| How Nebraska compares with U.S. on average fixed upload speeds | Nebraska beats the U.S. average upload speed of 33 Mbps. |

| Average Mobile Speeds | |
|---|---|
| **Measure** | **2019 Most Recent Data**<br>**2018, Ookla** |
| Average mobile download speed in Nebraska | 20.8 Mbps |
| How Nebraska compares with neighboring states on average mobile download speeds | 5th out of 7 |
| How Nebraska compares with U.S. on average mobile download speeds | Nebraska lags the U.S. average mobile download speed of 20.8 Mbps |
| Average mobile upload speed in Nebraska | 7.72 Mbps |
| How Nebraska compares with neighboring states on average mobile download speeds | 5th out of 7 |
| How Nebraska compares with U.S. on average mobile download speeds | Nebraska lags the U.S average mobile upload speed of 8.63 Mbps |

# Broadband Data and Mapping

*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.**[16]

- 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.
- Mobile wireless providers provide polygons of their service area and the minimum speeds that are publicly available. The FCC is currently investigating at least one national mobile wireless provider for overstating coverage.
- 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.
- Supplementing data from providers with speed test data or other sources of data can help verify data submitted by providers.

## Key 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.
- To the extent possible, encourage the FCC and/or Congress to improve data collection of mobile wireless coverage data.
- Encourage Nebraskans to participate in crowdsourcing efforts developed to enhance federal broadband mapping.

Photo Credit Mary Ridder

Because states are limited in their authority to compel providers to submit broadband coverage data, federal data collection efforts should be leveraged if feasible. Leveraging federal data collection efforts will also minimize state costs for data collection.

The FCC's Digital Opportunity Data Collection[17] program which was approved on August 1, 2019

[16] *For additional information, see Appendix 4 Supplemental Information--Broadband Data and Mapping.*

[17] *The Report and Order and Second Further Notice of Proposed Rulemaking on establishing the Digital Opportunity Data Collection is available at https://docs.fcc.gov/public/attachments/FCC-19-79A1.pdf*

and federal legislation being considered, including the Broadband DATA Act (SB 1822),[18] would largely address the shortcomings of the current fixed broadband data collection method.

Mobile wireless coverage data submitted through the Form 477 is insufficient to support sound policymaking and funding decisions, and needs to be improved either through further rulemaking by the FCC or federal legislation such as the Broadband DATA Act (SB 1822).

Photo Credit Mary Ridder

## 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.
- To the extent possible, encourage the FCC and/or Congress to improve data collection of mobile wireless coverage data.
- Urge FCC and Congressional policy to support efforts to improve broadband data collection for both fixed and mobile broadband technologies.
- 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.

## Broadband Impacts Rural Health Care

Broadband connectivity is playing a greater role in healthcare, with more than three-fourths of U.S. hospitals connecting with patients and consulting practitioners through video and other technology.

With broadband service, rural residents can:

- Research health topics online
- Access electronic health records
- Make appointments and communicate with health care providers
- Access health primary and specialty care via telemedicine
- Participate in home monitoring telehealth services

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Sources: Statement of the American Hospital Association for the Energy and Commerce Subcommittee on Communications and Technology of the U.S. House of Representatives: Realizing the Benefits of Rural Broadband: Challenges and Solutions. (July 2018). Available at https://www.aha.org/system/files/2018-07/180717-statement-rural-broadband.pdf

[18] *Information on S. 1822 is available at https://www.congress.gov/bill/116th-congress/senate-bill/1822/*

# 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 broadband technologies found that several emerging technologies may be well-suited for rural areas:**[19]

- Fixed wireless technologies using mid-band spectrums could potentially provide service of 100 Mbps or greater in rural areas. Several telecommunications providers are using or planning to use mid-band fixed wireless providers to meet their Connect America Fund obligations to provide broadband to rural areas.
- TV white space may be suited for lower bandwidth agricultural internet of things applications. With Microsoft's support, the cost of customer service equipment has been coming down. Future reductions in the prices of customer service equipment to about $100 would likely make this technology economically feasible.
- Low Earth orbit satellites could potentially provide 100 Mbps or greater service with low latency by mid-2020.
- AT&T's AirGig may be another technology to watch. AirGig uses antenna modules called eggs which are clamped on power lines to send data signals which cling to the wire. A demonstration in September 2018 showed data capacity of 90 gigabits per second. The technology will reportedly be available for commercial use in 2021.

