

### August 15, 2018 Meeting Agenda

Wednesday, August 15, 2018 at 9:00 AM CDT

Host Location: Varner Hall Lower Level IVC Room, 3835 Holdrege Street, Lincoln, NE

Remote Sites:

ESU 2 Admin Office, 2320 Colorado Avenue, Fremont, NE;

Technology Office, Central Community College, 3134 Hwy 34, Grand Island, NE;

Technology Office, District OR-1 School, 425 F Street, Palmyra, NE;

Campus Service Bldg-NATS Room, Wayne State College, 1111 Main Street, Wayne, NE

Admin Office, Schuyler Public Schools, 401 Adam Street, Schuyler, NE

**Open Meetings Act** (PDF - 11 pgs, 234KB)

Meeting Documents (PDF, MB)

<b>9:00 AM</b>	<b>1.</b> Call to Order, Electronic Posting, Location of Open Meeting Law Documents, Roll Call, Introductions	Co-Chair
<b>9:05 AM</b>	<b>2.</b> Consider approval of the Agenda for the August 15, 2018 meeting*	Co-Chair
<b>9:08 AM</b>	<b>3.</b> Consider approval of the Minutes from the 4/25/2018 meeting*	Co-Chair
<b>9:10 AM</b>	<b>4.</b> Public Comment	Co-Chair
<b>9:15 AM</b>	<b>5.</b> Announcements, Miscellany	T. Rolfes
<b>9:20 AM</b>	<b>6.</b> NebraskaCloud Single Sign-on Presentation	C. Hicks (invited)
	<b>A.</b> Federated Directory System Link	
	<b>B.</b> Single Sign-on Demonstration	
<b>9:50 AM</b>	<b>7.</b> Nebraska Rural Broadband Task Force	T. Rolfes
	<b>A.</b> Governor's Press Release	
	<b>B.</b> Discussion: Presenting educational needs and issues	
	<b>C.</b> Creating the Rural Broadband Study Task Force (Summary)	
<b>10:10 AM</b>	<b>8.</b> Filling the Homework Gap and Narrowing the Digital Divide	T. Rolfes
	<b>A.</b> Sparks Grant Update: Bancroft, Bayard, Genoa, Imperial-Lied, Verdigre, Wymore	
	<b>B.</b> NDE/NET/OCIO Comments to the FCC to Transform the 2.5 GHz Spectrum (Educational Broadband Service)	

<b>10:30 AM</b>	<b>9. Network Nebraska 2018-2020 Action Items</b>	Co-Chairs
	<b>A. Future Network deliverables</b>	
	<b>B. Communication Hub deliverables</b>	
	<b>C. Security Initiative deliverables (June 20 Recap and September 28-29 Events)</b>	
<b>10:40 AM</b>	<b>10. Digital Education 2018-2020 Action Items</b>	Co-Chairs
	<b>A. Student Transition deliverables</b>	
	<b>B. Equity of Access deliverables</b>	
<b>10:50 AM</b>	<b>11. Subsector Reports</b>	Co-Chair
	<b>A. University of Nebraska</b>	
	<b>B. Nebraska State Colleges</b>	
	<b>C. Nebraska Community Colleges</b>	
	<b>D. Nebraska Independent Colleges and Universities</b>	
	<b>E. Public K-12 and ESUs</b>	
	<b>F. Private/Denominational K-12</b>	
	<b>G. Nebraska Educational Television</b>	
	<b>H. Coordinating Commission for Postsecondary Education</b>	
<b>11:10 AM</b>	<b>12. Agenda Items for the 10/17/2018 Meeting</b>	Co-Chair
<b>11:15 AM</b>	<b>13. Consider location(s) for the 10/17/2018 Meeting</b>	Co-Chair
<b>11:20 AM</b>	<b>14. Adjournment</b>	Co-Chair

\* Indicates an expected action item.

The Council will attempt to adhere to the sequence of the published agenda, but reserves the right to adjust the order of items if necessary and may elect to take action on any of the items listed.

The NITC Education Council wishes to thank staff of the University of Nebraska Online for helping to arrange the August 15, 2018 meeting.

NITC/Education Council [Homepage](#)

Meeting Notice Posted to the [Nebraska Public Meeting Calendar](#) 8/10/2018

Agenda Posted to the [NITC Web site](#) 8/10/2018

## **EDUCATION COUNCIL**

Nebraska Information Technology Commission

Wednesday, April 25, 2018 at 9:00 a.m. CDT

Host Location:

Varnier Hall Lower Level Board Room  
3835 Holdrege Street, Lincoln, Nebraska

## **MINUTES**

### **MEMBERS PRESENT:**

Mr. Derek Bierman, Northeast Community College

Mr. Andrew Buker, Alt. Bret Blackman, University of Nebraska-Omaha  
(Zoom, waiting on confirmation, non-voting)

Mr. Burke Brown, District OR 1 (Palmyra-Bennet)

Mr. Mike Carpenter, Doane University

Mr. Matt Chrisman, Mitchell Public Schools

Dr. Ted DeTurk, ESU 02

Mr. John Dunning, Wayne State College

Mr. Steve Stortz, Alt. for Stephen Hamersky (Zoom, not voting, participation only)

Mr. Steve Hotovy, Nebraska State College System

Mr. Trent Kelly, Hastings Public Schools

Mr. Gary Needham, ESU 09

Ms. Mary Niemiec, University of Nebraska

Mr. Tom Peters, Central Community College

**LIAISONS/ALTERNATES PRESENT:** Dr. Mike Baumgartner, CCPE; Mr. Chad Davis, NET; and Ms. SuAnn Witt, NDE

**MEMBERS/LIAISONS ABSENT:** Dr. Dan Hoelsing, Schuyler Public Schools; Mr. Greg Maschman, Nebraska Wesleyan University; Mr. Alan Moore, ESU 03 and Mr. Ed Toner, OCIO

### **CALL TO ORDER, ELECTRONIC POSTING, LOCATION OF OPEN MEETING LAW DOCUMENTS, ROLL CALL, INTRODUCTIONS**

Co-Chair, Gary Needham, called the meeting to order at 9:04 a.m. Roll call was taken. There were 11 voting members present. A quorum existed to conduct official business. The meeting notice was posted to the [Nebraska Public Meeting Calendar](#) on February 22, 2018. The meeting agenda was posted to the [NITC Web site](#) on April 23, 2018.

### **CONSIDER APPROVAL OF THE AGENDA FOR THE APRIL 25, 2018 MEETING\***

**Mr. Hotovy moved to approve the April 25, 2018 meeting agenda as presented. Mr. Carpenter seconded. Bierman-Yes, Brown-Yes, Carpenter-Yes, Chrisman-Yes, DeTurk-Yes, Dunning-Yes, Hotovy-Yes, Kelly-Yes, Needham-Yes, Niemiec-Yes, and Peters-Yes. Results: 11-Yes, 0-No, 0-Abstain. Motion carried.**

## CONSIDER APPROVAL OF THE [MINUTES](#) FROM THE 2/21/2018 MEETING\*

**Ms. Niemec moved to approve the February 21, 2018 minutes as presented. Mr. Hotovy seconded. Bierman-Yes, Brown-Yes, Carpenter-Yes, Chrisman-Yes, DeTurk-Yes, Dunning-Yes, Hotovy-Yes, Kelly-Yes, Needham-Yes, Niemiec-Yes, and Peters-Yes. Results: 11-Yes, 0-No, 0-Abstain. Motion carried.**

## PUBLIC COMMENT

There was no public comment.

## ANNOUNCEMENTS, MISCELLANY

Mr. Rolfes made the following announcements:

- Andrew Buker, Alternate for Bret Blackman, was introduced to the Council. He joined the meeting today via Zoom but is not able to vote. There are lots of “Alternate” vacancies on the council. Mr. Rolfes reminded members to appoint an alternate to serve on the council in their absence. Alternates do not have to be approved by the NITC.
- Today is the 20<sup>th</sup> Anniversary of the NITC. LB924 was established in 1998. To honor this occasion, Mr. Rolfes brought cookies for the Council.
- LB994 to create the Rural Broadband Study Task Force was passed this legislative session. This will be discussed later in the meeting.
- Last Wednesday, the Office of the CIO was informed that the SPARKS grant was awarded.

Ms. Niemec thanked Mr. Rolfes for his hospitality.

## FUTURE READY NEBRASKA PRESENTATION

[Future Ready Nebraska Infocard](#) and [Future Ready Nebraska Website](#)

Dean Folkers and Dorann Avery, NDE

Dr. Folkers and Ms. Avery provided historical information about Future Ready efforts in the country as well as Future Ready Nebraska (FRN). The Department of Education has created an Interactive Website that shares all of the FRN plan details:

- 28 Goals and action steps tied to ESSA
- 30 Goals and action steps tied to AQuESTT tenets
- 29 Goals and action steps aligned to the National Education Technology Plan
- 15 Goals and action steps supporting the State Board Strategic Vision and Direction

Many of the Future Ready Nebraska (FRN) goals coincide with the NITC’s goals and action items contained in the Statewide Technology Plan for Digital Education:

1. Action: Create Professional development opportunities for all Nebraska educators to maximize student success through the innovative uses of technology in teaching.
2. Action: Address technical challenges for students in the transition from secondary to postsecondary education.
3. Action: Expand awareness and address the need for equity of access as it relates to digital education.

Overall, FRN's goal for every student, every day is as follows:

- Increased equity across the state for ALL students
- Increased opportunities for ALL students
- Need for collaborative leadership throughout the state
- Creates a systematic approach to change
- Personalized learning for each student at the center

Partnerships and sustainability were discussed. Private/public grants and collaboration will be vital. On May 2<sup>nd</sup>, the FRN Council will be meeting to discuss next steps and implementation, roles and responsibilities for what, budget, implementation teams, and the FRN website.

The NITC Education Council agreed to collaborate with FRN. There are Education Council members serving on the FRN council but would like to have additional Education Council members to serve on FRN work groups. Burke Brown volunteered to assist FRN with Digital Education. It was stressed that higher education participation is important as well.

## **LEGISLATIVE RECAP**

Legislative bills left in Committee include the following:

- **LB 856 Net Neutrality**  
Members are very concerned about this issue and how it impacts education entities in the state of Nebraska. The Council would like to form a group to research and determine implications of how this affects the State of Nebraska. Ad hoc work group volunteers included John Dunning, Ted DeTurk and Mike Carpenter. They are to create a fact-based document to share with their sectors and the NITC.
- **LB 1113** Provide an exception for leasing dark fiber or providing Internet services by an agency or political subdivision

The following legislative bill was left on General File:

- **LB 966** Sales and use tax exemption for dark fiber

The following legislative bills were passed and approved:

- **LB 994** To create the Rural Broadband Study Task Force and exempt dark fiber from sales tax.

(Excerpt) Section 1. It is the intent of the Legislature that broadband telecommunications service in rural areas of the state should be comparable in download and upload speed and price to urban areas in the state where possible and that state resources should be utilized to ensure that the rural residents of the state should not be penalized simply because of their rural residence. It is further the intent of the Legislature that the residents of this state should have access to broadband telecommunications service at a minimum download speed of twenty-five (25) megabits per second and a minimum upload speed of three (3) megabits per second.

Sec. 2. (1) The Rural Broadband Task Force is hereby created. Task force members shall include:

1. the chairperson of the Transportation and Telecommunications Committee of the Legislature,
2. a member of the Legislature selected by the Executive Board of the Legislative Council who shall both serve as nonvoting, ex officio members,
3. a member of the Public Service Commission who shall be selected by the chairperson of such commission,
4. the chairperson of the Nebraska Information Technology Commission or his or her designee, who shall act as chairperson of the task force,
5. the Director of Economic Development or his or her designee,
6. the Director of Agriculture or his or her designee,

The following members to be appointed by the Governor:

7. a representative of the agribusiness community,
  8. a representative of the Nebraska business community,
  9. a representative of the regulated wireline telecommunications industry,
  10. a representative of the wireless telecommunications industry,
  11. a representative of the public power industry,
  12. a representative of health care providers,
  13. a representative of Nebraska postsecondary educational institutions, and
  14. a representative of rural schools offering kindergarten through grade twelve
- **LB 944** Governor's Budget Bill. In the bill, additional funding was provided for Network Nebraska E-rate and Invoice Consolidation to begin July 2019. This will allow the Office of the CIO to go forward with an opt-in process to aggregate E-rate filing, as well as for the CIO to coordinate WAN circuit payments for entities. This will give the OCIO more control and authority regarding contract enforcement. Mr. DeTurk has spoken with some entities. His impression is that most do not want to do the E-rate filing themselves.

