

# **Network Nebraska**

## **Digital Learning**

### **E-rate Modernization**



• May, 2014 •



# Network Nebraska • Digital Learning • E-rate Modernization

## Summary of Contents

Nebraska has a story to share that reveals the good things that happen when people collaborate and partner and resources unite toward a common vision. Information in this packet is intended to demonstrate how diverse systems are working together toward achieving a vision that is ever-evolving.

### • Network Nebraska

The first tab in this packet summarizes the statewide high-capacity backbone called Network Nebraska.

Network Nebraska Summary .....	2
Network Nebraska Accomplishments.....	3
Network Nebraska Consortium E-rate Discounts .....	4
Serving Schools and Libraries:	
What we seem to be doing well .....	5
What we seem to NOT be doing well .....	5
How E-rate Modernization could help .....	5
Organization Chart .....	6
Map by Year, building Network Nebraska.....	7
E-rate filing resource for Network Nebraska .....	8
Legislated Incentives for Distance Education on Network Nebraska.....	9
Sample of Market Survey responses:	
Important attributes of Network Nebraska.....	10
Desired Shared-Services over the Network.....	11
Comprehensive listing of Network Nebraska Services and Benefits .....	12

Learn more about Network Nebraska at <http://www.networknebraska.net/>

### • Digital Learning

One of the key components intended with formation of Network Nebraska was the ability for rural and urban districts to share courses. State lottery dollars dedicated to supporting education were directed for a period of time toward incentivizing the exchange of courses and reimbursing districts for updating interactive video classrooms. Digital Learning in Nebraska has seen a steady growth that includes high school credit courses, dual credit courses, virtual field trips, elementary learner opportunities, and much, much more. Districts are adopting 1 to 1 programs at a steady pace – more evident in the rural areas due primarily to lower investment costs.

Districts also moved from static DL classrooms to mobile cart systems as well as investing in MCU bridges so that diverse systems worked together. The state has transitioned from managed face-to-face course scheduling that turned classrooms on or off as scheduled to an in-house developed online course catalog called NVIS (Nebraska Virtual Instruction Source) where districts can list course offerings or seek a particular course that may be needed.

The transition from static DL classrooms to mobile carts to desktop events continues to evolve. Education partners in the state can see the value of a blended learning environment (BlendEd project) that will enable students, teachers, and others access to learning resources anytime, anywhere. We are just beginning to tap the potential of this vision and look forward to watching students succeed in creating the environment that best meets each student’s learning potential.

Included in this packet is the story of Holly O’Brien whose goal was to attend Massachusetts Institute of Technology (MIT) and how she used DL in rural Nebraska to achieve her goal. Also, the NeBooks project is a great example of partnerships with the Nebraska Department of Education with schools, state agencies, and non-profit organizations across Nebraska to provide quality instructional materials. Authored books are interactive using an iPad, and available for viewing in PDF as well.

Nebraska Distance Education: The Year in Review ..... 14

    Graph: DL Course Breakdown ..... 15

NVIS Web page – catalog of course and field trip offerings ..... 16

<http://nvis.esucc.org/>

NeBooks Project ..... 17

    This small sample of 6<sup>th</sup> grade student work demonstrates cross-course work that included research skills, literature, history, writing, graphic design, and critical thinking to publish each book. <http://www.education.ne.gov/nebooks/index.html>

Distance Learning Success: The Hollie O’Brien story ..... 18

BlendEd – the path to student control over time, place, path, and pace..... 20

<http://www.esucc.org/BLEND-ED>

**• E-rate Modernization**

E-rate is a valued partner in achieving the vision of Network Nebraska and Digital Learning. Modernization of the E-rate program has the potential to bring high capacity broadband to learners and classrooms in Nebraska and across the nation. While the comments filed are directed at the questions posed by the FCC in the Public Notice, we also offer our services in whatever way possible to achieve a healthy, viable, effective program that can achieve the goals of advanced telecommunications services for schools and libraries.

Summary of Comments from the Nebraska OCIO ..... 23

Statistics of Erate Years 2013 and 2014 ..... 26

    Comparing Largest and Smallest District discount impact ..... 26

    Network Nebraska Erate Reimbursements 2008-present..... 27

        Internet Access Costs - how low can they go?..... 27

## • Other Resources

Below are links to other useful and relevant resources to diverse systems working together toward achieving a vision that is ever-evolving.

Nebraska Department of Education – Network, Education and Technology Team

<http://www.education.ne.gov/neat>

Additional links to Distance Education, E-rate, Technology Planning, 1:1 Initiatives, and more.

ESUCC – Educational Service Unit Coordinating Council

<http://www.esucc.org/>

Network Nebraska, Digital Education, professional development and much more would not be as successful in Nebraska were it not for the dedicated staff of the 17 regional Educational Service Units across the state.

*Year End Report – 2012-13 ESUCC Distance Learning Review*

[http://issuu.com/gordonroethemeyer/docs/year\\_end\\_report\\_2013](http://issuu.com/gordonroethemeyer/docs/year_end_report_2013)

Digital Citizenship Symposium

<http://nebraskadcs.wikispaces.com/DCS+Home>

Participating districts send a team consisting of an administrator, teacher, parent, technology coordinator and two students (maximum of six members). The symposium offers several breakout sessions for each diverse group with a culminating activity bringing district teams back together to discuss, share and develop their own district vision statement to guide local policy development.

Nebraska Information Technology Commission, Education Council

[http://nitc.ne.gov/education\\_council/index.html](http://nitc.ne.gov/education_council/index.html)

The Education Council of the Nebraska Information Technology Commission is a 16-member advisory committee of the NITC composed of representatives from K-12 and Postsecondary education.

*Document archive* – current and historical documents about Network Nebraska including market surveys, legislation and policies, participation information, funding, etc.

<http://nitc.ne.gov/nnag/documents.html>

Contact us:

Tom Rolfes,  
Education I.T. Manager  
Nebraska Office of the CIO  
(402) 471-7969  
[tom.rolfes@nebraska.gov](mailto:tom.rolfes@nebraska.gov)

SuAnn Witt,  
E-rate Coordinator / Infrastructure Specialist  
Nebraska Department of Education  
(402) 471-2085  
[suann.witt@nebraska.gov](mailto:suann.witt@nebraska.gov)

# **Network Nebraska**



## I. NETWORK NEBRASKA SUMMARY

- A. The Nebraska Office of the Chief Information Officer (OCIO) was given administrative and management responsibility by the Nebraska State Legislature in 2006 to work in partnership with the University of Nebraska to develop and maintain a statewide, multipurpose, high capacity, scalable telecommunications network to be called **Network Nebraska**. “The network shall consist of contractual arrangements with providers to meet the demand of educational entities. The network shall provide access to a reliable and affordable infrastructure capable of carrying a spectrum of services and applications, including distance education, across the state. The Chief Information Officer shall aggregate demand for those state agencies and educational entities choosing to participate and shall reduce costs for participants whenever feasible. The Chief Information Officer shall establish a cost structure based on actual costs and shall charge participants according to such cost structure. The Chief Information Officer shall annually provide a detailed report of such costs to each participant and to the Legislative Fiscal Analyst.” (Neb. Rev. Stat. 86-5,100)
- B. Since 2006, the Nebraska OCIO and the University of Nebraska have worked together to carry out the vision of the Legislature to create a single, statewide, IP-based network that interconnects K-12 school districts, educational service units, and higher education. On July 1, 2014, Network Nebraska will mark its 275th participant in this statewide consortium. Participation will include:
1. 235 of 250 public school districts (94%)
  2. 17 of 17 Educational Service Units (100%)
  3. 8 of 8 community colleges [including 2 tribal colleges] (100%)
  4. 3 of 3 state colleges (100%)
  5. 1 of 1 University of Nebraska (100%)
  6. 7 of 14 private colleges (50%)
  7. 6 of 213 private, denominational schools (3%)
  8. 1 of 270 public libraries (.3%)

Network Nebraska-Education daily serves approximately 375,000 K-12 and higher education students, or about 95% of the state’s public student population.

- C. The Nebraska OCIO is responsible for the E-rate filing on the statewide backbone and statewide Internet access for all of the eligible education entities, and based on the poverty and ‘rurality’ of the participants, has received an annual E-rate discount ranging from 68-70% on those services. The entities, themselves, are responsible for the E-rate filing on the Wide Area Network (WAN) circuits needed to reach the Network Nebraska-Education aggregation points.
- D. The Nebraska OCIO is also responsible for the aggregation of demand and procurement of the WAN circuits, statewide backbone circuits, and statewide Internet.
- E. Since the Nebraska OCIO has been entrusted since 2006 with the interconnection of schools and colleges to a single statewide network, and procurement of WAN circuits on their behalf, an additional 24 school districts have been connected with terrestrial optical fiber for the first time, so that an estimated total of 99.6% of Nebraska’s 250 public school districts now are connected with scalable fiber telecommunications circuits. Actual building-level WAN data is currently being collected.
- F. Network Nebraska-Education is a Sponsored Education Group Participant (SEGP) of Internet2, and enjoys preferential Intranet routing and peering through the Great Plains Network (GPN) Gigapop in Kansas City. The cost for Commercial Peering Service Internet through the GPN is \$ .25/Mbps/month but is non-E-rate eligible.