### Key Findings

- Several emerging technologies may be well-suited for rural areas, including fixed wireless using mid-band spectrums, TV white space, and low Earth orbit satellites. AT&T's AirGig technology may be another technology to watch.
- Higher speed technologies like 5G will likely be deployed first in urban areas, potentially exacerbating the speed gap between rural and urban areas.

**A number of emerging and currently technologies may provide speeds of one gigabit per second of more.** It is likely that most of these technologies—particularly 5G—will be deployed first in urban areas, potentially exacerbating the speed gap between rural and urban areas.

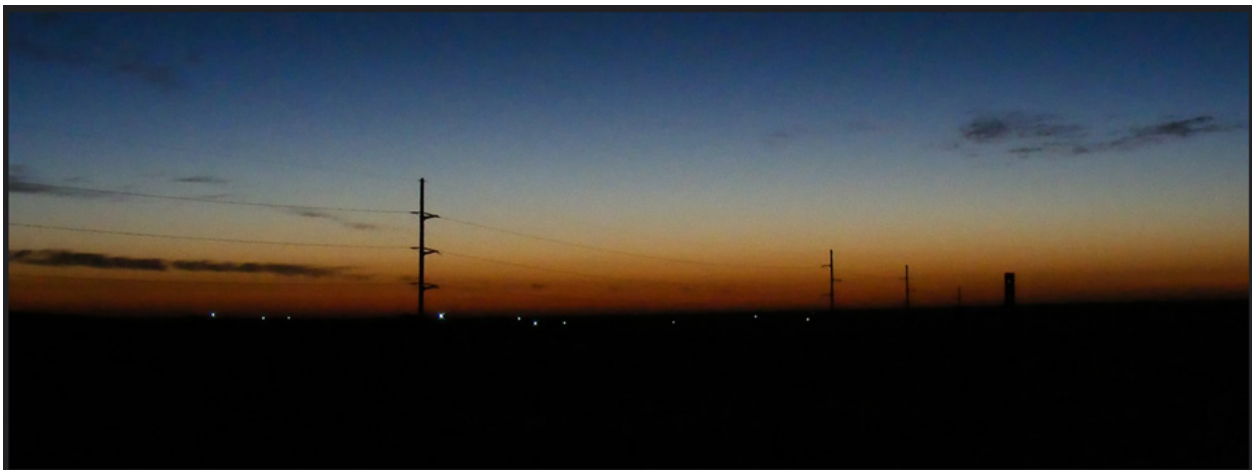

Photo Credit: Sunset and Power Lines by Jeff Ruane is licensed under Creative Commons Attribution-NonCommercial-NoDerivs 2.0 Generic (CC BY-NC-ND 2.0). See photo credits on back page.

[19] *See Appendix 5 Supplemental Information—Broadband Technologies*

# Nebraska Universal Service Fund and Reverse Auction

*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)**

## Findings

**The Nebraska Universal Service Fund (NUSF) provides support to price cap, rate of return, and mobile wireless carriers in Nebraska.** In 2019, the Nebraska Public Service Commission allocated $12,049,546 in high cost support to price cap carriers and $14,100,058 in high cost support to rate of return carriers.[20]

**Providers must be accountable for the support received from the Nebraska Universal Service Fund.** The Nebraska Public Service Commission has taken steps to move the fund toward a grant-like method of distribution whereby carriers must build first before receiving reimbursement.

## Key Recommendations

- Support the Nebraska Public Service Commission's efforts to modernize the NUSF contribution system and to improve provider accountability by moving to a grant-like system of distribution.
- Encourage the Nebraska Public Service Commission to continue to investigate a state-run reverse auction as a mechanism to spur broadband build out in rural areas.

**The total remittances to the NUSF have decreased from $52 million in 2013 to about $33 million in 2018. However, the Nebraska Public Service Commission has taken steps to stabilize the fund by modernizing the contribution methodology.** 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.[21]

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

**Broadband availability varies by incumbent carrier.** Approximately 79% of those rural households which do not have broadband available reside in Windstream, CenturyLink, Great Plains or Frontier (Citizens) exchanges.[22] Addressing the rural broadband divide in Nebraska will require strategies which address areas without broadband access served by both price cap and rate of return carriers.