## **IMLS SPARKS GRANT IMLS GRANT #LG-99-18-0018-18--NEBRASKA SCHOOLS AND LIBRARIES: BREAKING THE ICE AND IGNITING INTERNET RELATIONSHIPS**

The grant subawardees are located in the following communities: Bancroft, Genoa, Imperial, Verdigre, and Wymore. The grant amount is \$25,000 for 5 pilot projects. Phase 1 will be to install a fixed wireless connection from the school to the library. In the Fall of 2018, the school district will decide how much they will share with the Library. Phase II is a decision point for the partnership: 1) discontinue the partnership in June 2019; 2) Keep the wireless augmentation as is; 3) create a new E-rate consortium Billed Entity which would include the school district and the public library. This would qualify them for E-rate on a terrestrial circuit between the school and library. Members were pleased to hear about library and school partnership. Mr. Dunning offered Wayne State College assistance to the project.

### **NETWORK NEBRASKA 2018-2020 ACTION ITEMS**

#### **Future Network deliverables; Communication Hub deliverables and Security Initiative deliverables**

The work group met and discussed “audience focused” information. Different audiences are interested in different areas of interest: IT technicians, teachers, administrators/superintendents, chief information officers, chief financial officers, and legislative entities. The work group decided to develop a one-page document for each audience. The group discussed how to articulate the value of advanced services provided by Network Nebraska. For example, DDoS protection is offered by Network Nebraska at no charge but members are not very aware that DDoS protection exists. Holly West, OCIO Public Information Officer, will be assisting the Council with this effort.

### **DIGITAL EDUCATION 2018-2020 ACTION ITEMS**

#### **Student Transition deliverables and Equity of Access deliverables**

Burke Brown and the work group concentrated on the measurable and deliverables. The work group members from Higher Education were going to check into having a graduate student take this on as a project. It was recommended for the work group to fine tune what the research study will include, and to possibly work with Future Ready Nebraska’s goals.

The Education and Community Councils are working together as a work group in regards to equity of access. Communication and collaboration is continuing between ESU’s and school technicians.

### **SUBSECTOR REPORTS**

**University of Nebraska.** No major updates. The Innovation in Pedagogy and Technology Symposium will be held on May 8<sup>th</sup> at the Cornhusker Marriott in Lincoln. If

members were interested in attending, they were to contact Ms. Niemec. The National Council of SARA (State Authorization Reciprocity Agreements), is building a portal where institutions can list their online SARA courses/programs. This was initially voluntarily by states with the responsibility of the institution to keep it up-to-date. There are other participating states that have expressed concerns regarding the portal, as well as security issues.

**Nebraska State Colleges.** A consultant study was recently done to review risk compliance and assessment. Overall, the state college systems did OK but will need to make some investment on the findings. The Office of the CIO will be assisting so costs won't be as much as expected. The main result was to develop a security process. The Nebraska State College system collaborated with UNL on the Student Information System authentication. There is a lot of cross agency collaboration. ITIL (deployment of services) compliance is being utilized. Butler Community College, in Kansas, is a partner.

**Nebraska Community Colleges.** Mr. Peters reported that his institution is actively looking for collaborative partners for a virtual desktop initiative, focusing on security and cost effectiveness. Mr. Bierman stated that his institution is working on improving their information security.

**Nebraska Independent Colleges and Universities.** On May 22<sup>nd</sup> and 23<sup>rd</sup>, Homeland Security will be doing a cyber security audit for Doane University. This is a free service and they also indicated they could monitor education networks. Homeland Security also did a "physical" security audit a year ago. The independent colleges are organizing a CIO summit to be held in the near future.

**Public K-12 and ESUs.** Not filling IT vacancy positions has had a negative effect on institutions and ESUs. The Nebraska Department of Education and ESUCC have partnered to provide a solution for single sign-on. This past year the NeSA testing went very well. Lancaster County Sheriff's office has requested access to video stream, floor plans, etc. from schools. Mental health services were discussed in regards to the physical security of students.

**Private/Denominational K-12.** Earlier this month, the Lutheran schools met to discuss internet and E-rate. Only one school is currently receiving E-rate. It was agreed that the other schools should apply for E-rate, as well as consider becoming participants of Network Nebraska. On March 2<sup>nd</sup>, the Lincoln Diocese and Omaha Archdiocese met to discuss internet and Network Nebraska.

**Nebraska Educational Television.** No report.

**Coordinating Commission for Postsecondary Education.** No report.



## **CONSIDER LOCATION(S) FOR THE 6/20/2018 MEETING**

Mr. Rolfes will poll to see if there is a quorum. The location may be at Varner Hall with video conferencing.

## **AGENDA ITEMS FOR THE 6/20/2018 MEETING**

Agenda items to be considered for the next meeting:

- Report of Net Neutrality bullets
- FRN Council and EC collaboration
- Discussion about physical building security

## **ADJOURNMENT**

**Mr. Kelly moved to adjourn. Mr. Carpenter seconded. All were in favor. Motion carried by voice vote.**

The meeting was adjourned at 11:27 a.m. CDT

The meeting minutes were taken by Lori Lopez Urdiales and reviewed by Tom Rolfes, Office of the CIO/NITC.



(https://www.facebook.com/GovernorPeteRicketts)



(https://twitter.com

/GovRicketts)



(https://www.instagram.com

/govricketts/)

(https://www.flickr.com

/photos

/governorpetericketts/)



(https://www.youtube.com

/channel

/UCcDw3\_CGhTVcVtxoGKRkjIQ

/feed)



(https://ne-test-governor.cdc.nicusa.com

/governor-news)

# Governor Ricketts Announces Rural Broadband Task Force Members

◀ 46

◀ 16

July 30, 2018

Media Contacts:

Taylor Gage, Governor’s Office, 402-471-1970

Holly West, Office of the CIO, 402-471-5807

LINCOLN – Today, Governor Pete Ricketts announced representatives to serve on the Rural Broadband Task Force. The task force will review issues related to availability, adoption, and affordability of broadband services in rural areas of Nebraska and make recommendations to the Legislature.

“While Nebraska has rightly earned a reputation as the Silicon Prairie, we have more work to do to ensure that every part of the state has access to broadband to grow businesses, support smart farming, and to improve access to health care and educational opportunities,” said Governor Ricketts.

Governor Ricketts has appointed the following members to the task force:

- Andrew Buker, Omaha, Executive Director of Infrastructure Services, Information Technology Services, University of Nebraska (representing Nebraska postsecondary educational institutions)
- Ron Cone, Kearney, Director of Network Information Services, ESU 10 (representing rural schools offering kindergarten through grade twelve)
- Isaiah Graham, St. Paul, Vice President, Homestead Bank (representing the Nebraska business community)
- Zachary Hunnicutt, Giltner, corn, popcorn, and soybean farmer, Hunnicutt Farms (representing agribusiness)
- Timothy Lindahl, Sidney, CEO/General Manager, Wheat Belt Public Power District (representing the public power industry)
- Tom Shoemaker, Cambridge, President, Pinpoint Communications, Inc. (representing the regulated wireline telecommunications industry)
- Daniel Spray, Norfolk, Owner, Precision Technology, Inc. (representing the

wireless telecommunications industry)

- Anna Turman, Hay Springs, CEO, Chadron Community Hospital and Health Services (representing health care providers)

Other members of the 14-member task force include Ed Toner, Chief Information Officer for the State of Nebraska and Chair of the Nebraska Information Technology Commission, who will act as Chair of the Rural Broadband Task Force; Mary Ridder, Chair, Nebraska Public Service Commission; Dave Rippe, Director, Nebraska Department of Economic Development; Steve Wellman, Director, Nebraska Department of Agriculture; Senator Curt Friesen, District 34, Chair, Transportation and Telecommunications Committee, Nebraska Legislature; and Senator Bruce Bostelman, District 23, Nebraska Legislature.

“With broadband available to 89 percent of Nebraskans, but only 66 percent of rural Nebraskans, Nebraska is facing a rural-urban digital divide,” said Toner. “I welcome the opportunity to work with key stakeholders on the Rural Broadband Task Force to improve broadband availability in Nebraska.”

The task force was created by LB 994, which was passed 48-0-1 by the Legislature and signed by Governor Ricketts on April 17. The bill was introduced by Senator Curt Friesen, chair of the Transportation and Telecommunications Committee. The task force will submit a report of its findings and recommendations to the Legislature by Nov. 1, 2019.

###

**LB 994 (excerpts)** <https://nebraskalegislature.gov/FloorDocs/105/PDF/Final/LB994.pdf>

**Section 1. The Legislature finds and declares that:**

(1) The availability, quality, and affordability of broadband telecommunications service is important to the residents of Nebraska; and

(2) Because availability, quality, and affordability of broadband telecommunications service is lacking in certain rural areas in Nebraska, combined with greater investment in urban areas, the state may be facing a digital divide.

It is the intent of the Legislature that broadband telecommunications service in rural areas of the state should be comparable in download and upload speed and price to urban areas in the state where possible and that state resources should be utilized to ensure that the rural residents of the state should not be penalized simply because of their rural residence.

It is further the intent of the Legislature that the residents of this state should have access to broadband telecommunications service at a minimum download speed of twenty-five (25) megabits per second and a minimum upload speed of three (3) megabits per second.

**Sec. 2. (1) The Rural Broadband Task Force is hereby created. Task force members shall include:**

1. the chairperson of the Transportation and Telecommunications Committee of the Legislature,
2. a member of the Legislature selected by the Executive Board of the Legislative Council who shall both serve as nonvoting, ex officio members,
3. a member of the Public Service Commission who shall be selected by the chairperson of such commission,
4. the chairperson of the Nebraska Information Technology Commission or his or her designee, who shall act as chairperson of the task force,
5. the Director of Economic Development or his or her designee,
6. the Director of Agriculture or his or her designee,

**The following members to be appointed by the Governor:**

7. A representative of the agribusiness community,
8. a representative of the Nebraska business community,
9. a representative of the regulated wireline telecommunications industry,
10. a representative of the wireless telecommunications industry,
11. a representative of the public power industry,
12. a representative of health care providers,
13. a representative of Nebraska postsecondary educational institutions, and
14. **a representative of rural schools offering kindergarten through grade twelve.**

Sec. 2. (4) Task force members shall serve on the task force without compensation but shall be entitled to receive reimbursement for any actual expenses incurred for such service as provided in sections 81-1174 to 81-1177.

<**Application for Governor's Executive Appointment:** <https://governor.nebraska.gov/board-comm-req>>

**Sec. 2. (2) The task force may appoint advisory groups** to assist the task force in providing technical expertise and advice on any issue. The advisory groups may be composed of representatives of stakeholder groups which may include, but not necessarily be limited to:

- representatives from small and large wireline companies,
- wireless companies,
- public power districts,
- electric cooperative corporations,
- cable television companies,
- Internet service providers,
- low-income telecommunications and electric utility customers,
- health care providers,
- representatives of educational sectors.

No compensation or expense reimbursement shall be provided to any member of any advisory group appointed by the task force.

**Sec. 2 (3) In particular, the task force shall:**

- (a) 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;
- (b) 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;
- (c) Review the feasibility of alternative technologies and providers in accelerating access to faster and more reliable broadband service for rural residents;
- (d) 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;
- (e) Recommend state policies to effectively utilize state universal service fund dollars to leverage federal universal service fund support and other federal funding;
- (f) 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; and
- (g) Determine other issues that may be pertinent to the purpose of the task force.

**Before the  
Federal Communications commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Amendment of Parts 1, 21, 73, 74 and 101 of the	)	
Commission's Rules to Facilitate the Provision of	)	WT Docket No. 03-66
Fixed and Mobile Broadband Access, Educational and	)	(Terminated)
Other Advanced Services in the 2150-2162 and 2500-	)	
2690 MHz Bands	)	
	)	
<b>Transforming the 2.5 GHz Band</b>	)	WT Docket No. 18-120

**Initial joint comments of the Nebraska Department of Education (NDE),  
Nebraska Educational Television (NET), and the  
State of Nebraska Office of the Chief Information Officer (OCIO)**

---

**I. INTRODUCTION**

1. Release of this NPRM and rededication of the EBS spectrum to education could not be timelier. Transmission technology has caught up to the need and the ability for licensed users to make a significant impact on educational opportunities. Schools and State Departments of Education are embracing personalized learning with greater utilization of digital resources in the learning environment. More and more, schools are providing laptops, tablets, or other computing devices for each student in a "one-to-one" environment so that every student has what they need to complete their learning objectives. In Nebraska, 138 of 244 districts have deployed one-to-one initiatives in some or all of its grade levels. In the 2016-17 technology profile, Nebraska schools reported a total of 141 high/middle schools and 181 elementary schools with some type of one-to-one program for students.