#### I. NETWORK NEBRASKA “ACCOMPLISHMENTS”

- A. Has reduced the unit cost of Internet for participants by 99% over the past 8 years through aggregated demand and statewide bidding (from \$87/Mbps/month in 2006 to \$1.28/Mbps/month in 2014)
- B. Annually transports over 600 high quality semester distance education courses for high school and college credit (<http://nvis.esucc.org/>)
- C. Serves over 375,000 (95%) K-20 public students across Nebraska
- D. Has one of, if not THE lowest operational budgets in the country among statewide networks
- E. Is totally self-funded by the 275 project participants, with no state funding
- F. Nebraska public school districts are 99% fiber-connected from 40Mbps to 100Mbps
- G. Was approved for Internet2 Sponsored Education Group Participation (SEGP) in 2005 and has access to Internet2’s 100Gbps nationwide backbone
- H. Have had 100% participant retention through the first 8 years of the project, with participation being completely voluntary
- I. Was selected as the National Association of State CIOs’ 2013 top state project in the category of Cross-Boundary Collaboration and Partnerships

## II. NETWORK NEBRASKA CONSORTIUM E-RATE DISCOUNTS

- A. 2013-14 Backbone (2Gbps capacity, 1170 miles)
  - \$168,487 Total Annual Cost
  - \$108,039 E-rate discount of 69%
  - \$17.38/entity/month Interregional Transport Fee
- B. 2014-15 Backbone (2Gbps capacity, 1293 miles)
  - \$190,020 Total Annual Cost
  - \$120,254 E-rate discount of 68%
  - \$18.49/entity/month Interregional Transport Fee
- C. 2013-14 K-12 Internet Demand (8.00 Gbps capacity)
  - \$240,000 Total Annual Cost (\$2.50/Mbps/month)
  - \$165,600 E-rate discount of 68%
  - \$.7750/Mbps/month Internet Unit Rate
- D. 2014-15 K-12 Internet Demand (13.95 Gbps capacity)
  - \$215,010 Total Annual Cost (\$1.28/Mbps/month)
  - \$148,357 E-rate discount of 69%
  - \$.3982/Mbps/month Internet Unit Rate

## III. FCC NPRM 13-184 E-RATE MODERNIZATION

- A. Ensuring that schools and libraries have affordable access to 21<sup>st</sup> Century broadband that supports digital learning
  - 1. Focus the one-time \$2 billion of E-rate funding on new or faster high bandwidth connections for schools and libraries and the internal wireless infrastructure
  - 2. Retain support for voice services, but that if discontinuation is necessary, that it occur over a period of time to allow schools and libraries to adjust their budgets
- B. Maximizing the cost-effectiveness of E-rate funds
  - 1. Reduce the list of eligible equipment under Priority 2 funding to those devices that are absolutely essential to delivering Internet and other digital resources to the classroom;
  - 2. Phase in above recommendation” rotating eligibility model for Priority 2 funding, beginning with the 89% discount level in 2016-17;
  - 3. Reject any form of formula-based, per-building or per-applicant distributions or annual allotment models
  - 4. Require a detailed project plan from entities applying for Priority 2 funding
- C. Streamlining the administration of the program
  - 1. Create a new applicant category called “Network Consortium” that includes large-scale or statewide network consortia with specific criteria for eligibility
  - 2. Modify the Form 471 Item 21 Attachment to collect specific cost and bandwidth data from each eligible participant





## Serving Nebraska Schools and Libraries

### What we seem to be doing well:

- The number of school districts that are connected by scalable fiber (95%) to the statewide network
- The affordability of the Network Nebraska consortium project (< \$3000/year/entity)
- The comparatively low unit rate for commodity Internet (\$1.28/Mbps/month)
- Our ability to work together, between
  - The State of Nebraska and the University of Nebraska
  - K-12 and higher education entities
  - Public and private education entities
  - The Network Nebraska project staff and all participating entities
- The number of high quality video distance learning courses exchanged per year (>600)

### What we seem to NOT be doing well:

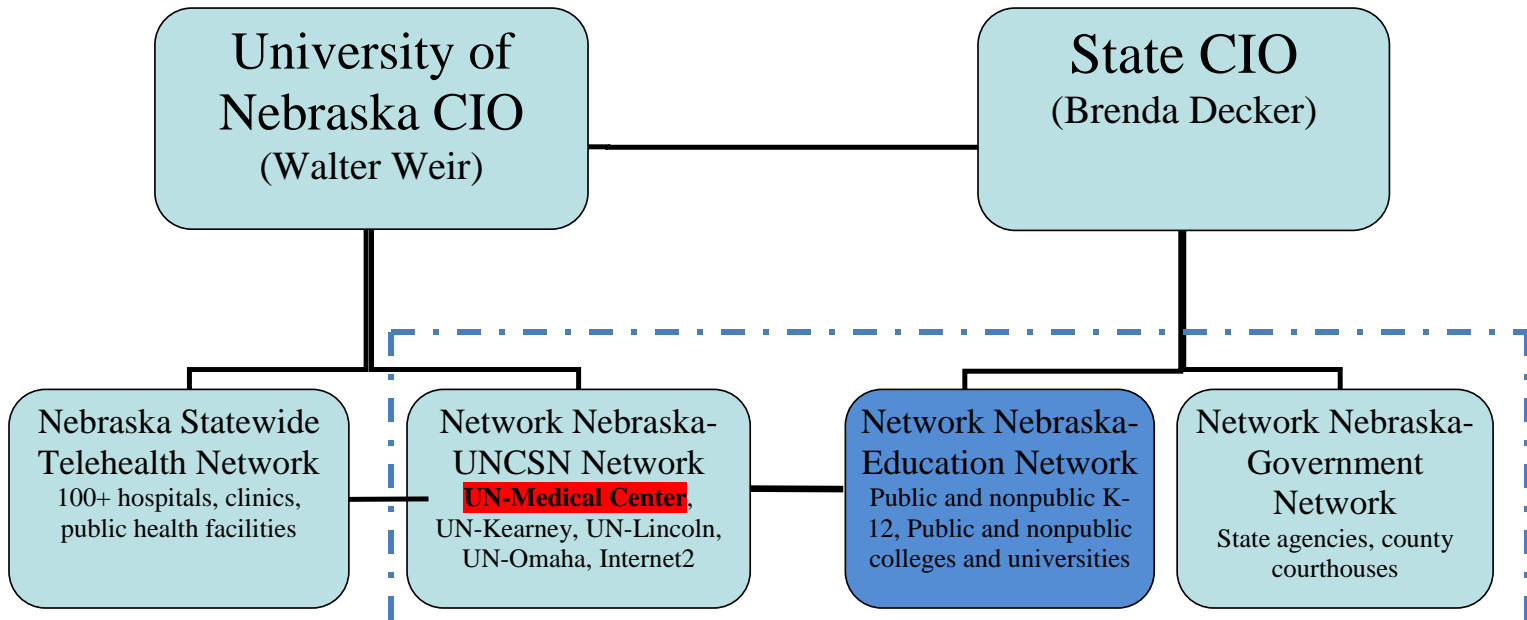
- The number of libraries that are connected by scalable fiber (<1%) to the statewide network
- The number of nonpublic schools that are connected by scalable fiber (3%) to the statewide network
- The affordability of advanced broadband ( $\geq 100$ Mbps) for public school districts
- The degree to which enterprise learning management (e.g. Blackboard, Moodle, etc...) and digital content management are being used by school districts
- The degree to which internal wireless infrastructure has kept up with the Wide Area Network (fiber) infrastructure

### How E-rate Modernization could help:

- Refocus the Priority 1 Eligible Services List on scalable fiber and Internet service and eliminate non-broadband application (e.g. E-mail, filtering, webhosting) eligibility
- Create a new E-rate filing status called "Network Consortium" and incentivize these consortia by increasing their discount percentage by 5% (not to exceed 90%) to take on new members and further decrease the cost of telecommunications
- Refocus the Priority 2 Eligible Equipment list on wireless access within schools and libraries and eliminate the eligibility of non-broadband equipment (e.g. videoconferencing, servers, etc...)
- Provide a one-time infusion of \$2 billion of carryover funds to stimulate the build-out of fiber to schools and libraries that have T-1 copper, DSL, and cable modem Internet service