**Implementing a reverse auction-like component could potentially maximize the impact of limited NUSF dollars in underserved areas of the state.** The current NUSF high cost distribution processes do not provide opportunities for entities that are not the incumbent carriers to compete for state universal service fund support.

[20] *See Appendix 6 NUSF Overview and Support Allocations for more information.*

[21] *See Appendix 6 NUSF Overview and Support Allocations for more information.*

[22] *See Appendix 7 Broadband Coverage in ILEC Territories by Any Provider*

**The FCC implemented a reverse auction, allocating $1.488 billion in support in August 2018 to be distributed over 10 years to expand rural broadband service in unserved areas in 45 states.** Awarded bids came in at 70% of the reserve/model costs for the block groups. Over $4 million was awarded to four carriers to serve 8,900 locations in Nebraska. Most locations in Nebraska are to receive service of 100 Mbps down/20 Mbps up via fixed wireless. Providers must build out to 40 percent of the assigned homes and businesses in a state within three years of becoming authorized to receive support. Buildout must increase by 20 percent in each subsequent year, until complete buildout is reached at the end of the sixth year.[23]

**Nebraska Legislative Bill 994, enacted in 2018, permits the Nebraska Public Service Commission to withhold support from the Nebraska Universal Service Fund "to any telecommunications company that has not served, to the commission's satisfaction, those areas with service that meets the criteria for successful investment of funding from the Nebraska Telecommunications Universal Service Fund."**

- LB 994 further permits the Nebraska Public Service Commission to "use the funding that is withdrawn to implement and operate a reverse auction program, except that any funding thatis withdrawn shall be utilized in the exchange area for which the funding was originally granted."

Photo Credit Mary Ridder

- On March 12, 2019, the Nebraska Public Service Commission opened a docket, Rule and Regulation #202, to adopt Reverse Auction and Wireless Registry rules in accordance with LB 994. The process of developing rules and regulations is expected to take approximately one year.[24]
- **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

- Support the Nebraska Public Service Commission's efforts to stabilize the Nebraska Universal Service Fund by modernizing the contribution system.
- 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.
- 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.
- 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.
- 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.[25]

[23] *More information on the Connect America Fund Phase II reverse auction is available at https://www.fcc.gov/auction/903. A map of winning bids is available at https://www.fcc.gov/reports-research/maps/caf2-auction903-results.*

[24] *See https://psc.nebraska.gov/administration/proposed-rules-regulations for information on the docket.*

[25] *See comments submitted by the Rural Telecommunications Coalition of Nebraska (RTCN) on April 18, 2019 available at https://psc.nebraska.gov/sites/psc.nebraska.gov/files/doc/administration/2019-04-18%20Comments%20of%20RTCN.pdf.*

- Examine how the Nebraska Public Service Commission currently collects information from carriers at the exchange level:
  - On what they built out the previous year and how the build out was funded, and
  - What their build out plans are for the next 3 to 5 years and how they intend to pay for that.

  Determine if the collection of this data could be improved.

## Metrics

| NUSF | |
|---|---|
| **Measure** | **2019 Most Recent Data**<br>**Nebraska Public Service Commission** |
| Annual contributions to the Nebraska Universal Service Fund (By Calendar Year) | 2017 - $35,321,380<br>2018 - $32,796,228<br>2019 - $18,333,749 (Through 1st Half, 2019) |
| Annual allocations from the Nebraska Universal Service Fund (By Calendar Year) | 2017 – $40,087,483<br>2018 - $33,139,591<br>2019 - $30,056,117 (Additional allocations may still be made in 2019) |
| The number of households and businesses in Nebraska which have broadband (25/3 Mbps Down/Up) available as a result of CAF II funding | A-CAM (2016-2018) – 3,828 Locations<br>CAF II (Price Cap Carriers) – 677 locations |
| The number of households and businesses in Nebraska which have, or will have broadband available as a result of NUSF funding (Includes only High Cost programs, NUSF-99 and NUSF-108) | NUSF-99 Projects (2016-Present) – 8,092<br>NUSF-108 Projects (2019) – 346 (Includes project notices received as of 8/9/2019) |

# Community and Regional Planning Can Drive Broadband-Related Development

Broadband planning and development usually starts with representatives from key organizations and groups in the community or region coming together to address the challenges facing the community or region. Groups and organizations represented may include:

- Business and industry,
- Community foundation,
- Local government,
- Local or regional economic development organizations,
- Education,
- Health care,
- Financial institutions,
- Telecommunications providers,
- Local public power district or cooperative,
- Nonprofit organizations, and
- Key populations

Broadband-related development doesn't require community leaders who know all of the answers. It does, however, require community leaders who have the passion and commitment to find the answers.