2. Equity is diminished when those same students head home where there is no connection to a data network and the school's digital learning tools. Teachers are less likely to utilize digital learning or make homework assignments when students lack access at home. Parents are generally excited about the implementation of digital learning environments, but the equity issue arises again when 9% (urban) to 34% (rural) of the state's student population have no access at home. One parent in a rural Nebraska town wrote to the district leadership on how she had to drive to a neighboring rural town to get access:

[excerpt] "So, here Liz & I sit, in the running car, outside the library in Syracuse, so we can use the free WiFi. Liz tells me she was told, "Since you get to take the Chromebooks home, you have no excuse for not getting the vocabulary homework done." [see NE-EBS Attachment A: 12/2016 Parent Email to School District OR1].

Equity is not equity when students have to leave their home and drive to another location just to get online.

3. In Nebraska, EBS has the potential to be a critical component in extending the *Network Nebraska* broadband backbone and direct connection to the school's resources, if strategically deployed. By blanketing the state with wireless service, all learners would have access to the information and digital resources they need for anytime, anywhere learning.

## II. BACKGROUND

### A. Current status of *Network Nebraska* Broadband Backbone

4. The Nebraska Legislature created *Network Nebraska* in 2007 as a statewide network interconnecting public and private schools and colleges. By 2017, 100% of the 244 public school districts had joined *Network Nebraska* with fiber Wide Area Network (WAN) circuits and now share over 90 GBPS of daily Internet capacity, purchased at the statewide level. In addition to the school districts, all 17 Educational Service Units (intermediate service agencies) and 25 public and private colleges and universities also belong to *Network Nebraska*. *Network Nebraska* is jointly managed by the State Office of the CIO and the University of Nebraska. It has a 24/7 Helpdesk and its staff monitor all 300+ fiber circuits and Internet access. During the school day, *Network Nebraska* provides superfast and super reliable Internet to 318,000 public K-12 students and 23,000 staff with one of the lowest unit rates in the United States [see attachment B: *Network Nebraska* map].

### B. Background on Nebraska's Situation

5. Nebraska is a very rural and sparsely populated state. Approximately 64% of the 244 school districts have fewer than 500 students K-12 [see Attachment C: Student Sparsity Map]. Over half of the school districts occupy only one building. Only six of the 244 school districts have more than one high school in the district. With 93 separate counties, Nebraska public school district boundaries do not correspond to county boundaries [see Attachment D: Nebraska School District Map]. In addition, Nebraska's tribal schools are part of the state accredited public school districts operated under local control. Although the state population density averages 23.5 persons per square mile, a vast majority

of the land mass has less than 5 persons per square mile, while the county of Douglas (i.e. Omaha) has over 1,600 persons per square mile.

6. Nebraska students are well-positioned with connectivity and Internet access while at school during the day; however, the situation reverses itself when students return home. An estimated 15-20% (45,000-60,000) of these students either do not have wired or wireless Internet access at all, or are dramatically underserved, far below the 25Mbps/3Mbps benchmark identified by the FCC. In very sparse rural areas and on tribal lands, the proportion of un-served students is believed to be much higher. For those students who are lucky enough to be within range of a cellular service, data caps quickly render this technology useless for educational purposes.

7. Nebraska school districts that have implemented district-owned computing devices that go home with students do so without regard to home connectivity. An estimated 100,000 devices (e.g. Chromebooks, iPads, laptops) have been deployed across the state reaching almost 1/3 of Nebraska's K-12 student population. Teachers, knowing that many of their students are without home access, are limited in the types of homework assignments that can be given, since a high level of inequity exists.

8. Nebraska has 270 public libraries. For the vast majority of rural Nebraska, the local public library represents the only source of free Wi-Fi Internet for students without home access. So, families with students routinely load up their car and drive into the library's parking lot after hours and on weekends to get Internet access for homework assignments, research, and other Internet-related activities. And what do they find there? Unfortunately, 82% of Nebraska libraries reported their contracted Internet speeds below 25 Mbps and 68% of these libraries reported download speeds at or below 12 Mbps.

9. In Nebraska's urban school districts where telecommunications competition thrives, at least two providers are offering residential fiber Internet service of 300 Mbps for under \$40/month. In rural Nebraska communities, it is not uncommon to subscribe to DSL service of 1 Mbps up and 6 Mbps down for \$60/month. This is evidence that the digital divide for urban and rural students is actually getting wider, not narrower.

### **C. Technology Pilots to Address Inequitable Access**

10. State leaders have been encouraging technology pilot projects to help address students' inequitable access.



- ☐ The State Office of the CIO approached Microsoft with six different projects in order to attract funding to test the applicability of TV White Space (482-698 MHz) for rural settings. Funding requests were not granted.
- ☐ Educational Service Unit 5 in Beatrice, Nebraska was awarded a Gigabit Library Network grant of \$15,000 to pilot TV White Space between their ESU and four community hotspots, including the public library. Although the bidirectional transmission was non line-of-sight, the end users' experiences at each location varied between 4 Mbps and 6 Mbps at a distance of 1 to 3 miles.
- ☐ The Nebraska Library Commission and the State Office of the CIO was awarded an Institute for Museum and Library Services (IMLS) grant of \$25,000 to pilot five school district/public library partnerships to share Internet over fixed-base wireless (5 GHz) connections during 2018-19. Internet speeds at these library homework hotspots will increase by 400-1500%.
- ☐ The Nebraska Department of Education (NDE), Nebraska Educational Telecommunications (NET), and the State Office of the CIO (OCIO) have begun exploring the feasibility of a statewide 4G/LTE wireless network solution using 2.5 GHz (EBS) spectrum. Conference calls have occurred with the Northern Michigan University's Educational Access Network (EAN) and the Kings County Office of Education in California, who each operate mature LTE networks for educational access.

#### **D. Nebraska's Infrastructure Environment**

11. Nebraska has significant statewide infrastructure that may make it a well-positioned location to implement a statewide wireless broadband solution.

- ☐ Nebraska currently has 30 active EBS licenses, with 73% leased to providers, and 13% transferred to providers, but in no way do the 30 active licenses present a comprehensive coverage of rural Nebraska.
- ☐ Nebraska has about 60 state-owned or state-leased towers at 90 meters or higher, almost all with fiber backhaul to the statewide network.
- ☐ All 244 public school districts and 17 Educational Service Units are fiber-connected to the statewide network.
- ☐ *Network Nebraska* has ample after-hours Internet capacity that could be used to supply a statewide EBS deployment.
- ☐ Nebraska school districts and colleges are prepared to utilize single sign-on authentication by students and staff to enable controlled access to wireless network resources.

- ☐ Nebraska has a highly collaborative partnership of state government, public television, K-12 and higher education engineers and technicians who work together for the common good.

#### **E. The Nebraska EBS Project Plan (NE-EBS Project)**

12. The *Future Ready Nebraska PK-12 Digital Learning and Ed Tech Plan* includes several goals focused on equitable learning opportunities, robust infrastructure, and use of space and time. The plan was developed by a diverse workgroup consisting of a broad range of stakeholders. It used the national Future Ready framework to develop the plan. The plan was adopted and is in the implementation phase. Equitable access to resources is key to achieving these goals. Use of EBS spectrum would be a vital and cost effective solution to reaching the Plan’s access-related goals. [See *Future Ready Nebraska PK-12 Digital Learning and Ed Tech Plan* at <https://www.education.ne.gov/future-ready-nebraska/>]

13. Consideration was given to three different approaches:

- ☐ Renew existing local licenses and encouraging local education agencies and tribal governments to apply for new licenses during open windows of application, should the FCC grant those rules;
  - *Pros*- targeted, localized use as originally intended.
  - *Cons*- Difficult to organize all groups to act. Service areas are smaller and may not reach rural areas. Lack of technical wherewithal, no strategic pervasiveness or tactical placement of licenses for educational purposes.
- ☐ Encourage private providers to obtain new licenses to develop statewide coverage and to facilitate educational use by serving the unserved and underserved students in rural and urban areas;
  - *Pros*- Provider partnerships with education entities could provide coverage to rural areas. Latest technology would be utilized by providers experienced in operating large-scale wireless networks.
  - *Cons*- Profit is the driving decision factor. Private entities have historically avoided building out to low population density areas as well as low socio-economic areas. No guarantee that providers would reach all unserved areas or at a minimum cost to end users.
- ☐ Design and develop a state-sponsored or state-coordinated wireless network approach, using existing state infrastructure, and applying for new licenses in Geographic Service Areas that would ensure statewide coverage to address the digital divide.

- *Pros*- Mission driven to cover the entire population without regard to socio-economic status or population density. Leveraging state assets to reduce cost of implementation and low cost to end users. Utilization of state and University employees who have expertise and skills in building and maintaining a wireless network.
- *Cons*- Long-term build out. Initial capital costs could be difficult to assume.

14. **Considering option 3, a partnership of Nebraska Educational**

**Telecommunications (NET), the Nebraska Department of Education (NDE), and the State Office of the CIO (OCIO) are performing a feasibility study and developing a deployment plan that would blanket the state from border to border with a wireless network using EBS spectrum to assure all learners in K-12 and higher education have access to digital learning resources.**

15. Nebraska’s project (NE-EBS) is a partnership that will serve the most need with a key focus of creating equity while closing the homework gap. The project team has spent many hours researching and connecting with active projects in other states in order to conceptualize the most viable and sustainable network possible. NE-EBS broadband deployment would ensure the spectrum is put to its most beneficial use by responding to the K-20 need for anytime, anywhere services, and maximize the probability of success for new services.

16. This partnership brings together several needed resources to build a statewide solution. NET and the OCIO own or lease towers that can blanket the state with 2.5 GHz, as well as engineering expertise to design and maintain the network. The OCIO manages the fiber backhaul to each of the towers. *Network Nebraska* has ample internet and peering capacity for after hours and weekend use when students at home need it most. Three state data centers have additional space for wireless network equipment and are directly connected to the state’s backbone. NDE provides distance learning resources to be used over the spectrum including, but not limited to, Open Education Resources (OER), distance/blended learning classroom tools, and learning management systems.

**F. NE-EBS technical feasibility overview:**

17. In the feasibility study, Nebraska identified thirty-five (35) towers for 3GPP (3<sup>rd</sup> Generation Partnership Project) LTE-A (Long Term Evolution Advanced) and 5G NR (New Radio) standards-based cellular network services deployment to cover the state of Nebraska. 5G NR offers:

- ☐ Scalable OFDM (Orthogonal Frequency Division Multiplexing) based air interface
- ☐ Flexible slot-based framework

☒ Advanced channel coding

☒ Massive MIMO (Multiple-input Multiple-output)

5G NR significantly increases broadband capacity, spectrum efficiency, accessibility, and reduces energy consumption. With scalable transmission time interval (TTI), 5G NR is more adaptable and dynamic, offers more diverse services and supports more diverse devices. 5G NR supports both licensed and unlicensed spectrum, provides an opportunity for spectrum sharing and coexisting with other technologies, such as Wi-Fi (<https://www.qualcomm.com/media/documents/files/expanding-the-5g-nr-ecosystem-and-roadmap-in-3gpp-rel-16-beyond.pdf>).

18. Out of the thirty-five (35) towers, twenty-four (24) towers are already interconnected to the State's fiber network, eight (8) NET towers can be linked to the State's fiber network via VLAN configuration, and only three towers would need to be connected to the State's fiber network through last mile configuration. This existing infrastructure would greatly simplify and reduce construction work and cost for the EBS services deployment [see Attachment E -Proposed 35-tower coverage map]. There are two assumptions for the coverage map: 1) EBS licenses would be obtained based on a 35-mile radius circular Geographic Service Area (GSA); 2) LTE end-user exchange can occur up to nine miles. The map is a conceptual illustration of an idealized situation where the state of Nebraska can be minimally covered with 35 towers. The actual number of towers and locations would be determined after tower studies and predictive coverages in the pre-implementation stage. Nebraska would utilize its abundance of tower resources as shown in Attachment F [see Attachment F: State Tower Resources] to implement this model. For example, some circular Geographic Service Areas with higher student density may require more than one tower and up to a maximum of 16 towers or community high points to provide suitable access and capacity to students.

19. Recently, Sprint and Ericsson field-tested Massive MIMO (Multiple-input Multiple-output) at 2.5 GHz. The test used 64x64 Massive MIMO radios and reached peak speeds of more than 300 Mbps using a single 20 MHz spectrum. Massive MIMO is the key technology of 5G and can be utilized for Nebraska deployment to reduce cost (<https://www.wirelessweek.com/news/2017/09/sprint-ericsson-unveil-results-25-ghz-massive-mimo-tests>).