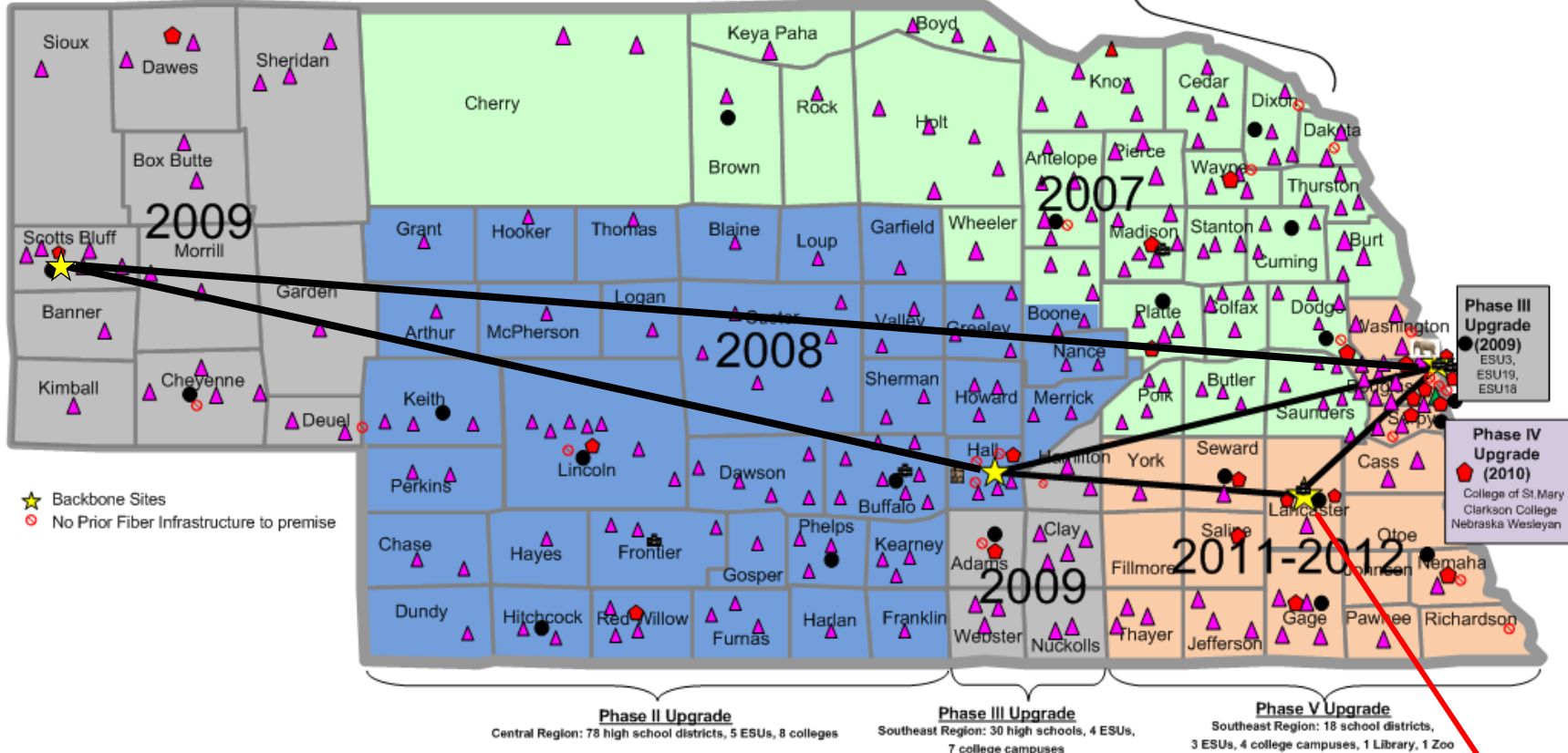
- (N.R.S. 86-5,100) The Chief Information Officer, in partnership with the University of Nebraska, shall develop and maintain a statewide, multipurpose, high capacity, scalable telecommunications network to be called **Network Nebraska**. The network shall consist of contractual arrangements with providers to meet the demand of state agencies, local governments, and educational entities as defined in section 79-1201.01. (LB 1208—2006 Session) (“Network Nebraska” is shown inside the dotted lines)



# Network Nebraska-Education Map by Year

**Phase III Upgrade**  
Panhandle Region: 23 high school districts, 2 ESU offices, 1 college campus

**Phase I Upgrade**  
Green Shading of Northeast Region: 87 high school districts, 5 ESUs, & 2 college campuses



★ Backbone Sites  
○ No Prior Fiber Infrastructure to premise

**Phase I – Green Shading on Counties**  
North Central/NorthEast Regions 2007

- ▲ 87 School Districts
- 5 ESU Offices (1, 2, 7, 8, & 17)
- ◆ 2 College campuses
- NU (UNO, UNL, UNMC, UNK)

**Phase II – Blue Shading on Counties**  
South Central Regions 2008

- ▲ 78 School districts
- 4 ESU Offices (10, 11, 15, & 16)
- ◆ 7 College campuses
- 1 NU (NCTA)

**Phase III – Gray Shading on Counties**  
Western/SouthEast Regions in 2009

- ▲ 42 School districts
- 6 ESU Offices (3, 9, 13, 14, 18, & 19)
- ◆ 8 College campuses

**Salmon Shading on Southeast Region (2011-2012)**

- ▲ 18 School districts
- 3 ESU Offices (4, 5, & 6)
- ◆ 4 College campuses
- Henry Doorly Zoo
- Grand Island Public Library