Community leaders assess what assets are available in the community and areas in which improvements need to be made. Community partners then work together on projects which address:

- Broadband availability and affordability,
- Developing a skilled IT workforce,
- Innovation and entrepreneurship,
- Digital literacy and inclusion,
- Technology adoption, and
- Quality of life


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It doesn't take a lot of money or resources to get started. Roberto Gallardo, a rural broadband advocate and researcher from Purdue University advises: "Don't scratch your head wondering where in the world you will get the money to pay for it. Often, all it takes is time and passion for your community. Resources will surface if true partnerships are established, volunteers are utilized, and the community commits to the priority of transitioning to the digital age. The important question really is: Does the community want to make the transition?"

*For additional information, see the broadband resources for communities in Appendix 8.*

# 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

**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.**[26] 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. Possible models are described below:

- 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 entites 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

## Key Recommendations

- Encourage local and regional broadband planning, including communications planning between telecommunications providers and public power districts and cooperatives.
- Explore the creation of broadband cooperatives in unserved and underserved localities.
- Retain the existing prohibition on retail provision of broadband service by public entities.
- Explore ways to make it easier for public entities to lease dark fiber.
- Explore legislation clarifying communications as an approved use for private easements set up for telephone and electric use.
- 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.

[26] *See Appendix 8 Supplemental Information--Public-Private Partnerships for more information.*

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.

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

Photo Credit Anne Byers

**Neb. Revised Statutes Section 86-577 places restrictions on leasing of dark fiber by public entities.** The current legislation requires public entities to lease dark fiber at the market rate, have the lease price and profit distribution approved by the public service commission, and contribute 50 percent of the profit to the Nebraska Internet Enhancement Fund.

This process adds additional time and uncertainty to a provider's implementation schedule. Currently one lease is in place. The burden of complying with the restrictions may factor into the low number of leases. However, it is likely that other factors are involved. Factors cited by telecommunications providers include:

- Existing public power-owned leasable fiber is not "last-mile fiber."
- Existing fiber is limited in quantity in routes and number of fibers.
- Existing public owned fiber is generally in areas that have alternative private sector fiber available.
- Private sector fiber is generally connected to a much more robust and established set of telecommunications carrier networks.
- Existing fiber may primarily be aerial fiber.
- There may not be any appreciable cost savings.

As more fiber is deployed by public entities, however, leasing could become more attractive in the future.

Another issue appears to be a lack of trust between the public power and telecommunications industries and a lack of familiarity with the other industry's regulatory structure.

**It is unclear if private easements set up for telephone and electric use could also be used for communications.** Legislation clarifying that communications is an approved use for private easements set up for telephone and electric use would eliminate uncertainty and litigation.

## Recommendations

- **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 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.**
- **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.**
- **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.
- **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.** Possible steps include:
  - » The Nebraska Public Service Commission (PSC) could work with the Nebraska Rural Electric Association (NREA) and Nebraska Public Power District (NPPD) to communicate information on the current process to provide additional clarity and address any misperceptions about the process.
  - » The current legislation could be modified to ease the restrictions. Options include:
    - Public entities could be required to file their lease rate with the Public Service Commission. The PSC would publish the rate for 30 days. If no protest is filed, the PSC would approve the lease. If a protest is filed, a hearing would be scheduled.
    - The percent of profits contributed to the Nebraska Internet Enhancement Fund could be reduced or eliminated.
    - All of the restrictions on leasing dark fiber could be eliminated.

- **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.**
- **Identify funding for public-private partnerships.** Possible funding sources for public-private partnerships include LB 840 funds, USDA broadband grants and loans, Community Reinvestment Act, and New Market Tax Credits. Additional sources of funding such as a state broadband grant program would facilitate the development of public-private partnerships. Approximately 25 states have created broadband grant funds.
- **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.**

## Metrics

| Measure | 2019 Most Recent Data<br>Nebraska Public Service Commission |
|---|---|
| The number of leases of dark fiber from public entities | 1 |

## Broadband, Precision Ag Technologies Would Add $47 to $65 Billion to U.S. Economy

Broadband and precision agricultural technologies are becoming increasingly important for agriculture. The USDA estimates that fully utilizing precision agricultural technologies would generate approximately $47-$65 billion annually in additional gross benefit for the U.S. economy. The USDA identified the following economic and environmental benefits of precision agriculture:

- 40% less fuel burned due to variable rate technologies
- 20% or greater reduction in water usage
- Up to 80% reduction in chemical application

Precision agriculture is in use by the early majority of row crop producers, with guidance systems used on approximately 50% of the planted acres of some row crops in the United States. The use of precision agriculture in specialty crops and livestock is still in the early stages of adoption, however.

