

Network Nebraska

Northeast Nebraska Fiber Loop Project

Executive Briefing

The year 2016 represented a turning point in both Nebraska's economy and its public telecommunications infrastructure.

The governor convened an economic summit on July 12th, 2016 to discuss the results of an SRI Internationalⁱ studyⁱⁱ regarding the state's existing economic programs. The study identifies Nebraska's current strong and enviable position of high workforce participation and low unemployment. The study did, however, identify that wages are well below the national average, leading to challenges in recruiting and retention of workers.

On April 13th, 2016 Network Nebraska celebrated its official 10th birthday as a statewide network. Network Nebraska has established itself as a vital resource for technology infrastructure in the government and higher education sectors. Since its inception, the network has lowered the price of commodity internet access through aggregated demand and collaborative purchasing, from a high of \$87/Mbps/month to under \$1/Mbps/monthⁱⁱⁱ, resulting in accumulated cost avoidance for the state of \$YYY million dollars over 10 years and providing opportunities for technology infused education that could not have been envisioned when the network was created. The governance bodies which guide the collaborative project now turned their eyes to what opportunities may lie ahead in the next decade of service.

The SRI report identified four interrelated, strategic investments to help transition Nebraska to a high-wage/high-value economy (*SRI report page 4*):

- High skill, high wage jobs
- Technology intensive investment
- Innovation
- High quality communities

As cloud computing becomes the predominant delivery method for innovation, education, workplace, and consumer technology solutions, network infrastructure continues to be a foundational and critical technology investment for achieving these goals.

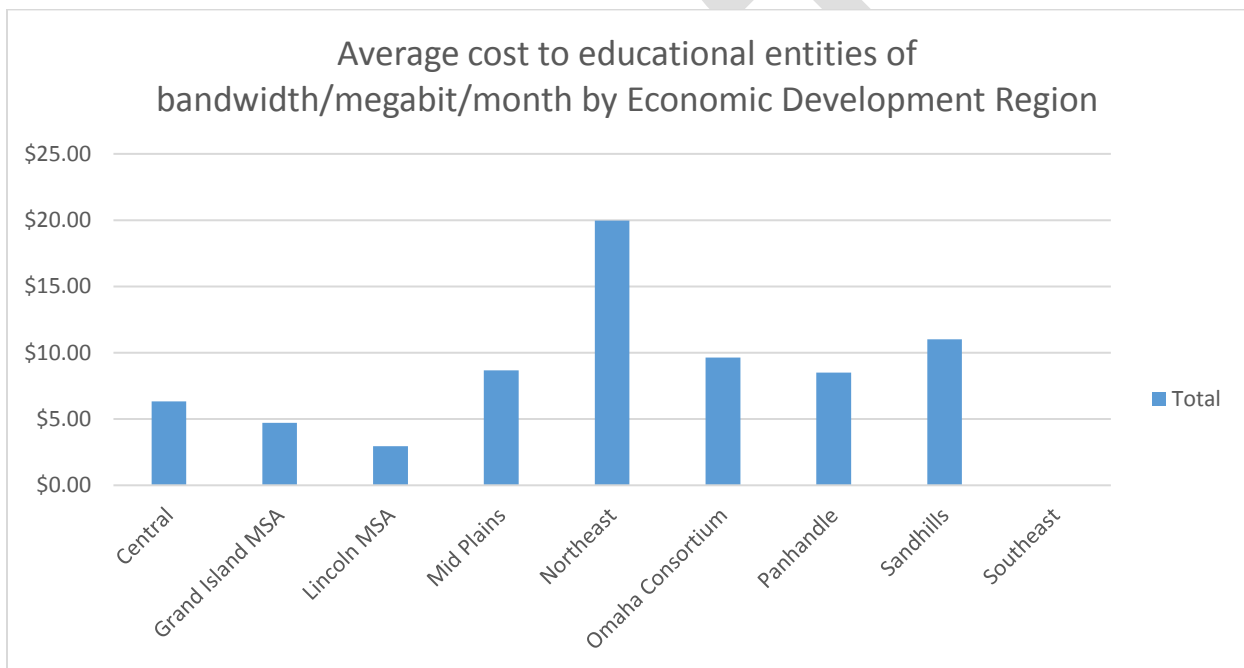
Additionally, enhanced in-state network connectivity will be required to fulfill a number of the SRI report recommendations for the educational sector, including support for the high school career academies and specific programs such as the Interface Web School in Omaha.

Further, in-state network connectivity facilitates the kind of inter-agency shared services projects currently recommended by the office of the OCIO. These projects, like the inter-local agreement between Wayne State College and Northeast Community College, can provide data center consolidation, disaster recovery, and improved service quality at lower costs.

Access to low cost, high bandwidth network infrastructure required for these innovative approaches, is not, however, universally available outside the urban core.

The federal map of high speed internet indicates general availability outside the metro areas along Interstate 80 and the Platte River. However, some interviewees indicated gaps in coverage that were burdensome for business connectivity, as well as high prices. ... Addressing these deficiencies is critical for the future of the state outside the metro areas, the equivalent of adequately providing and maintaining roads. – SRI report page 45

This observation through interviews validates data collected by Network Nebraska on telecommunications circuit pricing and availability in rural Nebraska, particularly in the Northeast economic development region:



This inequity creates barriers to collaboration for key resources located throughout the Northeast region of the state.