### Network Nebraska Backbone Funding (2014-15)

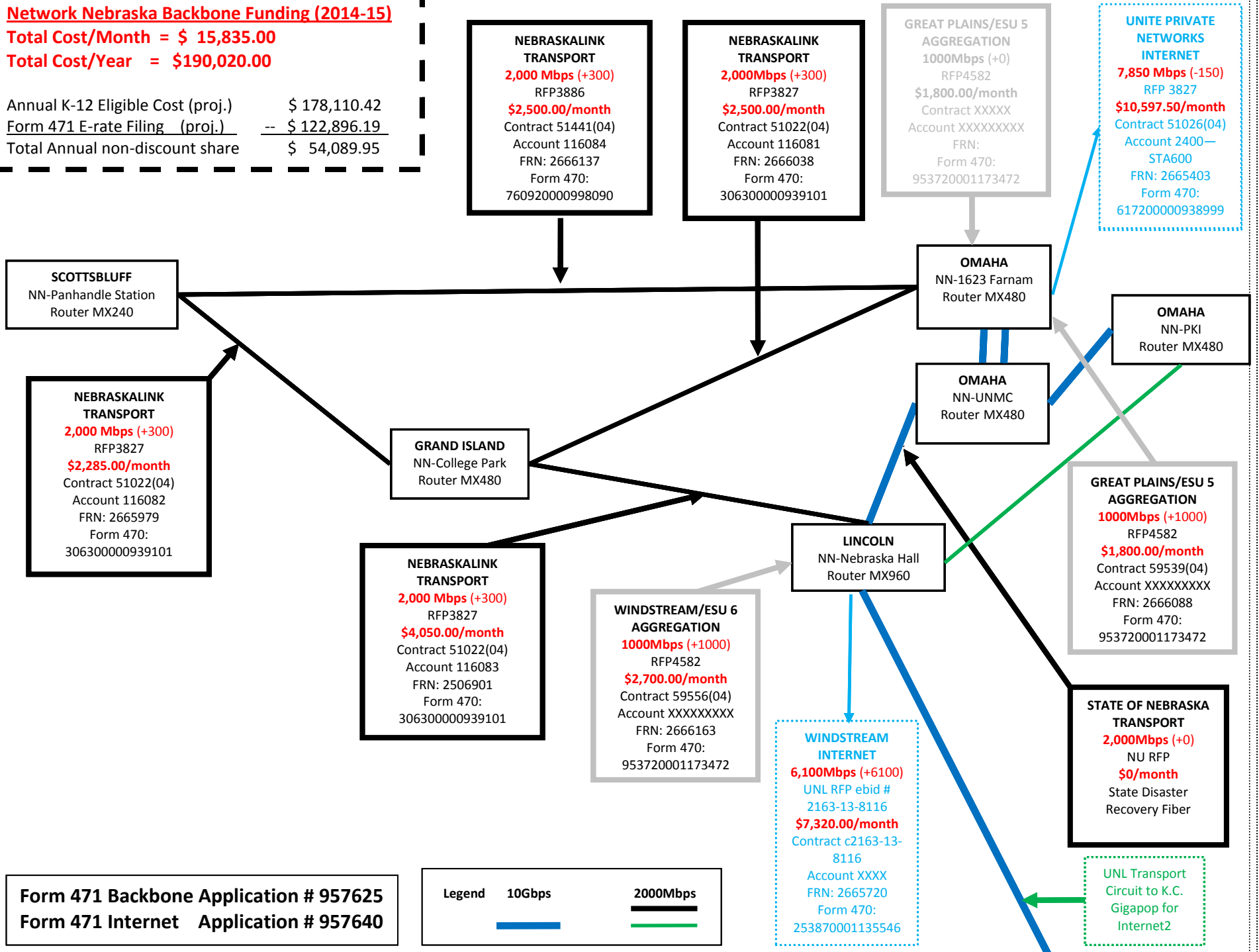
Total Cost/Month = \$ 15,835.00

Total Cost/Year = \$190,020.00

Annual K-12 Eligible Cost (proj.) \$ 178,110.42

Form 471 E-rate Filing (proj.) -- \$ 122,896.19

Total Annual non-discount share \$ 54,089.95



## **Distance Education Equipment Reimbursement and Incentives**

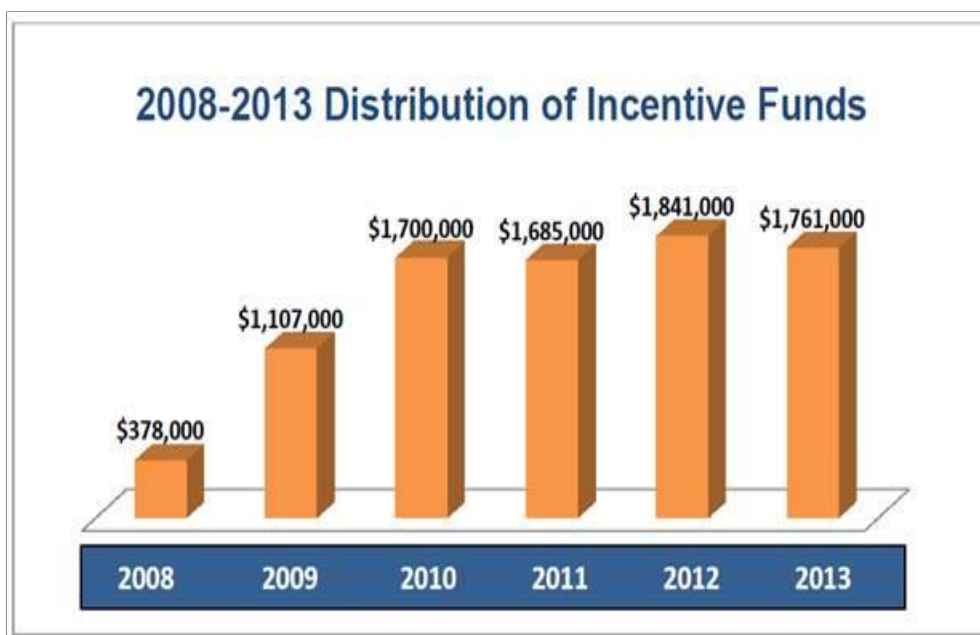
The process for incentivizing distance education across Nebraska was presented in LB 1208 during the 2006 Legislative session and reflected in current state statutes N.R.S.79-1336 which provides for a reimbursement of up to \$20,000 per high school and Educational Service Unit (ESU) for equipment related to distance education; and N.R.S 79-1337 that provides incentive funds for the exchange of distance education courses over Network Nebraska. Statutes required that the Nebraska Department of Education promulgate Rules to administer the provisions of LB1208 and are reflected in Rule 89. Public School Districts and Educational Service Units that are members of Network Nebraska qualify for these funds, which originate from the State Lottery. Participation in Network Nebraska is voluntary and public education entities are not required to accept the equipment reimbursement.

### **Equipment Reimbursement Funds:**

A total of \$5,063,781 in equipment reimbursements were distributed between 2008 and 2013 to 228 school districts and ESUs. Schools are required to exchange a minimum of 2 semester distance education courses per year for four consecutive years to retain the equipment reimbursement funds.

### **Incentive Funds:**

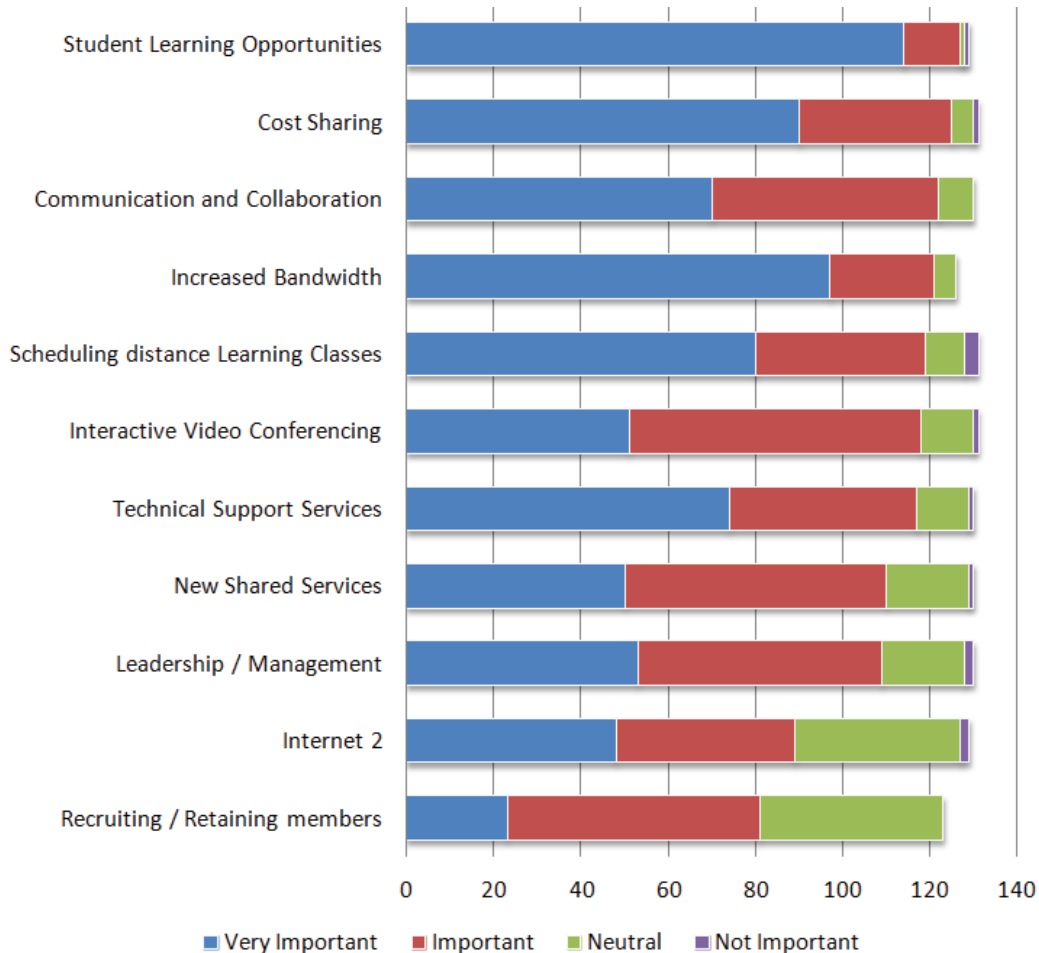
In years 2008 through 2013 a total of \$8,472,000 has been distributed to schools and Educational Service Units for the exchange of high school credit and dual credit courses over Network Nebraska (see graph below). In addition to high school courses, elementary distance education exchanges receive \$10 per instructional hour, sent and received, and districts have earned \$79,202 in years 2011-2013. Two more funding years remain in this program.



## K-12 Partner Responses

(includes public, non-public and ESUs)

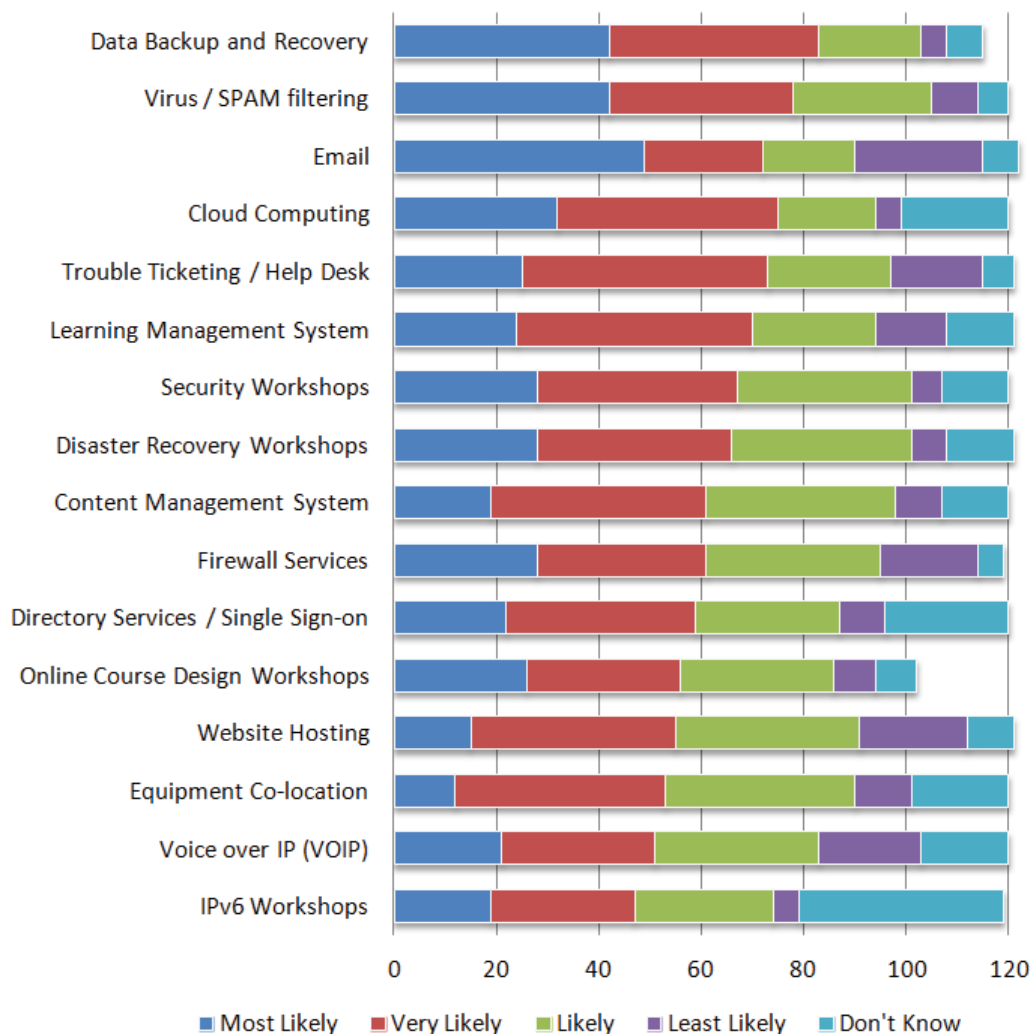
**Question:** Reflecting on your experience as a Network *Nebraska-Education* partner, please rate the following attributes based on their relative importance to your institution:



**Comments:**

- Elaboration on a few responses above: \*new shared services and internet 2: I don't know what those would be so am neutral \*increased bandwidth and communication: it seems from time to time that bandwidth gets seriously compromised and delivery/access is slowed noticeably; from time to time we get no service -- it would be nice to know of those lapses in advance!
- I feel this question was worded poorly. Do you want to know whether these things are important specifically in relation to NN-E's role in their use in my district, or important to my district in general? I answered based on the former.
- Portable video units were rarely used if ever. Waste of resources!
- Redundant Links need to be established throughout the state
- When I marked neutral it is because I was unclear as to what was being referred to in the selection....in other words, I do not know what Internet 2 means, I don't know what new shared services you are referring to and I am a little unclear on exactly what you mean for Leadership/Management in relation to this topic.
- Not particularly familiar with the services provided by Network Nebraska

**Question:** Past survey responses have indicated that sharing services is a significant benefit to Network Nebraska members by reducing costs locally and increasing statewide collaboration. For example, by aggregating demand, members of Network Nebraska have enjoyed a reduction of Internet costs of more than 90% over the past five years. If Network Nebraska -- through partnering with members or through hosted services -- were to offer any of the following, please rate from 1 to 4 (with 4 being the most likely) the likelihood that your institution would purchase or participate in the following shared service(s):



**Comments:**

- I am not sure how the ESU services and NN would work and therefore was unsure how to answer some of the above.
- Am unfamiliar with some of the services being suggested
- These questions are broad enough that the answer in every case is "it depends." We have a strategic plan and when the product lines up, we will participate. When it doesn't we'll shop elsewhere. Opportunities to learn are always welcomed. Answers above are based on my understanding of NN-E as portrayed by my ESU
- Schools need this very much!
- Interested in a statewide system/services that will reduce costs
- I am not a tech person, so am unable to respond to a lot of these. I do not however, understand the need to purchase a learning management system when we have access to Moodle free of charge and it works well for my needs as an instructor. I guess, I also am not sure about the exact difference between LMS and CMS. In my mind Moodle is an LMS, so if a CMS is a repository site, then I think we probably need that, but again, I am not sure.
- I really don't know about Network Nebraska-Education, so am unable to answer the questions below. The questions I answered above were my thoughts on the subject and do not reflect the organization I work for.



## **Comprehensive Listing of Network Nebraska—Education Services and Benefits (7/2/2013)**

### **Student Learning Opportunities**

- Statewide Clearinghouse and Videoconferencing Scheduling Software (i.e. Renovo)
- High quality exchange of Nebraska K-12 and college video distance learning classes
- High bandwidth Internet2 access to over 50,000 education partners and content providers
- Internet2 programming and virtual museum trips from across the U.S./world
- Host to the new ESUCC/NDE statewide learning object repository
- Participant in the 2013-14 Internet2 InCommon national pilot project for federated identity services

### **Connectivity/Transport**

- Intranet Ethernet connectivity to all 262 Network Nebraska participants and Nebraska Dept of Ed
- Interregional (high bandwidth backbone) Transport between Grand Island, Lincoln, Omaha, and Scottsbluff
- Access to commodity Internet1 service with one of the lowest rates in the U.S. (state contract purchase)
- 3Gbps Internet2 Commercial Peering Service (NEW for 2013-14) and routing to over 60,000 companies
- Limited co-location rack space at Grand Island, Lincoln, Omaha core locations on a space available basis
- Core router and core infrastructure cost avoidance through the University of Nebraska partnership
- Shared services for up to 12 simultaneous videoconferencing ports over the OCIO MCU bridges
- Development of an outstate dark fiber backbone project partnered with UNCSN (NEW for 2013-14)

### **Network Management/ Monitoring**

- 24/7 network monitoring and call center
- Toll-free Network Nebraska number, 1-888-NET-NEBR (638-6327)
- Automated Notification System services
- Network abuse and nefarious activity monitoring
- Fortinet enterprise Intrusion Prevention Service (NEW for 2013-14)
- Bandwidth measuring and assistance
- Level 1 network troubleshooting and support on Network Nebraska - Education backbone, core network devices and State Contract and University of Nebraska contracts for Internet access
- Level 2 network troubleshooting and support on wide area networking and other participant routing and DNS issues
- Level 2 video/scheduling troubleshooting and support
- Traffic shaping of Network Nebraska Internet bandwidth at Omaha and Lincoln (NEW for 2013-14)
- Onsite and/or remote technician assistance, upon request

### **Administrative/E-rate**

- RFP development and State Master Contract negotiations
- E-rate filing on the K-12 eligible portion of the Interregional Transport and statewide Internet
- Sponsored Education Group Participation (SEGP) Membership for Internet2
- Establishing the yearly eligibility list for LB1208 Distance Education Incentive Dollars and Equipment Reimbursements
- Management of the statewide purchase contracts for statewide scheduling, WAN services, Internet access, Cisco equipment, and videoconferencing equipment.
- E-rate archiving of bid documents, invoices, correspondence
- Continual Management of Consortium Letters of Agency to maintain E-rate eligibility
- OCIO Financial Solutions Services for budget development and vendor service orders
- State Billing services for Network Nebraska Participation Fee and Interregional Transport
- Network Nebraska website ([www.networknebraska.net](http://www.networknebraska.net)) development and support
- Staff support for the Network Nebraska-Education Advisory Group
- Informational presentations about Network Nebraska, upon request



# Digital Learning

# Nebraska Distance Education

## THE YEAR IN REVIEW

**N**ebraska schools exchanged 588 unique courses with total enrollments of 7578 students. Although the total number of courses exchanged increased the total enrollment was down from 8223 recorded in 2011-12. The decrease was due in large part to significantly lower number of elementary classes than were exchanged in 2011-12. The number of elementary courses dropped from 129 in 2011-12 to just 76 exchanged this year. There were also less dual-credit courses exchanged this year, 110 compared to 127 in the previous year. However, the number of high school classes exchanged grew from 346 in 2011-12 to 394 in 2012-13 according the NVIS clearinghouse reports.

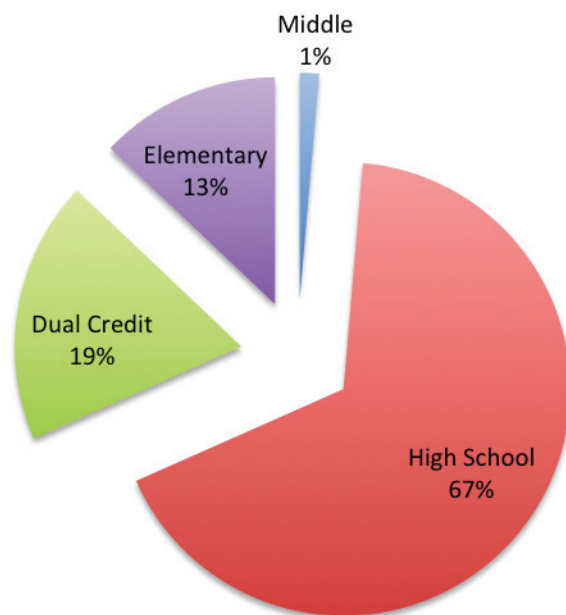
There are surprises each year when reviewing trends and comparing numbers from the year just completed to the previous years. One concern this year is that there was a decline in the number of teachers teaching distance-learning courses although it did not come as a complete surprise because it was already known from survey results that many teachers were close to retirement. Consequently, a comparison of 2012 -13 data to that from 2011-12 indicated that 57 teachers that had taught classes in 2011-12 did not teach in 2012-13. Thirty-five teachers joined the ranks of those that teach distance-learning classes leaving a net loss of 21 teachers. Another concern was the decrease in the number of students taking dual-credit courses, which stood at about 1700 students in 2011-12 but dropped to

1438 this past year. This is partially attributable to decline in the number of dual-credit courses from 127 down to 110 this past school year. Both the drop in enrollment and the number dual-credit courses may be due to new testing requirements for enrollment into dual-credit courses.

A nice surprise has been increased interest in the Special Distance Learning Music Classes described elsewhere in this publication. Eleven Special Distance Learning Music Classes with three schools enrolled in each class had to be scheduled this summer to meet the demand. Music teachers in five Nebraska schools are working with each other and with the Manhattan School of Music in New York to provide advanced level instruction to students who love music and performing. These classes also introduced students and teachers to blended learning through the self-blend model of instruction, which appropriately gives students more responsibility for their own learning.

Two-way interactive (synchronous) distance-learning continues to be important to schools for different reasons often depending on the size of the school. For some small districts distance-learning is vital in order for these small districts to offer students foreign language and advanced math classes along with other courses that they would not be able to offer on site. For other schools enabling students to take dual-credit courses such as College Algebra and/or English Composition is most important. Large districts such as Lincoln and Omaha Public Schools continue to participate in state-wide distance-learning by sending courses that are popular with out state schools. NVIS shows that there eighteen courses sent to out state schools by LPS and OPS offered eight courses.

### 588 Courses Exchanged in 2012 - 13



Although the clearinghouse is not able to track the frequency of events that enhance and enrich the curriculum such as virtual field trips or bringing experts into the classroom via videoconferencing there is anecdotal evidence that there was an increase in special events. See the article titled Top Five Virtual Field Trips on pages 22 -23 for an overview of sites that schools like to visit. However, schools also participated other impressive events involving the use of videoconferencing to bring students together, such as a Holocaust Survivors presentation held at Wahoo High School that was shared with over 1100 students, about 600 were on site and more than 500 students from 15 other schools throughout the state participated through high definition videoconferencing. Students at the host school as well those at all the remote sites were able to ask questions of the presenters.