Precision agricultural equipment requires both GPS and mobile broadband connectivity. Wired broadband can facilitate the transfer of the vast amounts of data generated by precision agricultural equipment from the field to the cloud where the data can be stored and analyzed. Currently 75% of agricultural producers in Nebraska have internet access. Many of these producers may lack sufficient upload speeds to transfer large amounts of data, necessitating the transfer of data via sneakers or the mail.

Photo Credit Mary Ridder

Sources: USDA. (April 2019). A Case for Rural Broadband: Insights on Rural Broadband Infrastructure and Next Generation Precision Agriculture Technologies. Available at https://www.usda.gov/sites/default/files/documents/case-for-rural-broadband.pdf
USDA. (August 2017). Farm Computer Usage and Ownership. Available at https://usda.library.cornell.edu/concern/publications/h128nd689

# Rural Broadband and Cooperatives

*By Gregory McKee, University of Nebraska-Lincoln*

Cooperatives provide goods and services throughout the economy. Recent efforts to expand rural broadband access have led to questions about using the cooperative business model to provide broadband.

## What Is a Cooperative?

Cooperatives are user-owned and user-controlled businesses formed to benefit a group of members.

Cooperatives are designed to reward use, encourage users to commit to using the business's services, and encourage users to voice opinions about how the business is doing.

## Cooperatives Provide Rural Broadband

Cooperatives are being used around the United States to provide broadband service.

Photo Credit Mary Ridder

1. **Cooperatives deploy broadband.** Some telecommunications cooperatives have expanded their service offerings to include broadband. Electricity distribution cooperatives have expanded infrastructure to provide broadband services themselves, through a subsidiary, or through an affiliate business. Hundreds of business arrangements, each unique to the circumstances and needs of the users, among these cooperatives can be found.

2. **Cooperatives facilitate community organization for broadband service.** Less common than utility cooperative affiliations are cooperatives organized to facilitate broadband availability. Maryland Broadband Cooperative, Mid-Atlantic Broadband Cooperative, and Michigan Broadband Cooperative work with local partners to facilitate community broadband demand, leverage existing infrastructure, or help design partnerships among broadband access providers. These cooperatives may also provide shared administrative services for internet service providers.

*For additional information on rural broadband and cooperatives, see Appendix 8.*

# 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

**As more services move online, internet access is becoming a necessity. Students who need to use the internet to complete homework are especially impacted.** The term "homework gap" is used to describe the challenge that students who lack home internet access face in completing online assignments.

**Approximately 16% of Nebraskans and 12% of Nebraskans under 18 years of age lack a home internet subscription.**[27] In addition, approximately 17% of Nebraskans only have mobile-broadband internet, which may be limited by data caps.[28] Mobile-only broadband users may also lack a computer or tablet which can make some tasks like applying for jobs or completing homework online more difficult.

**In some schools, the percent of students without internet access may be greater than 30%.**[29]

**Libraries are key community partners in providing internet and computer access to students and the general public—especially in rural areas.**

**84% of Nebraska public libraries serving populations less than 2,500 reported internet speeds of less than 24 Mbps down, with 68% reporting speeds of less than 13 Mbps.**[30]

## Key Recommendations

- Increase the number of public libraries applying for E-Rate support.
- Fund four regional technicians to assist public libraries with technology support, upgrades, digital literacy training, and E-Rate filing.
- 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.
- 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.
- Encourage education leaders and public library staff to be part of local community discussions involving broadband services and digital inclusion.