20. Design and implementation would comply with the latest 3GPP (3rd Generation Partnership Project) Standards and technologies available. NE-EBS anticipates actual deployment using C-RAN (cloud radio access network) architecture with BBUs (baseband unit) located at central locations, RRHs (remote radio head) on identified towers, and gateways strategically positioned for each coverage area based on population and propagation constraints (see Attachment G- Proposed deployment model). 5G technology may eventually offer service to students at home, in school, and on the

road, particularly aboard school buses. NET has expertise in RF (radio frequency) transmission, signal distribution, content streaming and traffic scheduling as well as monitoring and control of the whole system.

### III. RECOMMENDATIONS

#### A. Rationalizing Existing 2.5 GHz Holdings (NPRM ¶ 10-24)

##### 1. Regular Geographic License Areas (NPRM ¶ 10-18)

21. Nebraska recommends that the Commission prioritize all alternatives for use of this spectrum that utilize new technologies to implement educational solutions. Licenses should be issued only if the usage will align to the “education” component of the *Education* Broadband Service. Solutions may be local, regional, or statewide ensuring that the radio spectrum is used efficiently and intensively in the public interest.

22. Equity is one of, if not the, primary reasons the NE-EBS project seeks EBS spectrum. This project could provide access to resources to students where they cannot get broadband locally. Providers have been reluctant to install cost effective connectivity to remote rural locations, creating a homework gap. Schools want to move forward with personalized learning, but this lack of equity makes it difficult and creates an unwillingness in educators to fully embrace digital tools. Nebraska is considering the use of the EBS spectrum to blanket the state and allow all learners direct connectivity to their school’s digital learning tools. Broadband companies have failed to do so, and giving them additional spectrum via EBS licensing has not solved the rural broadband challenges.

23. Nebraska supports the flexibility for license boundaries to overlap or be converted to a single license made up of a contiguous geographic area rather than require a collection of separate licenses. In its NE-EBS plan, spectrum would be used to blanket the state. Under current rule, this will require multiple licenses that overlap and expand into contiguous areas in order to assure that all students can make use of digital learning resources.

##### 2. Additional Flexibility for EBS Licenses (NPRM ¶ 19-24)

24. **Educational use** (NPRM ¶ 22). The Commission suspended the processing of EBS applications in 1993 (NPRM ¶ 6). In formulating a response to this NPRM, the project team had conversations with the State Education Technology Directors Association (SETDA), the School, Health, Library Broadband (SHLB) Coalition, and other education advocates. They indicated a strong desire to

utilize EBS, but many lack the knowledge of how to use it. Technology has only recently become advanced enough to allow local and statewide deployments.

25. Nebraska advocates that priority to EBS spectrum remain an educational resource with enough time allowed for entities to understand and develop plans for its utilization. Nebraska reiterates its concern that EBS has only recently come into its own as a tool that is more useful now to education with the advent of technologies that make it cost effective to deploy and manage. The long delay in utilizing this spectrum has had a two-fold effect: 1) the respite of spectrum licensing has caused a significant loss of awareness of its existence and potential uses; 2) technology has advanced to a point where it can now be utilized.

26. Nebraska supports an optional contiguous spectrum solution when a viable proposal exists. If Nebraska was able to obtain enough spectrum to blanket the state for its educational use connectivity, it would only require about 35 licenses using the 35-mile GSA coverage area. If it is required to have a license for each county, it would require 93 licenses. If it is required to have one license per district, it would need 244 licenses. The need to provide equipment and connectivity to a provider source (in Nebraska's case, backhaul to the *Network Nebraska* educational backbone) is far less to facilitate if fewer locations for distribution are required.

## **B. Opportunities to Acquire New 2.5 GHz Licenses (NPRM ¶ 25-51)**

### **1. New Local Priority Filing Windows (NPRM ¶ 26)**

(NPRM ¶ 29) When the Commission reopened applications for the 2.5 GHz band in 1985, it expressed a "strong preference" for local applicants in the licensing process. The Commission found then that local applicants were "convincingly demonstrated . . . to be the best authorities for evaluating their educational needs and the needs of others they propose to serve in their communities," to "best understand the educational needs . . . of their communities," and to "act most responsibly in designing and developing [2.5 GHz] systems."

(NPRM ¶ 31). The majority of current EBS licensees, such as school districts, schools, colleges and universities, appear to have a local presence where they have licenses. It also appears that the entities most likely to be affected by a local presence requirement are the "national" licensees.

27. Nebraska agrees that local authorities are in the best position for evaluating the educational needs of their communities, and asks the Commission to consider that for the purpose of utilizing EBS spectrum, the State fulfills the definition of "local presence" (NPRM ¶ 29) and can best determine the educational needs of its population, including K-12, higher education, and workforce development. Local needs would also align with the State's interests in deploying rural broadband (See

Nebraska Rural Broadband Task Force, <https://governor.nebraska.gov/press/governor-ricketts-announces-rural-broadband-task-force-members>). Rather than rely on a collection of independent local entities to research and deploy EBS, the community, and state as a whole are better served by implementing a statewide solution. Shared resource and expertise may not be available locally and therefore some efforts may incur higher than needed costs, not be as successful, or fail in implementation altogether.

28. Nebraska agrees that local presence is essential in servicing the needs of the community and that local applicants are in the best position to evaluate their educational needs. However, recognition of local presence should include solutions that have the geographical impact as proposed by the NE-EBS Project. A more efficient use of the spectrum is achieved when it can be shared by a larger user group. Indeed, Nebraska's solution guarantees that the EBS spectrum would have an educational utilization and reach all eligible users in an equitable distribution. If a local presence becomes a requirement of the new ruling, Nebraska seeks identification of State Education Agencies (SEAs) in a statewide solution as having such presence in order that it may obtain the needed licenses to fulfill its objective.

29. Nebraska contends that its proposal would benefit local communities in an equitable fashion as well. Utilization of the network could be expanded to include identified gaps in service areas within local communities; such as, a need for telehealth data between homebound patients and doctors, emergency medical services fire/rescue communication in extreme rural areas where broadband is weak or not available.

30. Nebraska statutes (Neb. Rev. Stat. 86-594 to 86-597) restrict telecommunications competition by public agencies with for profit service providers, with exceptions for agencies in fulfilling their educational missions. Existing EBS license holders may have a legitimate need to expand their services, but they also may acquire licenses to be leased by a third party, such as a cellular service provider. The Nebraska project plan would create a statewide information service usable by students and staff who are end users from educational institutions that are already part of *Network Nebraska*.

*Local Priority Filing Window and Local Priority Filing Process.* (NPRM ¶ 32-48)

31. Currently, eligibility to hold an EBS license is limited to (1) accredited public and private educational institutions, (2) governmental organizations engaged in the formal education of enrolled students, and (3) nonprofit organizations whose purposes are educational and include

providing educational and instructional television materials to accredited institutions and governmental organizations (NPRM ¶ 3).

32. Nebraska recommends that the Commission retain this definition of educational entities and allocate all unissued licenses remaining in a State, to the State Education Agency (SEA), following any approved application windows. The SEA would be responsible for allocating licenses to appropriate entities as viable solutions are determined. Licenses would therefore not be gone forever through auction, but utilized for educational purposes as intended.

33. Because of the lack of knowledge on how to utilize EBS spectrum, any limits to time and geographic presence could also limit best practice. In addition to solutions such as the NE-EBS Project, other projects and purposeful use may be initiated by regional entities such as Intermediate Agencies (BOCES, ESAs, ESUs), community colleges, etc. These groups need time to understand the potential and the implementation aspects of using this service without risk of losing the opportunity because of a missed window or through the selling off of available licenses in their area. SEAs would be the most knowledgeable of these efforts and able to assign licenses appropriately.

34. A return of investment into supporting EBS services should be required on any funds from leased spectrum. A holding period of seven years would provide states time to either establish local best use of spectrum solutions, or lease to providers who have a viable solution for their community needs including education, telehealth, emergency response, workforce development, youth services or other underserved areas or population.

35. Nebraska supports an optional contiguous spectrum solution when a viable proposal exists. Nebraska asks that the Commission to consider geographic area to include proposals that transcend county and census tract boundaries. In the solution that Nebraska is considering, it would be a more efficient use of spectrum if geographic limits were not implemented. However, if a local entity chooses to apply for a license, it may be appropriate to limit coverage area. Flexibility is key.

36. Nebraska supports the 20% educational use requirement for existing license holders. This would provide a means to recapture misused or under-used licenses if required. Outright auctions or competitive bidding for commercial use is not conducive to the purpose of the EBS spectrum and should not be considered.

## **2. Licensing White Spaces (NPRM ¶ 49-51)**

37. Depending on the outcomes of this NPRM, use of white space and the spectrum aggregation screen may depend on how it is used. Nebraska is considering creation of a border-to-



border network to ensure all users have equity of access to digital resources, and at present, does not know how evolution of digital resources may affect future use and capacity.

**3. Requirements for New 2.5 GHz Licenses** (NPRM ¶ 52-55)

*Performance Requirements for New 2.5 GHz Licenses* (NPRM ¶ 54)

*The Commission proposes robust performance requirements for any new 2.5 GHz licenses granted through a local priority filing window or a system of competitive bidding* (pg 18, NPRM).

38. Nebraska agrees with the Commission that educational use should be a priority, and it contends that education should be the only consideration in licensing this spectrum. Nebraska also agrees that existing holders or State education entities have first option at new licenses.

39. The E-rate program has a long history of success in making advanced telecommunications services affordable to schools and libraries. Nebraska sees the EBS spectrum as a natural outgrowth of available services to students utilizing the *Network Nebraska* broadband. Competitive bidding has always been a value embraced by education, and is one of the mainstays of the Federal E-rate program. With that historical success in mind, Nebraska seeks consideration that all unassigned licenses within a state be allocated to the SEA to be used by or competitively bid for the benefit of education with ongoing oversight by the state.

40. In its E-rate 2.0 Modernization Order, the Commission provided for after hours use of Internet service for educational purpose without resale. This may be a topic for a subsequent NPRM, however, Nebraska's plan would depend on the *Network Nebraska* backbone, while also complying with CIPA requirements. Student logins would either pass via VPN to their school's filtering service or through a statewide filtering service. In this state alone, tens of thousands of devices potentially go home with students in order that they complete online school work. This solution merely extends the same network they use at schools to their home for the same purpose of digital learning.

**C. Cleaning up the 2.5 GHz Rules** (NPRM ¶ 56-57)

41. Nebraska's comments have expressed a desire to transform the 2.5 GHz band by allowing states to determine best usage to meet its educational purpose and to reach underserved or unserved areas of the state. These comments also support defining local presence to include a statewide solution as well as a larger or more ubiquitous coverage of geographic areas and contiguous spectrum utilization. The NE-EBS Project would utilize the most effective technology available ensuring that the bandwidth is put to its highest and best use.

**D. Additional Approaches for Transforming the 2.5 GHz Band** (NPRM ¶ 58-62).

42. Nebraska does not support an auction of spectrum. This method would likely favor those who have the funds to outbid the most needy, and favor those who will use the spectrum as a for-profit tool. The SEA state managed allocation solution recommended in ¶ 27-32 above provides that the spectrum be used as intended and that any funds received as part of a competitive bidding process will return to support education within the state. This solution provides an ongoing benefit to both the users and the solution providers, which may include commercial providers, in spectrum utilization.

#### **IV. CONCLUSION**

43. In conclusion, Nebraska Educational Television, Nebraska Department of Education, and the Nebraska State Office of the Chief Information Officer applaud the FCC on its re-consideration and possible transformation of the 2.5 GHz EBS spectrum. We share the Commission's goal to ensure that our nation's students receive access to the high-speed broadband connectivity and technology necessary for 21<sup>st</sup> Century digital learning. Addressing the Homework Gap and lack of Internet access for students, particularly in rural areas, is of paramount concern. This lack of equity is having a detrimental effect on daily educational processes and almost certainly is affecting the quality and quantity of learning opportunities for the unserved and underserved students. As rural broadband speeds and costs remain static, urban residential Internet speeds are getting much faster and much more affordable. This contributes to a widening digital divide and no easy solutions are within sight.

44. The 2.5 GHz EBS spectrum provides an un-exploited opportunity to provide more equitable and more affordable access for students to reach their digital educational resources. Only recently has the technology evolved to the extent that local and regional LTE networks have been affordable to implement and manageable to maintain (e.g. Northern Michigan University; Kings County, CA Office of Education).