Another engaging use of videoconferencing by schools were live discussions with State Senators about current issues faced by the legislature. Administrators, coaches

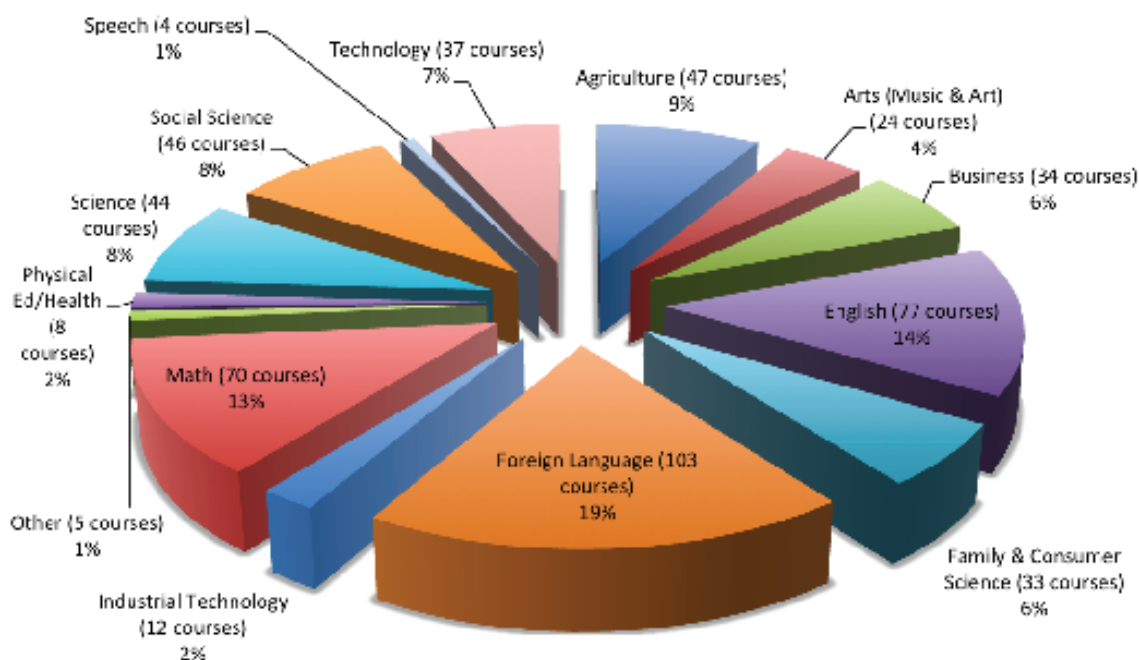
and teachers also found video conferences to be a good way to avoid travel and time away from school. Over 250 superintendents and school bookkeepers gathered at 19 ESUs and schools' sites across the state to listen to a presentation on the Patient Protection and the Affordable Care Act. This event represented the most simultaneous connections between sites at one time on the distance-learning network and it worked perfectly with high-definition connections at all locations. It has been estimated that by conducting this event as a statewide conference with everyone that needed the information attending at a remote site close to their school about \$47,855.00 was saved in travel costs, presenter fees, and time away from school.

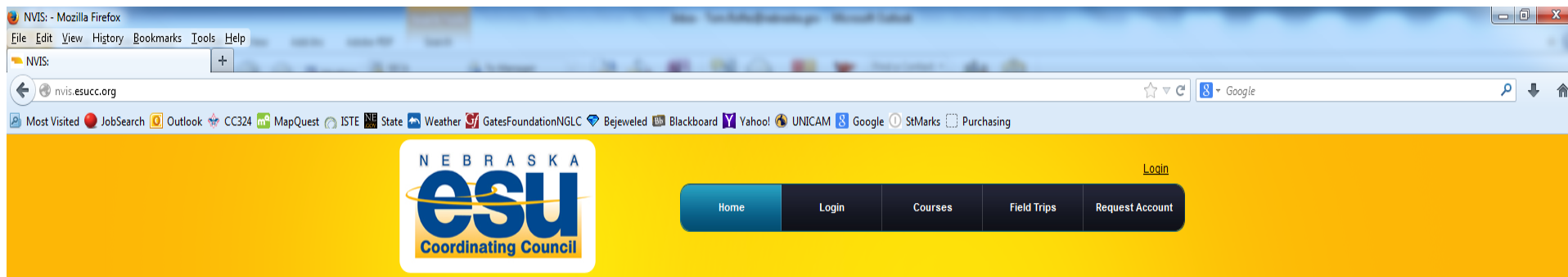
More and more professional development, athletics rules and seating meetings, and committee work, is now conducted over videoconferencing made possible through the purchase of multipoint conference units (MCUs) bridges that were purchased by ESUs who secured USDLA RUS-DLT grants. Since 2006 Nebraska ESUs, and schools have secured over eleven million dollars in grants in support of distance education.



John Stritt the DL Coordinator for ESUs 10 & 11 was chosen to receive the 2013 NDLA's Wayne Fisher Award for his leadership and service.

### 2012-13 DL Course Breakdown





## NVIS

Welcome to NVIS - The Nebraska Virtual Instruction Source  
eNVIion the future.

## 2013-14 Courses!

Current Course Breakdown by Subject

[Agriculture \(31 courses\)](#)

[Arts \(Music & Art\) \(39 courses\)](#)

[Business \(30 courses\)](#)

[Drivers Ed \(1 courses\)](#)

[English \(94 courses\)](#)

[Family & Consumer Science \(20 courses\)](#)

[Foreign Language \(110 courses\)](#)

[Industrial Technology \(3 courses\)](#)

[Math \(77 courses\)](#)

[Other \(11 courses\)](#)

[Physical Ed/Health \(7 courses\)](#)

[Science \(122 courses\)](#)

[Social Science \(50 courses\)](#)

[Speech \(8 courses\)](#)

[Technology \(14 courses\)](#)

NVIS currently has **617** Course Offerings available.

## Announcements

### Morrill Hall is ready to host virtual field trips!!!!

Morrill Hall wants to begin IVC outreach programs to schools and has plans and curriculum resources to provide. One strand that Morrill Hall's education staff can provide focuses on are the elephant fossils found on the plains of Nebraska. Or, if you would like a Titanoboa Virtual Field Trip featuring the giant snake, please call: 402-472-6302.

The museum has other programs they can provide too.

Call - 402-472-6302

or

Contact: Kathleen French <kfrench2@unl.edu>

or

Annie Mumgaard <amumgaard@unl.edu>

 Courses  Virtual Field Trips  
ESUCC © 2012  
455 S 11th St  
Suite C  
Lincoln, NE 68508

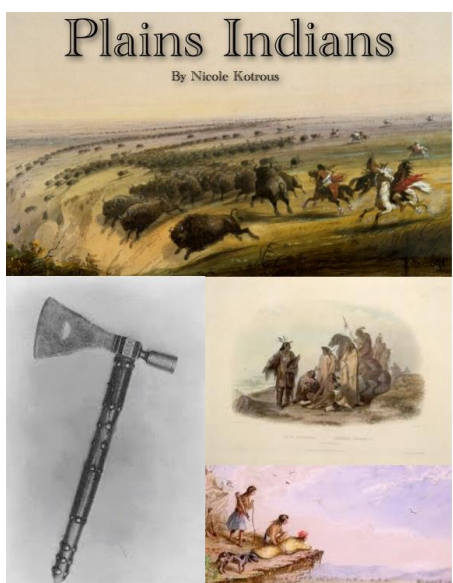


# NeBooks Project

The NeBooks Project is a partnership between schools, state agencies, and non-profit organizations across Nebraska for the common purpose of providing quality instructional materials. The initial focus of this project was creating Nebraska focused eBooks for use in meeting 4th grade Nebraska History standards. As the project has continued to grow and gain momentum, we want to encourage the writing of eBooks in all content areas to be added to our eBook Library.



Five 6<sup>th</sup> grade student authors from Ralston Public Schools, NE – sample work includes:



## ***Plains Indians***

by Nicole Kotrous

Have you ever thought of all the buffalo, Native Americans, and travois that once paraded through your backyard? The Plains Indians were the first inhabitants of the central part of the United States. Learn about culture, hunting traditions, clothing, and crafts. You will also get to know five specific tribes who lived in the Great Plains; the Sioux, Pawnee, Ponca, Omaha, and Otoe-Missouria. There is even a Native American Artifact Museum!

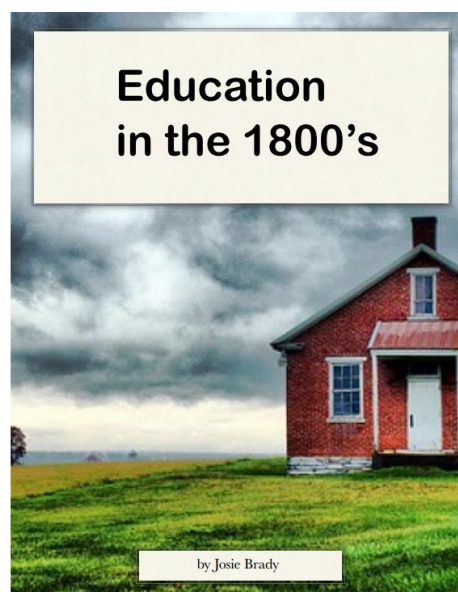
[http://www.education.ne.gov/nebooks/ebooks/Plains\\_Indians.pdf](http://www.education.ne.gov/nebooks/ebooks/Plains_Indians.pdf)

## ***Education in the 1800s***

by Jodie Brady

Imagine sitting in a desk in an 1800s schoolhouse. You glance out the window. Soon, you are no longer sitting in that desk, but on a stool in front of the classroom, with a cone of great stature resting across your head bearing the word "DUNCE". The teacher scolds you for looking out the window. This book gives a glimpse of what it would be like to be a student or teacher in the 1800s.