[27] *Source: U.S. Census Bureau 2017 American Community Survey 5-Year Estimate Data available at https://factfinder.census.gov/ . Note: The percent population with broadband internet subscription from the U.S. Census Bureau 2017 American Community Survey 5-Year Estimate includes those who subscribe to cable, fiber optic, or DSL, satellite or a fixed wireless service as well as those who only use mobile broadband plans for internet access.*

[28] *Pew Internet Research Center. Internet/Broadband Fact Sheet. Available at https://www.pewinternet.org/fact-sheet/internet-broadband/*

[29] *In a recent survey of Nebraska teachers, 49% of teachers from ESU 19 (Omaha Public Schools) and 32% of teachers from ESU 1 (Wakefield/Northeast Nebraska) estimated that over 30% of their students lacked internet access at home. See Appendix 10 Supplemental Information--Addressing the Homework Gap and Leveraging Funding.*

[30] *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*

Having high bandwidth of at least 100 Mbps available in public libraries would not only provide patrons with ample bandwidth for internet-dependent applications, but would also demonstrate high bandwidth capabilities to community members.

**Some school districts, ESUs, public libraries, and communities in Nebraska and in the United States are exploring or implementing 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.**

**Strategies which address the homework gap can also help improve internet access for other demographic groups who lack internet access as well.**

**The federal E-Rate program provides support for broadband connections in schools and libraries under two categories of service:**

- Category 1 services to a school or library (telecommunications, telecommunications services and Internet access),
- Category 2 services that deliver Internet access within schools and libraries (internal connections, basic maintenance of internal connections, and managed internal broadband services).

Discounts for support depend on the level of poverty and whether the school or library is located in an urban or rural area. The discounts range from 20 percent to 90 percent of the costs of eligible services.

Photo Credit Mary Ridder

**The E-Rate program is underutilized by Nebraska libraries.** Only 25% of public libraries in Nebraska applied for Category 1 (external connections) funding, and 3% of Nebraska public libraries applied for Category 2 (internal connections) funding in 2019-20.

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.

**The E-Rate Program includes a matching program for special construction charges for high-speed broadband.** The E-Rate Program will increase an applicant's discount rate for these charges up to an additional 10 percent to match the state funding on a one-to-one dollar basis. States participating in the matching program include Arizona, California, Colorado, Florida, Idaho, Illinois, Indiana, Kansas, Massachusetts, Maryland, Maine, Michigan, Missouri, Montana, Nevada, North Carolina, New Hampshire, New Mexico, New York, Oklahoma, Texas, Virginia, Washington, and Wisconsin.

**If the State of Nebraska provided matching funds for the construction of fiber network facilities to 22 libraries per year for 4 years (estimated at $55,000 per year or $220,000 over 4 years), the FCC would contribute a match of $220,000, the E-Rate program would contribute an additional $1.54 million in support, and libraries would contribute $220,000 (based on a statewide average E-Rate discount of 70%).**

**Nearly all Nebraska public school districts applied for E-Rate Category 1 (100%) and E-Rate Category 2 funding (98%) for 2019-20.5**[31]

[31] *Source: Universal Service Administrative Corporation (USAC) Data Retrieval Tools: https://slpin.universalservice.org/DRT/Default.aspx*

## 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 in FY 2020-21 and beyond.
- 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.
- 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.
- 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.
- Encourage education leaders and public library staff to be part of local community discussions involving broadband services and digital inclusion.
- 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.

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## Metrics

| Percent of Nebraskans Lacking Home Internet Subscriptions or Subscribing to Mobile Only | |
|---|---|
| **Measure** | **Most Recent Data** |
| Percent of Nebraskans who lack a home internet subscription | 16%<br>2017, ACS 5-Year |
| Percent of Nebraskans under 18 years of age who lack a home internet subscription | 12%<br>2017, ACS 5-Year |
| Percent of U.S. adults with a mobile only broadband subscription | 17%<br>2019, Pew Research Center |

| Percent Nebraska Libraries and School Districts Applying for E-Rate | |
|---|---|
| **Measure** | **Most Recent Data** |
| Percent of Nebraska Libraries Applying for Category 1 (External Connections) E-Rate | 25%<br>2019-20, USAC |
| Percent of Nebraska Libraries Applying for Category 2 (Internal Connections) E-Rate funding | 3%<br>2015-20, USAC |
| Percent of Nebraska K-12 public school districts Applying for Category 1 (External Connections) E-Rate | 100%<br>2019-20, USAC |
| Percent of Nebraska K-12 public school districts Applying for Category 2 (Internal Connections) E-Rate funding | 98%<br>2015-20, USAC |