45. Our three agencies cooperatively envision a statewide approach to bridging the digital divide through either state-sponsored or state-coordinated infrastructure using newly granted EBS licenses. Nebraska would be able to use its public infrastructure assets (e.g. towers, backbone, commodity Internet and peering, technical support) to effect an efficient and effective model. The State of Nebraska respectfully requests that the FCC permit flexibility in re-licensing to enable a statewide approach. Several decades of locally controlled licenses have not brought about the results envisioned from the 2.5 GHz spectrum, and now a new generation of cellular data transmission technologies make this spectrum incredibly promising.


46. Most of the current and future potential educational licensees are new to the idea of effective use of the EBS 2.5 GHz spectrum, so allowing a fixed time period to learn about and research how other entities and agencies are implementing solutions should be given consideration. A multi-use approach based on projected implementation and utilization of the spectrum, and not just applying for a license without a utilization plan, is a more effective use of EBS. This is a valuable resource to education. Let us work together to see that the 2.5 GHz (EBS) spectrum delivers its full potential.

**About NET:** Nebraska Educational Television (NET), **including Nebraska's PBS & NPR Stations**, is the statewide public media service dedicated to creating opportunities for Nebraskans to engage with critical issues, compelling stories and quality entertainment. NET serves each of Nebraska's 93 counties with 52,560 hours of programming each year on four television and two radio channels, plus online and mobile content. In addition to providing free, high-quality educational programming for children, NET provides programming in the arts, award-winning news and current affairs information and emergency alert services. NET's mission is to enrich lives and engage minds by connecting communities and celebrating Nebraska with services that educate and enlighten. For more information about NET, visit <http://netnebraska.org/>.

**About NDE:** The Nebraska Department of Education (NDE) is a constitutional agency and operates under the authority of an elected board of education. NDE is organized into teams that interact to operate the agency and carry out the duties assigned by state and federal statutes and the policy directions of the State Board of Education. The teams are organized around distinct functions and responsibilities that encompass leadership and support for Nebraska's system of early childhood, primary, secondary and post-secondary education; direct services to clients; and internal support to the agency. The department carries out its duties on behalf of Nebraska students in public, private, and nonpublic school systems. The staff of the department interacts with schools and institutions of higher education to develop, coordinate and improve educational programs. NDE's mission is to lead and support the preparation of all Nebraskans for learning, earning, and living. For more information about NDE, visit <https://www.education.ne.gov/>.

**About the OCIO:** The Office of the Chief Information Officer (OCIO) was created by the Nebraska Legislature to assure that a coordinated, efficient and cost effective approach is taken on an enterprise level for the deployment of technology by Nebraska State Government. The Office of the CIO provides a wide range of technology services to state agencies, boards and commissions, as well as political subdivisions. As the State continues to explore shared services, the OCIO has eliminated the duplication of several IT expenditures and services, lowered costs through enterprise purchases and agreements, and provided more efficient and effective ways to expand access to government services. The OCIO also manages *Network Nebraska*, the statewide network consortium that serves 293 education entities. The OCIO's mission is respect for the taxpayers of Nebraska. For more information about the OCIO, visit <http://www.cio.nebraska.gov/>.

Respectfully submitted on August 8, 2018,



Mr. Ed Toner

Dr. Matt Blomstedt

Mr. Mark Leonard

Chief Information Officer

Commissioner

General Manager

Office of the CIO

Nebraska Dept of Education

Nebraska Educational Television

Follow-up Point of Contact:

Tom Rolfes

SuAnn Witt

Ling Ling Sun

Education I.T. Manager

E-rate and Infrastructure Specialist

Chief Technology Officer

Office of the Chief Information Officer  
State of Nebraska

501 S. 14th Street, P.O. Box 95045

Lincoln, NE 68509-5045

tom.rolfes@nebraska.gov

(402) 471-7969

Nebraska Department of Education

P.O. Box 94987

Lincoln, NE 68509-4987

suann.witt@nebraska.gov

(402) 471-2085

Nebraska Educational Television

1800 N. 33rd Street

Lincoln, NE 68503-1409

lsun@netnebraska.org

(402) 470-6458

Matt Sperling

Senior Engineer

msperling@netad.unl.edu

(402) 470-6507

NE-EBS: ATTACHMENT A

12/2016 Parent Email to School District OR1 (Palmyra) personnel regarding access to digital resources

----- Forwarded message -----

From: **Janet Harder** <[janet.harder@gmail.com](mailto:janet.harder@gmail.com)>  
Date: Thu, Dec 8, 2016, 8:55 PM  
Subject: Rollout of Chromebooks

So, here Liz & I sit, in the running car, outside the library in Syracuse, so we can use the free WiFi.

Liz tells me she was told, "Since you get to take the Chromebooks home, you have no excuse for not getting the vocabulary homework done." She says she was not given any instructions for how to access and use any of the functions of the chromebook while NOT connected to the internet.

Nate and Daniel also did not hear any instructions for using it off-line. Daniel attempted to make his work available off-line on Friday. On Saturday, I observed Daniel having problems with Google Docs crashing repeatedly while off-line this weekend, and he was unable to work on his essay while we were in Kansas.

Perhaps you assume everyone has internet access at their homes. I don't believe you have data to support that. Even when some family members have internet access via their smartphones, using a smartphone as a wifi hotspot can burn through data quickly. We don't have a smartphone, and have a hotspot only so my husband can use the internet while at work. We can't afford to have the kids use a lot of data.

I strongly believe there needs to be something in writing, sent to all the parents, explaining exactly how the chromebooks work, and what the students need to do if they do not have unlimited data when not in school. I would also like to know what other applications they can download. (OpenOffice, for example, is a free, and relatively full featured office suite, but does the chromebook have the memory/processing power to run it?)

A similar reminder needs to be given to all the teachers, so they are able to assist the kids, and help them remember the steps needed. They also need to be made fully aware that anytime they give an assignment where the resources needed to complete that assignment are online, they need to give the students time to access and download those resources.

Failure to take these steps will tend to place a burden on students who do not have 24/7 unlimited data access. It will increase the digital divide, and unfairly penalize students who are not able to access unlimited data. For those homes with metered data (nearly anyone who uses a cell phone provider for their internet), you are likely to cause financial hardship on those families, as their students use data when they could work off-line, because the student doesn't know how to be a wise data user. Rural families are less likely to have internet, and more likely to pay a higher price for that access, when they have it.

[http://www.omaha.com/news/metro/census-data-on-internet-computer-access-show-that-digital-divide/article\\_9c973635-6b90-5b7e-8043-38196e1070f3.html](http://www.omaha.com/news/metro/census-data-on-internet-computer-access-show-that-digital-divide/article_9c973635-6b90-5b7e-8043-38196e1070f3.html)

I applaud District OR1 for making sure students have access to the technology. But you need to be watchful that careless assumptions don't lead certain students to worse grades, simply because of limited or no internet at home.

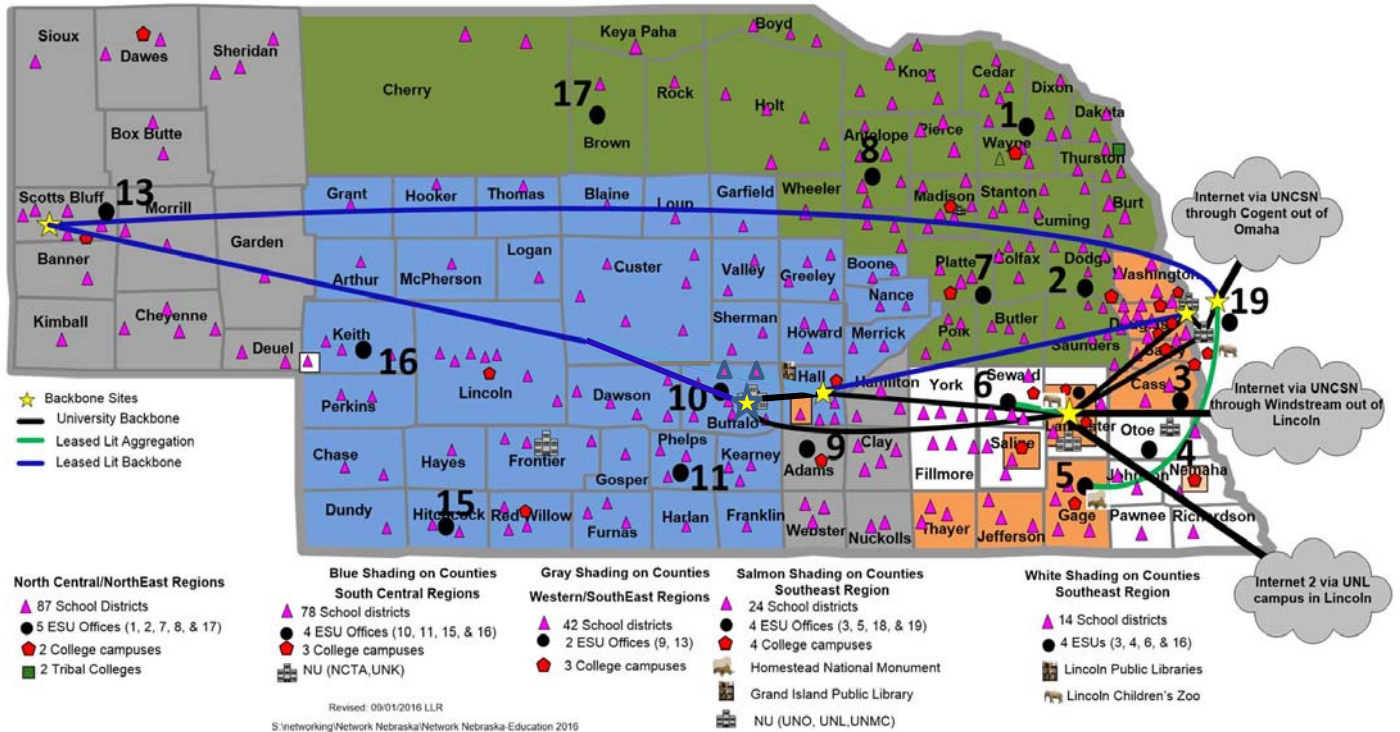
By expecting the students affected will just figure it out, you are being unfair to them, and especially to those students who may have IEPs that will need adjusting. Some of those students will need even more direct instruction so they will be successful.

Thank you for considering my concerns. I look forward to hearing from (any and all of) you.