[http://www.education.ne.gov/nebooks/ebooks/Education\\_in\\_the\\_1800s.pdf](http://www.education.ne.gov/nebooks/ebooks/Education_in_the_1800s.pdf)



Learn more about the NE Book project at: <http://www.education.ne.gov/nebooks/index.html>



# DISTANCE LEARNING SUCCESS

## NETWORK NEBRASKA GIVES HER THE WORLD

*by Kevin Cole, Omaha World Herald Staff Writer*



Hollie O'Brien's road from central Nebraska to the Massachusetts Institute of Technology took her through five schools without leaving her Arcadia High School desk.

Wanting to better her chances for admission to one of the nation's premier science schools, O'Brien took courses in nuclear engineering and physics taught at Burke High in Omaha; government, pre-calculus, trigonometry and geometry from Ansley High;

calculus from Burwell High; and English from Central Community College in Kearney. And just for fun, she added some computer science for advanced scholars from the University of Nebraska-Lincoln.

"I was able to take the courses that I needed in schools all around Nebraska without leaving Arcadia," O'Brien said. "I wanted more math, so I went for it."

She was one of 5,200 Nebraska students who "went for it" during the 2010-11 school year, taking advantage of the distance education program through Network Nebraska. The program connects students with classes that their districts don't or can't offer.

But some rural students, like O'Brien, take full advantage of the program to pack their semesters with challenging classes and help build a résumé that positions them for acceptance by some of the most competitive colleges in the country.

O'Brien, who graduated last week with a 4.0 grade-point average and first in her class of nine, said she wouldn't have been accepted into MIT

without access to the interactive videoconferencing courses.

And the 18-year-old did more than earn a place in MIT's next freshman class: She earned a full-ride scholarship valued at \$42,000 to study aerospace engineering.

Network Nebraska operates under the auspices of the Nebraska Information Technology Commission and includes the state's 17 educational service units that assist school districts in identifying courses that can be offered online or via a videoconferencing system.

John Stritt, director of Educational Service Unit 10, which includes Arcadia, said Network Nebraska benefited from the Omaha and Lincoln public school districts starting to share their courses in 2009.

"That gave us more teachers and curriculum to share with students in rural Nebraska," Stritt said.

"Anywhere in Nebraska, students have the opportunity to take video or Internet-based classes."

O'Brien worked with Arcadia guidance counselor Mindy Conner to find the classes she would need to beef up her science and math skills.

"Hollie is a planner and a thinker," Conner said. "She targeted the classes she needed and found a way to work out a pretty complicated schedule."

O'Brien spent the first four hours of her school day in front of a 42-inch television screen equipped with a

high-definition camera that allowed her to see and be seen, as well as an audio system so sensitive that it picked up the turning of book pages in the remote classroom.

“At first it was really weird, because you’re by yourself listening to the teacher and all the other kids, but you get used to it,” she said. “My nuclear science teacher at Burke, Mr. (Hakan) Armagan, really made me feel like I was right there in the class.”

Nebraska Education Commissioner Roger Breed said the need for distance education - whether online or through videoconferencing classes - is growing as rural populations shrink.

“It is becoming increasingly more difficult to offer specialized classes to areas with smaller and smaller populations,” Breed said. “We’re going to need more options for the students.”

A report that Wainhouse Research released in 2010 ranked Nebraska sixth among all states in the total number of classrooms with videoconferencing capability and second among states (behind only Hawaii) in the percentage of classrooms used for distance education.

Iowa ranked 14th in the total number of videoconferencing enabled classrooms and 16th in percentage of classrooms used for distance education.

Nebraska schools have more than 190 distance learning classrooms

and another 800 videoconferencing carts that can be moved from room to room for a total of 990 setups for an exchange of courses.

Nearly every Nebraska public high school has at least one videoconferencing system. Schools that are members of Network Nebraska exchange, on average, five distance learning classes each day, according to the Education Service Unit Community Council.

Mary Schlegelmilch, the distance education supervisor for the Omaha Public Schools, said that next school year, OPS will share 26 videoconferencing courses and 32 online courses on Network Nebraska. In 2009-10, a total of 337 courses were shared through the network.

“Our students are very excited for the opportunity to work with students in remote locations,” Schlegelmilch said. “They enjoyed talking with Hollie and even made sure the instructor knew if she had raised her hand.”

O’Brien, the daughter of Marie Nielsen of Ord, Neb., and John O’Brien of Lincoln, switched to Arcadia High School after her sophomore year because the high school in Ord did not participate in Network Nebraska at that time.

She counts volleyball, basketball, track, student council and tutoring other students among her extracurricular activities. She also participated in the Peter

Kiewit Academy of Excellence, Astronomy Camp at UNL, Space Camp in Alabama and the Women in Science conferences at UNL.

In addition, O’Brien was one of 50 high school students from across the United States - and one of only two from Nebraska - selected for an internship at the NASA Johnson Space Center in Houston last summer.

O’Brien leaves for MIT in late June to take summer courses in calculus, chemistry, physics and college writing so that she “feels comfortable” when the fall term begins.

“It really will be a big adjustment going from Arcadia to Boston, so I thought it would be good to cover a lot of fundamentals,” she said.

She also plans to join the track team and has volunteered for a program that seeks to help minority students feel at home on campus.



# Blended

*Blended learning is an educational model that combines traditional face-to-face/distance classroom methods with online delivery and participation; and an element of student control over time, place, path, and pace.*



## Components

### **Learning Object Repository (LOR) Content System**

A digital content repository (Safari Montage) for existing and future collections of multimedia learning objects and course materials

### **Learning Management System (LMS)**

Allows teachers and students to access, create, and organize instructional content; perform testing; support collaborative learning activities; and deliver instruction to students

### **Federated Directory Services System (LDAP)**

A statewide directory services structure that facilitates single sign-on access to all instructional resources for every teacher and learner

### **Statewide Professional Development (PD) System**

A comprehensive system of professional development providing technology-assisted instructional design training, embedded PD, and PD content shared between and among the NDE, ESUCC, higher education & other educational partners

### **Evaluative System**

A persistent system of assessment and analytics that enables the diagnosis of specific student achievement problems and the identification of curriculum or teacher shortages

## BlendEd: It's Personal

### **Past—**

- Two-way interactive courses limited to one send site and three receive sites within regional pods
- FAX materials back and forth, or snail mail
- Lottery dollars support purchase of equipment updates and incentives for send/receive courses
- Number of courses offered in 2008: **108**
- Types of systems used in 2008—MPEG3 systems (32 MB) and then updated through legislative support (IP network using 8 MB)

### **Present—**

- Network Nebraska allows high bandwidth statewide delivery
- Partial adoption of learning management systems for sharing content, online discussion, submitting assignments, delivering assessments
- Video bridge expand capabilities
- Number of courses exchanged in 2012-13: **567**, and number of students served: **8,800**.

### **Future—**

- Learning management system available to all NE teachers and students enhancing traditional face-to-face and video conferencing courses
- Build statewide repository of learning objects in Safari Montage
- Build online modules/courses that provide students with some element of control over time, place, path, and/or pace of their learning.
- A single sign-on (one login and password for every teacher and student) with one-stop shopping, access to resource they have permission to access with just one login to remember.
- Creation of comprehensive Professional Development opportunities for technology-assisted instructional design, so that teachers learn how to adapt their teaching to blended models.

For more information:

Beth Kabes, [bkabes@esu7.org](mailto:bkabes@esu7.org); Craig Hicks, [chicks@esu13.org](mailto:chicks@esu13.org); Linda Dickeson, [ldickes@lps.org](mailto:ldickes@lps.org)



# BlendEd: It's Personal

Previous funding— What we have accomplished	To Sustain— What we have learned	Missions— What we will do
<ol style="list-style-type: none"> <li>Distance Learning (DL) statewide impact since 2007 <ul style="list-style-type: none"> <li>1862 unique courses sent</li> <li>4050 receiving sites</li> <li>8939 DEUs (incentives) earned—almost \$9 million to Nebraska Schools!</li> </ul> </li> <li>9,000 students served by DL courses per school year (average since 2011-12) <ul style="list-style-type: none"> <li>Courses not provided by their own school</li> <li>Enhanced college prep opportunities</li> </ul> </li> <li>Classroom enrichment activities (experts, collaborations, virtual field trips)</li> <li>Virtual collaboration, communication and partnerships between state leaders and groups.</li> </ol>	<ol style="list-style-type: none"> <li>DL courses provide equitable course opportunities for students statewide.</li> <li>Schools receiving DL courses benefit from reduced staffing costs.</li> <li>DL courses help schools meet Rule 10 requirements (especially in World Languages).</li> <li>DL Courses give students access to the courses required to attend a four-year college.</li> <li>Travel costs and time for statewide leaders are significantly reduced.</li> <li>Pricing for access to Network Nebraska is negotiated to affordable rates.</li> <li>Students experience increased engagement and cultural sharing through global connections.</li> </ol>	<ol style="list-style-type: none"> <li><b>Personalize learning</b> for students and teachers</li> <li><b>Provide equal access to courses</b> for all students</li> <li><b>Provide equal access to rich content</b> resources for all students and teachers</li> <li><b>Connect to Data Dashboard (SLDS)</b> for improved data-driven decision making.</li> <li><b>Realize cost-savings</b> from implementing BlendEd components statewide.</li> <li><b>Transform classrooms</b> (DL or face-to-face) into blended learning environments</li> <li><b>Provide easy access</b> (single-sign-on) to all BlendEd components &amp; Data Dashboard</li> <li>Provide expanded opportunities for <b>Professional Development</b></li> </ol>