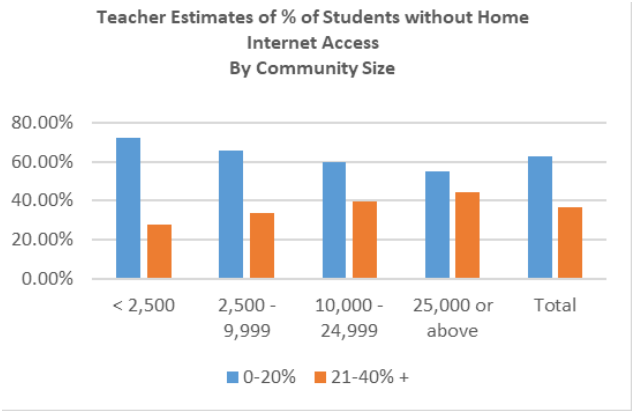
| Nebraska Library Broadband | |
|---|---|
| **Measure** | **Most Recent Data** |
| Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of Less than 12 Mbps | 42%<br>FY 2017-2018, Nebraska Library Commission |
| Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of Greater than 24 Mbps | 16%<br>FY 2017-2018, Nebraska Library Commission |
| Percent of Nebraska Libraries Serving Populations of Less than 2,500 with Internet Access of 100 Mbps or Greater | 0.6%<br>FY 2017-2018, Nebraska Library Commission |

# Survey Gauges Impact of Homework Gap on Students, Teachers

In order to better gauge the impact of the homework gap on teachers and students in Nebraska, a survey was disseminated via e-mail to 21,443 Nebraska teachers during July 2019.[32] Nearly 7,000 (6,919) teachers responded for a response rate of 32%.

The survey found:

- Over three-fourths (77%) of teachers agreed that if all students had broadband internet access at home, it would positively impact student learning/achievement.
- Nearly half of teachers (48%) agreed that the absence of home internet access for some students affects the level or amount of homework assigned.
- Most teachers report using digital resources for a minority of their homework assignments, with 64% of respondents indicating that less than 25% of their homework assignments are dependent on digital or internet-based resources.
- Overall, 37% of teachers estimated that 21% to greater than 40% of students do not have home internet access.
- Teacher estimates of the proportion of students not having home internet access varied by ESU and community size. The percent of teachers estimating that the percent of students lacking home internet access was 21% or greater increased with the size of the community, with 45% of those teaching in communities of 25,000 or larger estimating that at least 21% of students lacked home internet access (See Figure 1). The percent of teachers estimating that at least 21% of students lacked home internet access by ESU ranged from a low of 23% in ESU 11 (Holdrege) to a high of 65% in ESU 19 (Omaha Public Schools).




Most teachers (90%) reported that accommodations are made to address students' lack of home internet access. The accommodations most often cited included:

- Providing more class time to complete homework assignments (55%);
- Providing some students with printed materials that otherwise would be internet-based (41%); and
- Providing before-school and after-school time to complete homework assignments (33%).

[32] *See Appendix 10 Nebraska Homework Gap Survey Results for complete survey results.*

# Federal Rural Broadband Infrastructure Funds

*Make recommendations to the Governor and Legislature as to the most effective and efficient ways that federal broadband rural infrastructure funds received after the operative date of this section should be expended if such funds become available.*

**–Nebraska Revised Statutes 86-1102(3)(f)**

## Recommendations

Funding opportunities should be monitored and communicated to interested stakeholders, including communities.

If federal rural broadband infrastructure funds or other sources of funds become available, the Rural Broadband Task Force will immediately activate a subcommittee to review any rules or requirements associated with the funding and will draft recommendations on how the funds should be expended. The subcommittee will address the following questions and any other issues identified in the rules and requirements:

- Who should administer the funds? Should other agencies/entities be involved/consulted in the development of guidelines and selection criteria?
- How should the distribution of infrastructure funds be coordinated with the NUSF?
- Should the funds be distributed through a grant program, a reverse auction, or other mechanism?
- What criteria should be used to evaluate grant applications or bids?
- Should the funds be available to all carriers or just eligible telecommunications carriers (ETCs)?
- Should rural communities be involved in the process? How could they be involved?
- How could other local, state and federal funds be leveraged to assist the effort?"

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**Copies of the executive summary, full report, and appendices are available at:**
**https://ruralbroadband.nebraska.gov**

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