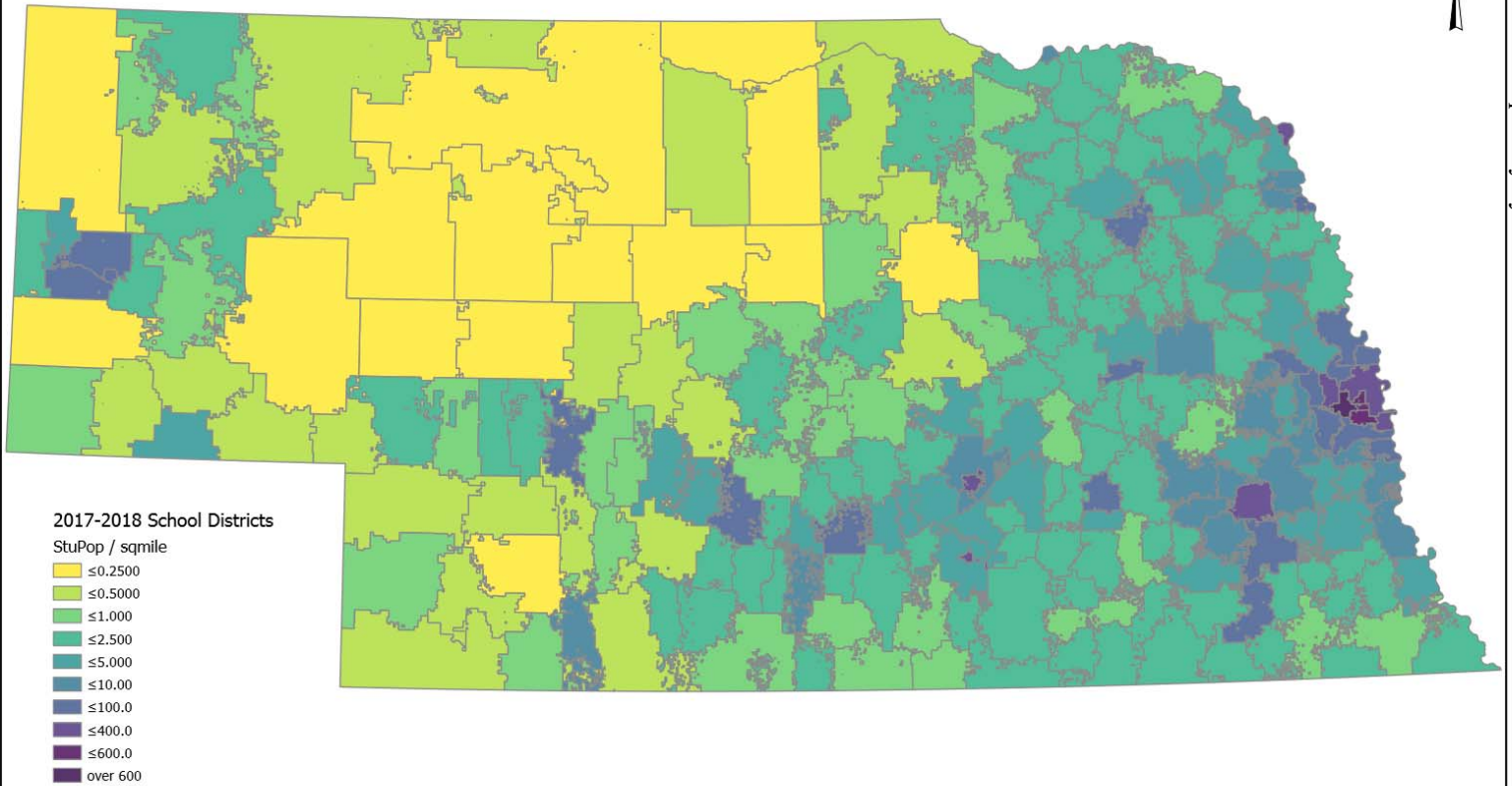
Janet Harder  
Rural Unadilla

(I've got the ESU fiber running down the road in front of my house, but I can't use it. No cable. No DSL. We could use satellite, and possibly, with some construction, a line-of-sight provider. No money for that right now. Teens and car insurance, you know?)

# Network Nebraska – Education 2018

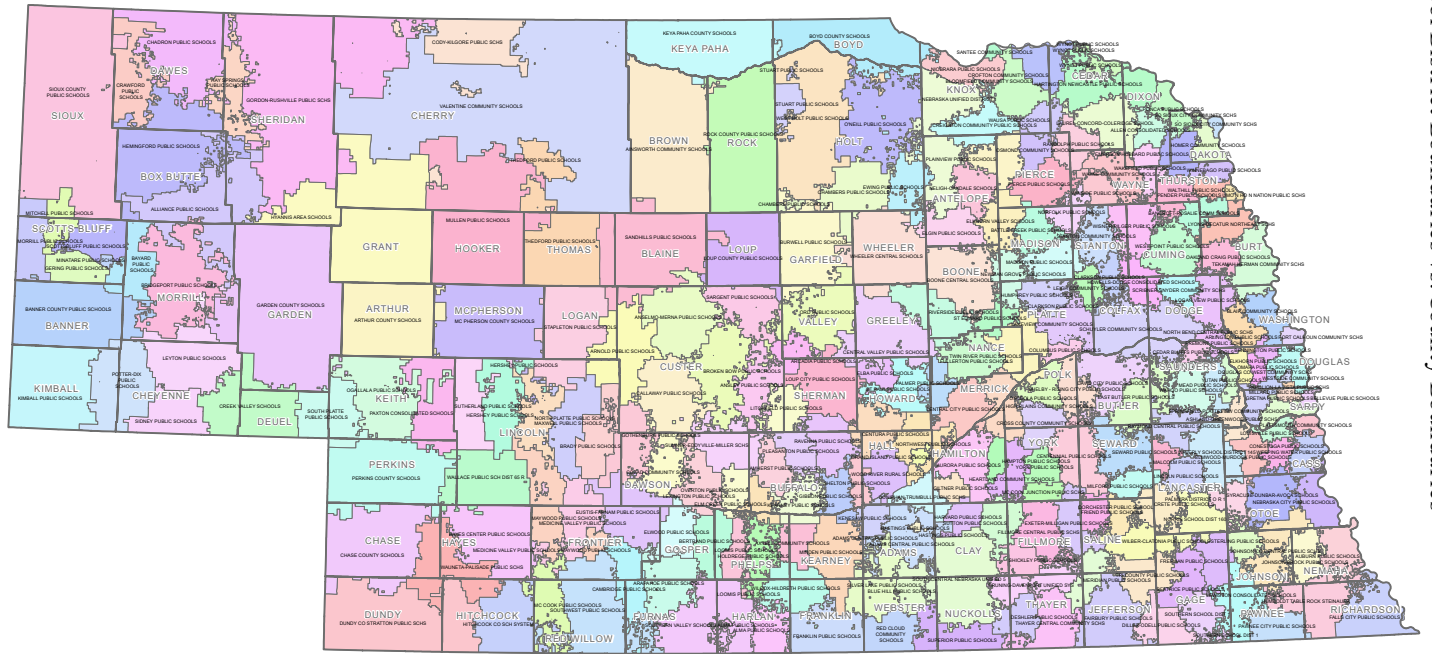


# Map of school district student sparsity





# Nebraska Public School Districts



NebraskaMAP.gov - Access to Nebraska's Geospatial Data



Map Produced for:  
Legislative Research Office  
State of Nebraska

Data Sources:  
School boundary and county data provided by US Census, 2012.

Warranty/Disclaimer:  
This map is for graphical purposes only and does not represent a legal survey. The State of Nebraska - Office of the CIO makes no warranty, expressed or implied, as to the accuracy, reliability, or completeness of data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Nebraska Information Technology Commission  
State of Nebraska | Office of the CIO



Map Production by: OCIO- GIO office  
John Watermolen | State GIS Coordinator  
P.O. Box 95045 | Lincoln, Nebraska | 68509

May 6, 2013, Updated 8/2/2018

Cavell, Mertz & Associates

### Proposed EBS Licenses

35 Required To Cover State

### Legend

- NET Owned Towers
- Towers with Network Nebraska access
- Towers without Network Nebraska access

Google Earth

Image Landsat / Copernicus

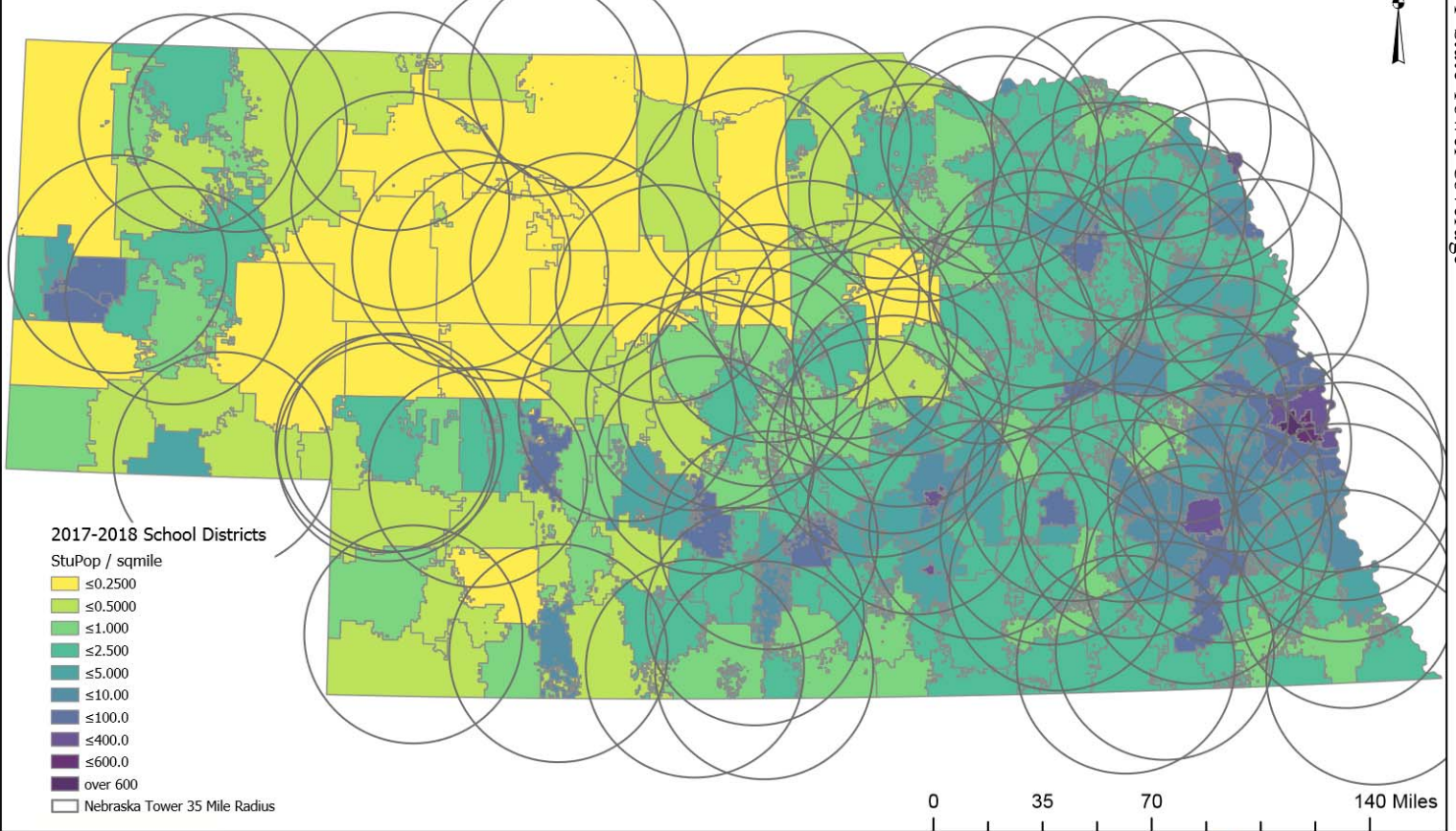
100 mi



Attachment E-Proposed 35-tower Coverage

# Map of school district student sparsity

with State-owned and state-leased towers, 35-mile GSA radius



**2017-2018 School Districts**

StuPop / sqmile

≤0.2500

≤0.5000

≤1.000

≤2.500

≤5.000

≤10.00

≤100.0

≤400.0

≤600.0

over 600

□ Nebraska Tower 35 Mile Radius

0 35 70 140 Miles



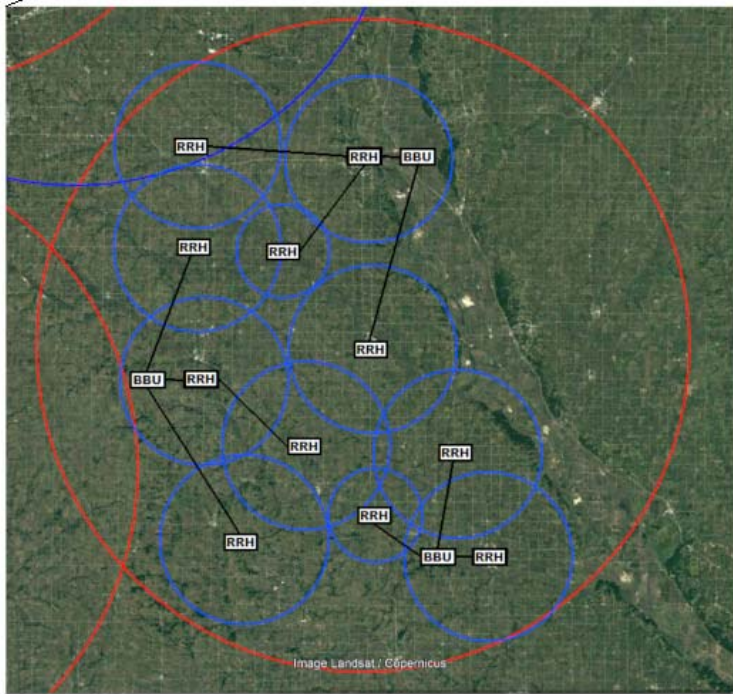
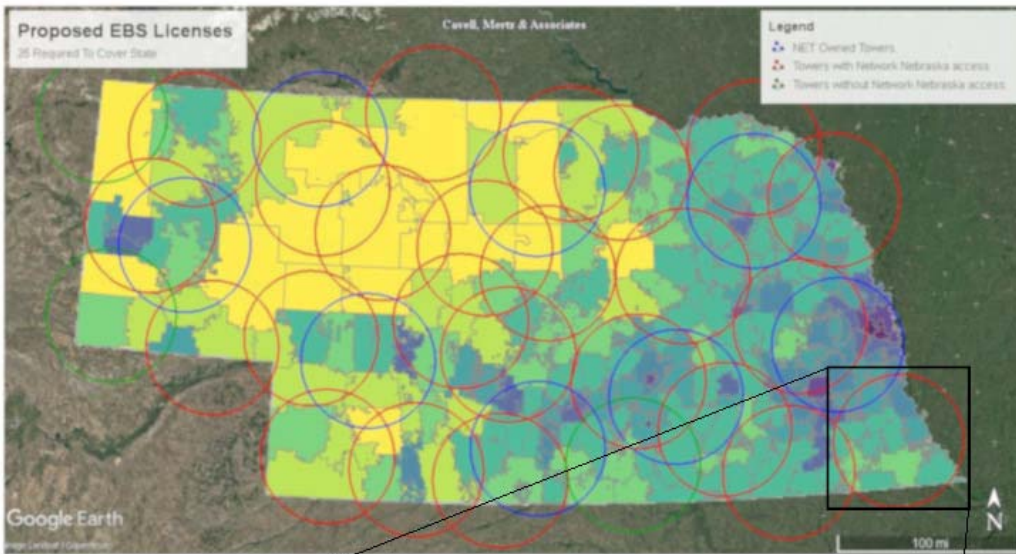
This map is for graphical purposes only and does not represent a legal survey. The State of Nebraska - Office of the CIO makes no warranty, expressed or implied, as to the accuracy, reliability, or completeness of data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