## Quotes—What we are hearing

*“Students have access to expanded curricular opportunities we are not able to offer locally including Spanish, Art, College Algebra, and College Medical Terminology.”*

*“We would be unable to offer numerous courses that are REQUIRED for students who want to attend universities. DL helps keep our costs down, and allows students choices...for additional courses, and dual/college credit.”*

*“Advanced students have earned scholarships because of advanced educational opportunities delivered through Distance Learning.”*

*“World Language (must offer two years...this has come in via distance for many years)—we would not be Rule 10 compliant in this area without distance learning.”*

*“We do utilize DL for World Language requirements and additional Language Arts courses...also to meet the requirement of Economics and Psychology.”*

# **E-rate Modernization**



## Summary of Comments From the State of Nebraska Office of the CIO

Modernizing the E-rate  
Program for Schools and  
Libraries

)  
)

WC Docket No. 13-184

April, 2014

Nebraska OCIO applauds the Commission for its efforts to ensure our nation's students receive access to the high-speed broadband connectivity and technology necessary for 21<sup>st</sup> century digital learning, and appreciates the Commission's review of our comments on this matter.

In preparation of these comments, the OCIO reviewed the Telecommunications Act of 1996, relative to the E-rate program. This review not only helped guide submitted comments and recommendations but also revealed that the E-rate program may have gradually strayed from the fundamentals of the original law, which states that "Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as described in subsection (h)." [PL 104 Sec 254(b)(6)].

Within the law, "Advanced telecommunications capability is defined, without regard to any transmission media or technology, **as high-speed, switched, broadband telecommunications capability** [*emphasis added*] that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."

It is also worth noting that the law provides a definition of the term **telecommunications** as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received."

One possible observation is that the E-rate program has experienced scope creep when it comes to Priority 1 service and now includes a variety of services that go beyond digital transmission service as defined in the law. This is without a doubt due to the well-intentioned desire of schools and libraries, as well as service providers, to find ways to fund services and systems that take full advantage of the E-rate program.

In the spirit of the program's goal of providing advanced telecommunications services within the limitation of available funding, and in order for schools and libraries to have resources available for classroom technology, the Nebraska OCIO encourages the Commission to return the E-rate program to the original intent of the law.

In simplest terms, we submit that a **Priority 1 service does not create or store information**. It only provides the medium to transmit (receive/send) information. [*Medium / Media*: Any form of transmission capacity used to carry signals including copper wire, coaxial cable, optical fiber, or wireless (radio/laser/microwave)].

Therefore, the Nebraska OCIO recommends retaining only the following as Priority 1 services:

- Digital transmission services (the medium over which it is carried is irrelevant, including dark fiber).
- Internet Access

As the following services do create and store information, the Nebraska OCIO suggests that these fall outside of the goal of “advanced telecommunications service” and therefore should not be eligible as Priority 1 services; neither do they qualify as Priority 2. They should be removed from the Eligible Services List or consideration as an eligible service altogether.

- Email Service
- VOIP
- Voice Mail
- Web Hosting
- Video Conferencing Equipment (codecs, etc)
- Any hosted service (circuits over which delivered are eligible, not the service)

Applications such as Email, Voice Mail, and Webhosting do create and store information; VOIP and video conferencing are end user applications or contracted services that use telecommunications services to transmit and/or store information. We believe these applications are services that advanced telecommunications capability was intended to transport – not fund.

In the current public notice, the Nebraska OCIO recommends to the Commission that it:

- Focus the one-time \$2 billion of E-rate funding on new high bandwidth connections for schools and libraries and the internal wireless infrastructure;
- Reduce the list of eligible equipment under Priority 2 funding to those devices that are absolutely essential to delivering Internet and other digital resources to the classroom;
- Implement the “1 in X years” rotating eligibility model for Priority 2 funding, beginning with the 80% discount level in 2016-17;
- Not consider any form of formula-based, per-building or per-applicant distributions or annual allotment models;
- Create a new applicant category called “Network Consortium” that includes large-scale or statewide network consortia (additional criteria listed below);
- Require a project plan from entities applying for Priority 2 funding;
- Modify the Form 471 Item 21 Attachment to collect specific cost and bandwidth data from each eligible participant;
- Retain support for voice services, but that if discontinuation is necessary, that it occur over a period of time to allow schools and libraries to adjust their budgets;
- Consider the Nebraska OCIO Demonstration Project proposal for possible implementation.

The “Network Consortium” criteria may include:

1. Legitimizes its creation or existence through specific statutes, policies, resolutions, or executive orders by the state in which it resides (i.e. Department of Education, State level legislation, Gubernatorial order, etc...);

2. Documents individual entity participation with a Letter of Agency, Memorandum of Agreement; Memorandum of Understanding; Service Level Agreement; or equivalent document;
3. Maintains some level of governance or sponsorship such as a board, council, advisory body, state agency, intermediate service agency, or university;
4. Performs network design and network management functions such as help desk, troubleshooting, filtering, traffic shaping, intrusion prevention, etc...
5. Facilitates development and implementation of network standards that raise the level of network security, integrity, and reciprocity;
6. Performs large-scale procurement resulting in state master contracts or master agreements for equipment, Wide Area Network circuits, statewide backbone circuits, Internet access, or other E-rate eligible services;
7. Involves enough entities (e.g. dozens or hundreds) to achieve economies of scale and lower costs in the competitive procurement, contracting of services, and consortium filing for E-rate eligible services;
8. Employs intelligent networking, Intranet routing, carrier co-location centers, network aggregation points, public and private data centers and commercial peering services to take full advantage of faster transport and reduce dependence on commodity Internet.

If you have any questions, please contact

- Tom Rolfes, Education I.T. Manager at (402) 471-7969, [tom.rolfes@nebraska.gov](mailto:tom.rolfes@nebraska.gov)
- SuAnn Witt, E-rate Coordinator and Infrastructure Specialist at (402) 471-2085  
[suann.witt@nebraska.gov](mailto:suann.witt@nebraska.gov)

## FUNDING YEARS 2013 AND 2014 • NEBRASKA ERATE FUNDING ACTIVITIES

Average Statewide Discount 66.3%		FY 2013	
		SCHOOLS	LIBRARIES
Priority 1	FRNs submitted	1415	198
	FRNs funded	1347	193
	Pre-discount total	\$ 15,248,628	\$ 453,801
	Amount Committed	\$ 10,327,176	\$ 308,332
	FRNs denied	68	5
	Pre-discount total	\$ 2,196,334	\$ 3,101
	Amount denied	\$ 1,242,907	\$ 2,101
Priority 2	FRNs submitted	18	5
	FRNs funded	3	0
	Pre-discount total	\$ 5,344	\$ 3,101
	Amount Committed	\$ 3,277	

Average Statewide Discount 66.3%		FY 2014	
		SCHOOLS	LIBRARIES
Priority 1	FRNs submitted	1350	195
	FRNs funded	N/A	N/A
	Pre-discount total	\$ 16,408,636	\$ 451,445
	Amount Committed	N/A	N/A
Priority 2	FRNs submitted	2	0
	Pre-discount total	\$ 90,014	
	Amount Committed	N/A	

### COMPARE:

	LARGEST DISTRICT	SMALLEST DISTRICT
Public School Name	Omaha Public Schools	Elba Public Schools
Total Students / NSLP	48,525 / 35,653	69 / 42
Shared Discount	82%	80%
Total FRNs for 2014	5	2
Total P-1 Costs Pre-Discount	\$ 2,013,035	\$ 19,980
Eligible Discount Total	\$ 1,664,300	\$ 15,984
Total Cost to District post Erate	\$ 348,735	\$ 3,996
Cost per student pre-Erate	\$ 41.40	\$ 289.55
Cost per student post Erate	\$ 7.19	\$ 57.91

*These FRNs and costs do not include Network Nebraska – the statewide education backbone.*

Data retrieved 4-30-2014 from the Data Retrieval Tool on the  
USAC Schools and Libraries website: [www.usac.org/sl](http://www.usac.org/sl)

## Network Nebraska-Education E-rate Reimbursements, 2008-present

	Backbone	Internet
2007-08	\$ -	\$ -
2008-09	\$ 126,286.00	\$ -
2009-10	\$ 161,472.77	\$ -
2010-11	\$ 181,569.03	\$ -
2011-12	\$ 174,567.47	\$ -
2012-13	\$ 118,128.15	\$ 88,140.81
2013-14	\$ 108,176.74	\$ 165,600.00
2014-15	\$ 122,896.19	\$ 148,356.90
Subtotal	\$ 993,096.35	\$ 402,097.71
Grand Total		\$ 1,395,194.06

## Network Nebraska internet Access Cost Average \$\$ per Megabit / Month