The communities of Columbus, Norfolk, Wayne, South Sioux City, and Fremont serve as homes to a number of businesses in economic development sectors identified as growth sectors by the SRI report:

- Agriculture & Food Processing
- Automotive & Transportation Equipment
- Materials & Chemicals
- Precision Metals

Further, these communities host post-secondary institutions with strong academic programs preparing students to work in economic sector clusters identified by the report as of interest to Nebraska's future economy:

- Agribusiness & Food Processing
- Advanced Manufacturing
- Biosciences (both medical and agricultural)
- Financial Services
- Health and Medical Services
- IT and Data Services
- Renewable Energy
- Transportation and Logistics

**A LIST OF THE SPECIFIC INSTITUTIONS, ACADEMIC PROGRAMS, AND INDUSTRIES SERVING THESE CLUSTERS CAN BE FOUND IN APPENDIX I OF THIS DOCUMENT.

These anchor cities of the rural community, given the right conditions, have the opportunity to utilize the attractions of small town life identified by the study to attract and retain talent; the key to 21st century economic development. One of the critical conditions to realize this is network connectivity:

Further, the nature of work is changing so that working at home from locations outside urban areas is much more practical, as long as connectivity is good. For example, it is important that download speeds of 10 – 25 Mbps are available in the Omaha and Lincoln metro areas, in towns in the Northeast, and in towns along I-80 and the Platte River. Access to this key infrastructure is comparable to proximity to the railroad in the 19th century (however, tariffs are very high in some places). – SRI Report page 11

Network Nebraska issued a RFP (bid) in late 2016 for a collection of dark fiber network segments which would connect all of these communities in a loop running from Grand Island to Omaha. Dark fiber leases would allow Network Nebraska to provide multiple, parallel high speed connections in each of these communities, facilitating cooperation between the education, government, and health care sectors and establishing multiple regional points of attachment to a high bandwidth redundant network backbone. While not directly serving business and industry, such a capital investment would serve as an anchor tenant, providing local carriers with a stable foundation from which to enhance local telecommunications facilities to support economic growth. This investment would also provide the required connectivity for educational institutions to train the workforce needed in the region.

While Network Nebraska has traditionally used leased circuits to deliver bandwidth, the use of dark fiber leases for Network Nebraska in the Urban core has provided greater flexibility and long term lower costs for Network Nebraska and University of Nebraska centric services. While initially more expensive, return on investment for high bandwidth is typically under 5 years. Such investments are key to long term economic development and the ability of the education and health care sectors to support that development:

High skill and high technology jobs are generally associated with capital intensive activities. Capital intensive investments are an important goal in order to make the

transition towards Nebraska's next economy. Technology intensive and capital intensive investments may not always have a direct impact on jobs, but they are associated with higher wages, and make an important long-term contribution to overall growth (such investments tend to generate significant productivity spillovers into the rest of the regional economy). Where employment of any kind is no longer the priority, policy instruments can be aligned with technology- and capital-intensive investments with less regard to an immediate impact on new jobs, but rather with a view to faster growth that builds the tax base and has powerful indirect, long term effects on the quality of jobs. -- SRI report page 10

The Northeast Nebraska Fiber Loop Project, if supported with the required funding to complete the network segment, will represent a watershed moment for Network Nebraska as well as a significant step forward in implementing the recommendations of the SRI report to transition this rural area of Nebraska to high-wage/high-value jobs.

The project has a number of next steps, beginning with the RFP. The results of that process will inform strategies on how to fund the project, with a number of potential sources:

- 1) Shared, postalized backbone fees collected through Network Nebraska
- 2) Federal E-rate support on the eligible portion of the backbone costs
- 3) Re-investment of existing network connectivity budgets from agencies attached to the loop
- 4) Direct investment of State funding
- 5) A combination with the above stakeholders and sources

Appendix I – Economic development cluster mapping for Northeast Nebraska Fiber Loop communities

- Columbus
 - Central Community College
 - Business and Industry
 - 79 manufacturing plants employing 6400 workers, including Behlen manufacturing
- Norfolk
 - Northeast Community College (NCC)
 - Aspen top 10 of Community Colleges serving 17,945 students in three locations
 - Applied Technology and Applied Research programs such as Agriculture, Water, and Energy
 - Business and Industry Training
 - The joint UNMC-NCC nursing program
 - Business and Industry
 - Nucor Steel
 - Norfolk Iron and Metal
 - Faith Regional Health Services
- Wayne
 - Wayne State College (WSC)
 - WSC has the state's highest capacity applied technology teacher education program, providing faculty for High School career academies. The new Center for Applied Technology facility will further build capacity for the teacher pipeline in this critical area, as well as employee training, applied research, and pipelines for management in advanced manufacturing and construction trades.
 - The WSC Rural Health Opportunities Program is a key feeder for rural students to the University of Nebraska Medical Center. Not only are WSC students among UNMC's best prepared applicants, but the RHOP program also helps support graduates who commit to staying in-state and serve rural communities, one of the SRI report's workforce recommendations.
 - Business and Industry
 - Great Dane trailer manufacturing
 - Sand Creek Post and Beam
 - Heritage Industries
- South Sioux City
 - College Center (joint NCC & WSC facility)
 - Little Priest Tribal College
 - Nebraska Indian Community College
 - Business and Industry
 - Tyson
- Fremont
 - Midland University
 - Metropolitan Community College Campus
 - Business and Industry

ⁱ SRI International is an independent, nonprofit research center. <https://www.sri.com/about>

ⁱⁱ <http://neded.org/governor-s-summit-sri>

ⁱⁱⁱ <http://www.govtech.com/pcio/articles/How-Nebraska-Built-a-Network-with-the-Lowest-Internet-Costs.html>

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