August 2nd, 2018

Map Production by Nebraska Geographic Information Office  
John Watermolen State GIS Coordinator



Attachment G-Proposed Deployment Model



# Network Nebraska

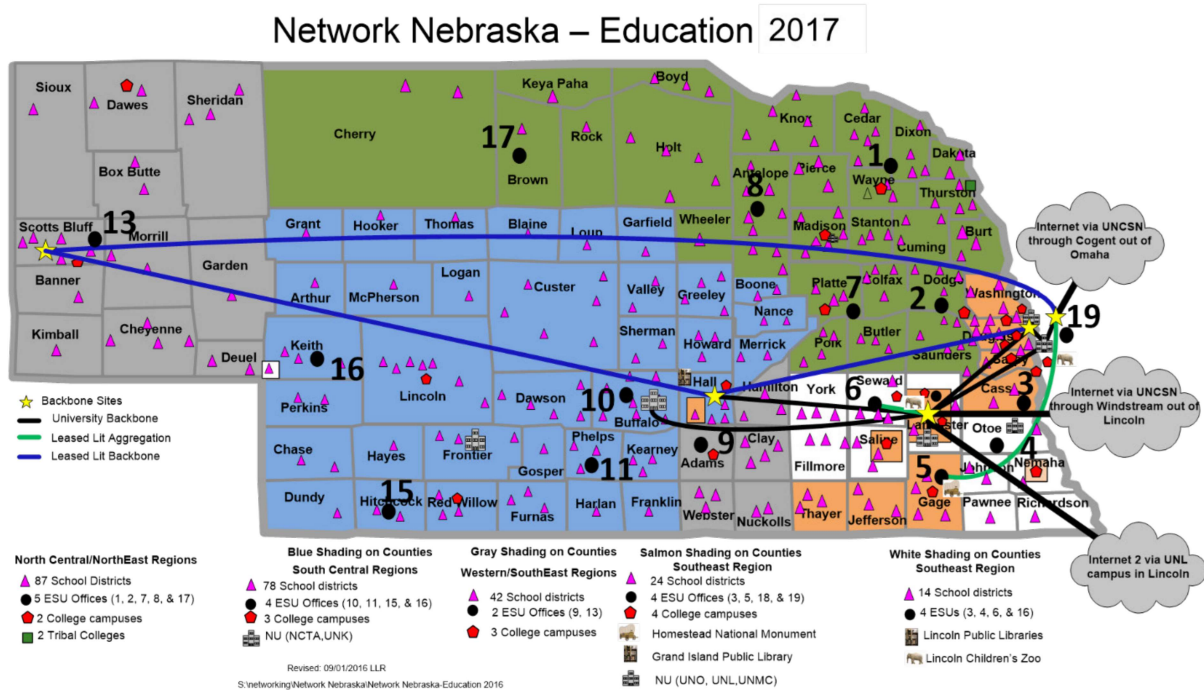
## Overview

### Objective:

To develop a broadband, scalable telecommunications infrastructure that optimizes the quality of service to every public entity in the State of Nebraska.

### Description:

Network Nebraska interconnects several hundred education entities to a multipurpose core backbone extending from Omaha to Lincoln to Grand Island and Scottsbluff, and provides aggregated Internet and commercial peering services extending out to the furthest corners of the state.



### Collaborators:

- Collaborative Aggregation Partnership: Office of the CIO, University of Nebraska Computing Services Network, Nebraska Educational Telecommunications, Public Service Commission, Nebraska Department of Education, Nebraska Information Technology Commission
- Network Nebraska Advisory Group: 8 K-12 members; 8 higher education members
- Educational Service Unit (ESU) Coordinating Council, ESU-Network Operations Committee, ESU-Distance education Advisory Committee, higher education chief technology officers



### **Strengths/Assets:**

- Every K-12 school district, educational service unit, and public college and university participate in Network Nebraska and share in its annual costs.
- Network Nebraska is a completely voluntary, self-funded project, which contributes to its resilience, sustainability and focus on customer service.
- Shared personnel support within the Office of the CIO, Administrative Services, and the University of Nebraska contribute to its ultra-low operational costs and affordability.
- Having all of the K-20 education entities on Network Nebraska provides not only a sense of pride in ownership of the network, but the daily offsets in Internet access peaks between K-12 and higher education also saves on the cost of Internet access.

### **Challenges/Issues:**

- The absence of full-time network employees reduces the capacity for such services as marketing, communications, research & development, and customer follow-up.
- The Network Nebraska cost recovery rates, although small in comparison to other state networks, are still above what rural public libraries and private K-12 schools are accustomed to paying for Internet service provision alone.

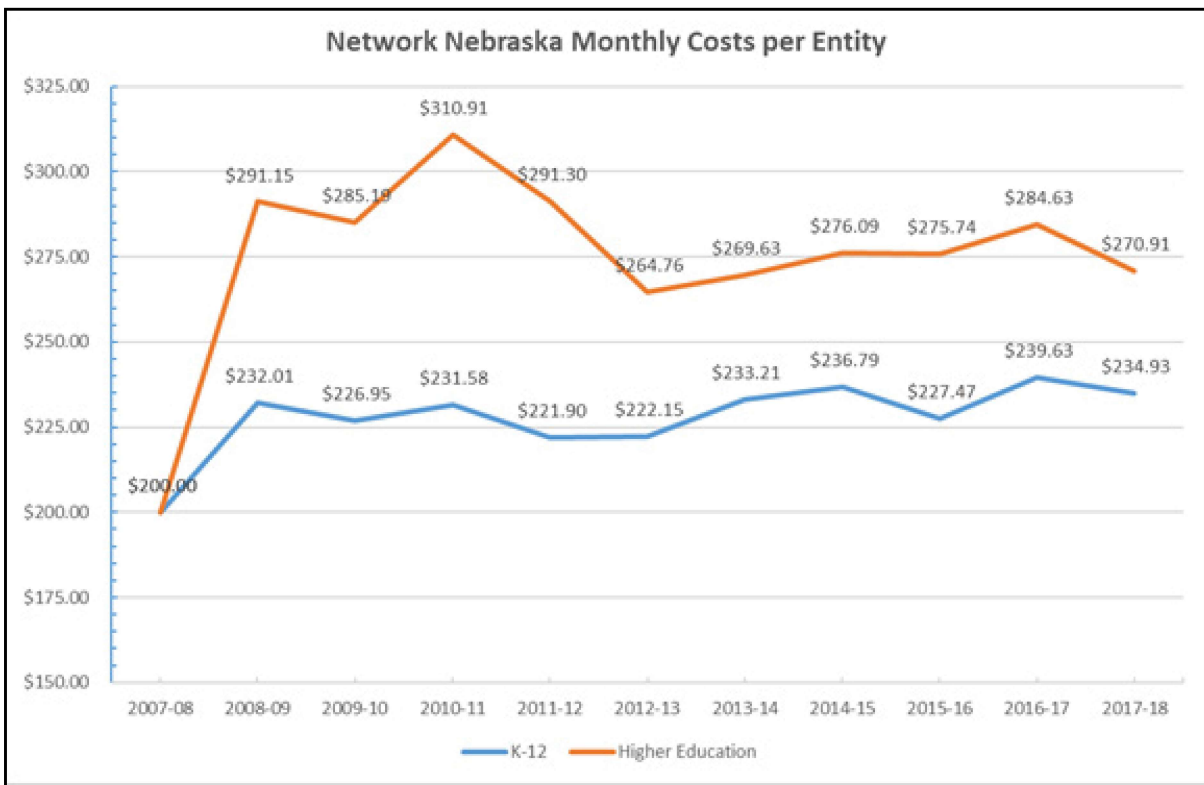
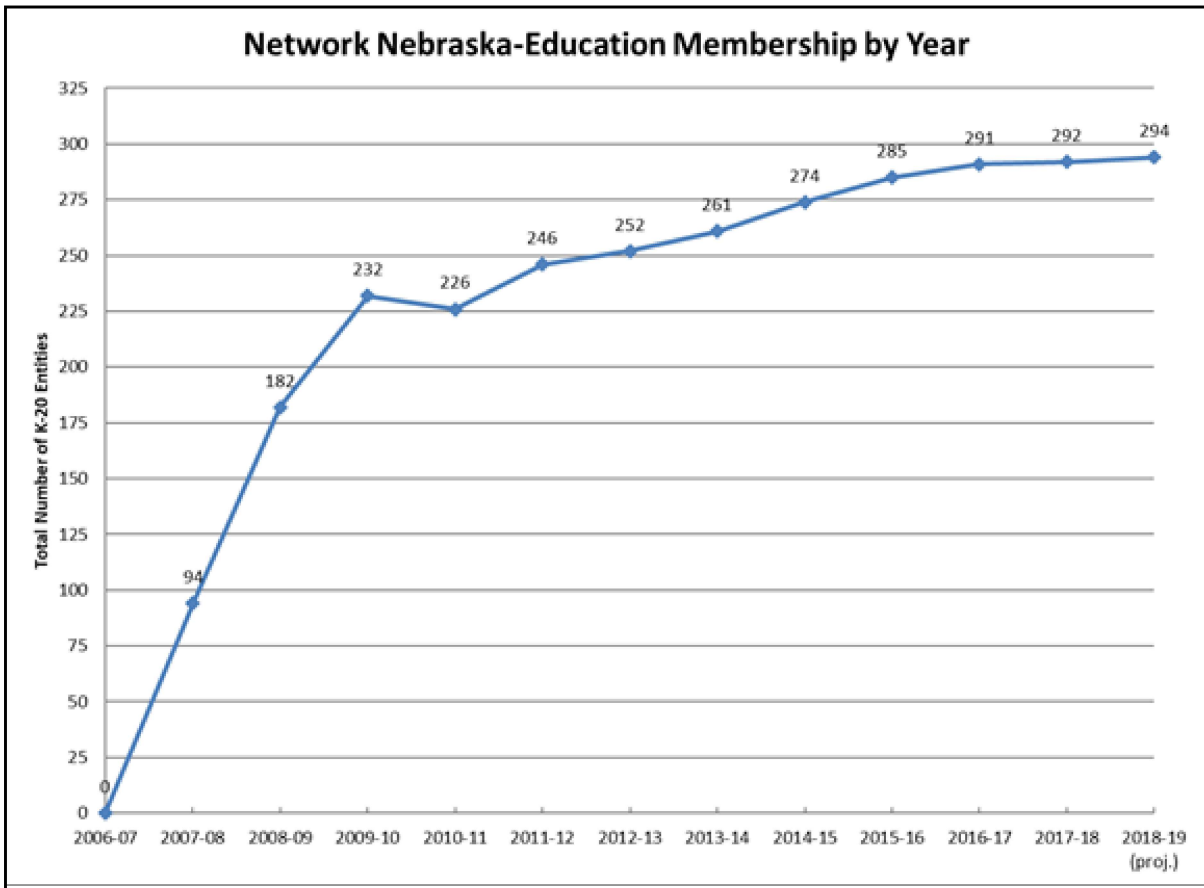
### **Recent Accomplishments:**

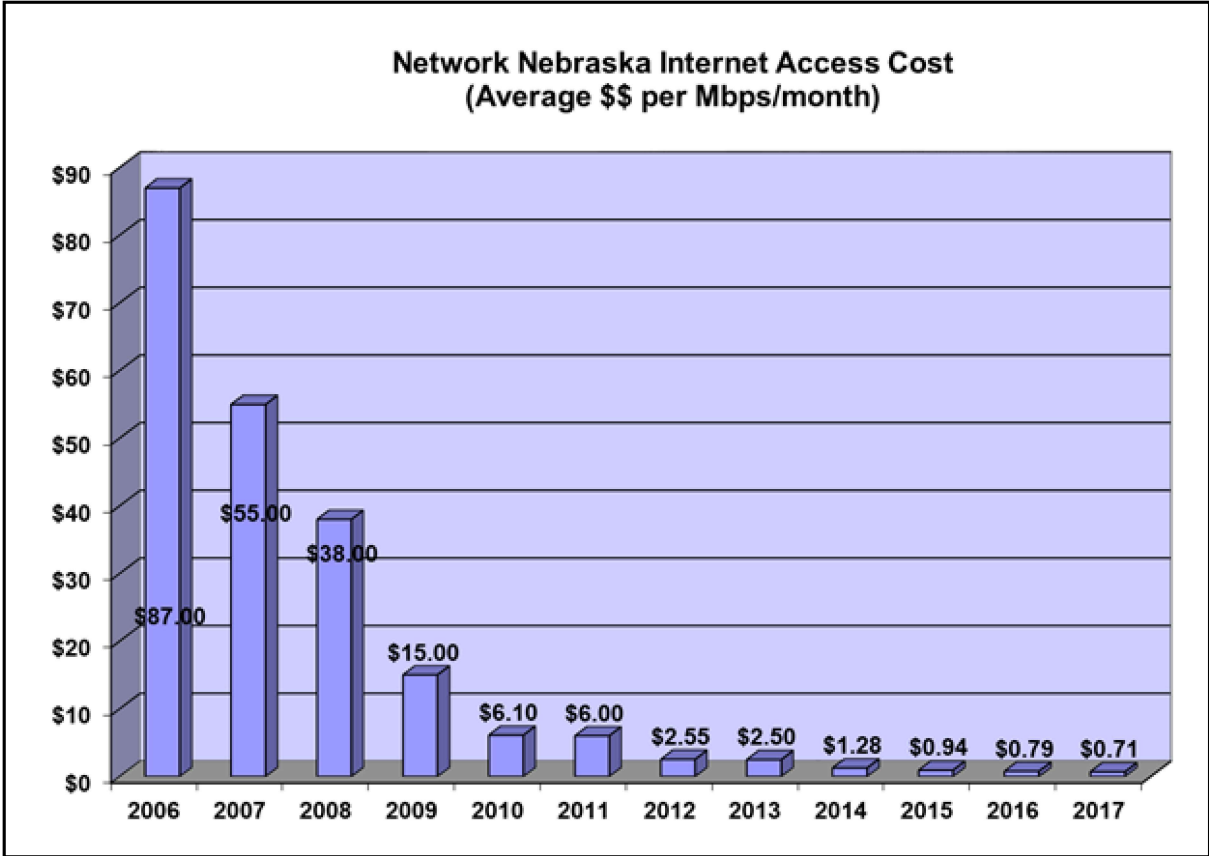
- Increased public school district participation to 100% by 7/1/2017
- Public higher education participation at 100% by 7/1/2012
- Achieved one of the lowest commodity Internet rates in the entire country, made possible through aggregation of demand and statewide bidding
- Achieved 100% retention of voluntary membership, now reaching 292 entities by 7/1/2017

### **Recommendations:**

- Continue this initiative.
- Position Network Nebraska to provide services such as network monitoring and management, mitigation of Distributed Denial of Service (DDoS) attacks, statewide helpdesk, aggregated invoicing, and coordinated E-rate filing

## Metrics





## Action Items

**1. Action: Prepare for the future of Network Nebraska as a statewide, multipurpose, high capacity, scalable telecommunications network that shall meet the demand of state agencies, local governments, and educational entities as defined in section 79-1201.01.**

Lead: Education Council

Participating Entities: Collaborative Aggregation Partnership (CAP); Network Nebraska Advisory Group (NNAG), OCIO/NITC staff

Timeframe: 2018-20

Funding: Additional funding and/or resources will be required for this action item out of the Network Nebraska Participation Fee, which is a participant-funded budget.



## Targets/Deliverables:

**1.1** The NNAG Participant Criteria subcommittee and OCIO staff will accommodate and enforce affiliate connections into Network Nebraska.

**1.1.1** Measurable: A) List the types and quantities of affiliate and hosted entity connections to the network.

**1.2** The Network Nebraska support team will use automated tools to monitor network utilization and uptime and develop a web-based graphic for real-time depiction of WAN circuits, backbone and Internet.

**1.2.1** Measurable: A) Regularly present utilization statistics to NNAG and to the Network Nebraska membership in an annual report.

**1.3** The Network Nebraska support team will implement incident management and change control frameworks appropriate to the staffing of Network Nebraska.

**1.3.1** Measurables: A) Implementation of a ticketing system that allows interaction with supported users. B) Advance communication of planned outages / upgrades that affect membership. C) Documentation of past changes to core network systems.

**1.4** NNAG and CAP will guide Office of the CIO (OCIO) decisions regarding network capacity, services, and reliability.

**1.4.1** Measurables: A) NNAG co-chairs will attend monthly CAP meetings and share information. B) CAP liaisons will attend bi-monthly NNAG meetings and share information.

## **2. Action: The Education Council and OCIO/NITC staff will serve as the communication hub for existing and potential new Network Nebraska Participants.**

Lead: Education Council; OCIONITC Staff

Participating Entities: Collaborative Aggregation Partnership (CAP); Network Nebraska Advisory Group (NNAG)

Timeframe: 2018-20

Funding: Additional funding and/or resources will be required for this action item out of the Network Nebraska Participation Fee, which is a participant-funded budget.

## Targets/Deliverables:

**2.1** Develop and implement a communications strategy.

**2.1.1** Measurables: A) Specific data and reports in an online newsletter or other form of communication to members outside of the annual fee memo. B) Designated representatives send timely notifications of changes in procedures affecting member relations with the Network Nebraska Support Team.

**2.2** Conduct an annual survey of Participants to guide direction and service development.

**2.2.1** Measurables: A) Survey is conducted, and data from the survey is compiled for sharing with NNAG, CAP, and the NITC Education Council.


## **3. Action: Review the NITC IT Security Initiative and cloud computing components of the State Government IT Strategy Initiative as drafted by the NITC State Government Council.**

Lead: Education Council; NNAG

Participating Entities:

Timeframe: 2018-20

Funding: No additional funding is projected for this action item.



3.1 Develop applicable practices and strategies for security and cloud applications in educational environments

3.1.1 Measurables: A) Formulation of a Strategy document

3.2. Determine how to incorporate the applicable strategies within services of Network Nebraska.

3.2.1 Measurables: A) Additional services or security practices added to NN services list or provided by member “centers of excellence.”

### Other Recommended Measurables:

- Network Nebraska backbone uptime
- Network Nebraska Internet access uptime
- Network Nebraska backbone bandwidth utilization (actual)
- Network Nebraska membership growth
- Network Nebraska Internet growth (purchased and actual)
- Network Nebraska unit cost of Internet
- Number of public and non-profit, non-education entities (e.g., libraries) connected to Network Nebraska

# Digital Education

## Overview

### **Objective:**

*To promote the effective and efficient integration of technology into the instructional, learning, and administrative processes and to utilize technology to deliver enhanced digital educational opportunities to students at all levels throughout Nebraska on an equitable and affordable basis.*

### **Description:**

The Digital Education initiative will involve the coordination and promotion of several major systems and applications that heretofore have either been developed mostly at the local level or have not been replicated statewide.

Initiative progress will be dependent upon adequate Internet connectivity and transport bandwidth for learners, instructors, administrators, and for educational attendance sites. A minimum acceptable level of classroom technology will have to be established for the initiative to be successful.

### **Collaborators:**

- Educational Service Unit (ESU) Coordinating Council and advisory groups
- Public and private K-12 schools
- Nebraska Department of Education
- University of Nebraska
- Nebraska State College System
- Nebraska Community College System
- Association of Independent Colleges and Universities of Nebraska

### **Strengths/Assets:**

- The enhancement of Digital Education is the combined focus of public and private K-12 entities and public and private higher education entities working together through Network Nebraska.
- The recent developments in learning management software, content management software, and longitudinal data tracking and depiction make it a particularly important time to improve on the statewide deployment of these systems.
- The high bandwidth transport and Internet capacity of Network Nebraska makes it possible to implement private cloud and public cloud applications to every education entity on Network Nebraska.

### **Challenges/Issues:**

While collaboration among entities is strong, the initiative lacks a “champion” and any additional implementation funding is a scarce commodity.

**Recent Accomplishments:**

- ESU collaborators have developed BlendEd briefing materials and the TLT Learning Group.
- The Nebraska Department of Education has made progress on the Adviser project involving all but four Nebraska school districts.
- The Nebraska Department of Education's Future Ready Nebraska Digital Learning Plan is being developed by a statewide committee for review and approval by the State Board of Education.
- NITC Education Council and Community Council have collaborated on the design of several technology solutions that may reduce the Homework Gap and improve digital equity among economically challenged students.
- The Nebraska Library Commission, in partnership with the State Office of the CIO, has applied for a Sparks Grant from the Institute for Museum and Library Services to incentivize school districts and public libraries to work together to improve Internet speeds at rural public libraries.

**Recommendations:**

- Continue and refocus this initiative.
- Encourage and/or incentivize collaborators and stakeholders to be more results-oriented using project management techniques.
- Build on the excellent foundation and success of Network Nebraska to deliver high quality digital educational opportunities that provide a framework for student success.

## Action Items

**1. Action: Address technical challenges for students in the transition from secondary to post-secondary education.**

Lead: Education Council

Participating Entities: K-12 and Higher Education professional and advisory groups

Timeframe: 2018-20

Funding: Additional funding may be required for this action item

Targets/Deliverables:

**1.1** Conduct a collaborative research project to identify existing infrastructure and pedagogical efforts in both secondary and post-secondary institutions.

**1.1.1 Measurables:** A) Create collaborative research study engaging the colleges of education at NE higher education institutions with a focus on opportunities for graduate student involvement. B) Secure funding support for research study. C) Develop and conduct national collaborative research study with entities i.e., Educause, MHEC.

Targets/Deliverables:

**1.2** Based on the results of the research project and other available resources, identify opportunities for collaboration to ease transition for students.

**1.2.1 Measurables:** Pending study outcomes.

**1.3** Identify key challenges for transitioning students and conduct an environmental scan to identify successful approaches to mitigate those challenges.

**1.3.1 Measurable:** These challenges will be identified in the study.

**1.4** Create a guide for effective practices in the use of flexible learning technologies.

**1.4.1 Measurable:** Pending study outcomes.

**1.5** Develop a strategy to encourage vendors to implement data exchange standards in their products and services.

**1.5.1 Measurable:** Pending study outcomes.

## **2. Action: Expand awareness and address the need for equity of access as it relates to digital education.**

Lead: Education Council

Participating Entities: NITC Community Council, K-12 and Higher Education professional and advisory groups

Timeframe: 2018-20

Funding: Additional funding may be required for this action item

Targets/Deliverables:

**2.1** Form a joint study group comprised of stakeholders from across the state to identify opportunities and actions to ensure equitable access for students.

**2.1.1 Measurables:** A) Members of the NITC Ed Council will participate in the study proposed in LB 994. B) Alternative should LB 994 not be approved, NITC will secure resources to form its own study group with key stakeholders across Nebraska.

**2.2** Education Council will work in collaboration with other Nebraska stakeholders, such as the Community Council Broadband Initiative, to find solutions for available, accessible, reliable, secure and affordable Internet access as related to academic success.

**2.2.1 Measurables:** A) NITC Ed Council members meet regularly with Community Council Broadband Initiative members. B) Propose grant to provide resources for affordable access through NE libraries.

**2.3** Identify and promote the use of accessible products and services in achieving equity of access.

**2.3.1 Measurables:** A) Implement statewide bid for internet hot spot access. B) Explore TV White Space for student home access for educational purposes.

### **Other Recommended Measurables:**

- Published research regarding infrastructure, pedagogy, equity of access, and impact on learning
- Number of K-12 students who have gained home Internet access through Digital Inclusion initiatives
- Number of public libraries that have gained faster Internet access by reaching Network Nebraska, either directly or indirectly