

Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships Abstract

The Nebraska Library Commission, in collaboration with the State Office of the Chief Information Officer, plans to use the SPARKS Grant of \$25,000 to partner with, and incentivize five rural public school districts and five rural public libraries to create a mini-consortium E-rate application model that will dramatically increase the frequency of applications and funding to rural public libraries in Nebraska, as well as across the United States, and to work together to increase the internet speeds at the public library.

The **time frame** for this project will be from **May 1, 2018-April 30, 2019**, with a preliminary, pre-grant activity of competitive applications submitted and evaluated between January and March, 2018.

The **project will address the need** of the rural public library to become a key Community Anchor Institution within the community by becoming the fastest (and often the only) source of free Wi-Fi internet in rural communities with a legal service area of under 25,000. This project will also provide homework hotspots for students who lack internet at home, estimated to be 17% of all Nebraska households, or over 50,000 students statewide, and to emphasize continuing education for patrons of all ages by sharing virtual field trips.

The **intended audience** of these grant activities are the local school district and local public libraries, their students, staff, and patrons. If this E-rate application and infrastructure sharing model proves successful, it will be replicated statewide and communicated nationally to the top 15 states that have over 2/3 of their public libraries labeled as “Rural” (IMLS locale codes 41, 42, 43) and “Small” (service populations <25,000).

The **specific project activities** will include: A competitive application process to determine community project sites; competitive procurement, purchase, and installation of fixed wireless equipment to interconnect the public school and public library buildings; purchase and installation of a new 802.11ac internal network within each public library; 6-month test of augmented internet model within the library; training and guidance to support each school district/public library mini-consortium as they make their first-ever joint E-rate application in 2019-2020; evaluation of IMLS performance measures; composing the final project report; and construction of a descriptive project model and promotion via Nebraska and national media outlets.

The specific performance goals, project outcomes and results include:

- Delivering training and assistance in establishing credentials within the USAC E-rate Productivity Center (EPC) so that E-rate applications and funding can be maximized to improve external and internal networks;
- Augmenting rural public library internet speeds to the FCC minimum of 25Mbps down/3Mbps up or more;
- Upgrading internal public library networks to 802.11ac and Cat 6 and/or 6a wiring;
- Creating at least one supervised homework hotspot in each public library so that K-12 students can access public school networks and resources while in a public library setting;
- Improving the equity of access and digital inclusion of rural community citizens by increasing the speed of public Wi-Fi locations, and enable selected partners’ staff to travel and share their experiences;
- Exploring cloud-based videoconferencing to bring museum virtual field trip programs to rural communities;
- Constructing an exportable model to replicate project success across Nebraska and within similarly situated states across the U.S.

The **Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships** project intends to address: Rural library directors’ inability to apply for Category 1/Category 2 E-rate funding by using a personalized training and a mini-consortium application model; the lack of infrastructure sharing among public school districts and public libraries in rural communities by providing free equipment to incentive their collaboration and participation; the dismissive attitudes of rural residents who say that “nothing much ever goes on in the library and their Wi-Fi is too slow” by demonstrating the fastest internet they’ve ever experienced; the criticism by rural taxpayers that their taxes are too high by showing an increase in efficiency of having two major political subdivisions work together to achieve better service at lower costs; and to convince the school technology coordinator that public libraries are not the administrative burden that they think they are.

Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships Narrative

STATEMENT OF NATIONAL NEED

Significance and Timeliness: This project will address two national needs: the need for better internet access in libraries with a particular emphasis on providing better access for students to complete homework and the need for new models for E-rate filing.

In 2015, the FCC implemented the E-rate Modernization Order, which among other things raised the cap on the School and Library program from \$2.4 billion to \$3.9 billion. This was an effort to fund Category 2 (internal connections) requests over the 5-year period from 2015-2020. Now almost four years into the funding window, requests are falling far short of the funds available. In 2016-17, the available E-rate funding exceeded funding requests by \$700 million, and eligible entities are significantly behind the projections of full use of their Category 2 funds. In Nebraska, for instance, almost 2/3 of public libraries do not apply for any E-rate funding at all, and 96% have not applied for any Category 2 funding.

It is believed that many public library directors' reluctance to apply for E-rate stems from a combination of: A) lack of technical wherewithal and familiarity with the new EPC online portal system; B) lack of time to pursue a complex governmental application; C) philosophical opposition to censorship and filtering, and D) ignorance of the minimal technical requirements needed to achieve minimal CIPA compliance.

This project proposal aims to revolutionize the way that library directors from small and rural libraries approach and apply for E-rate, and to create a local (school district), regional (Nebraska Regional Library Systems) and statewide (Nebraska Library Commission, Nebraska Office of the CIO) support network. This will help maximize their E-rate funding and improve the public library's internet speeds and technical environment to benefit the community at large, and particularly disenfranchised patrons.

Rural Libraries lag behind urban and suburban libraries in broadband speeds. A 2015 American Library Association report (Clark, 2015) analyzing speed test data from 2,251 library locations in 2014 found that city libraries had a median download speed of 30.5 Mbps, compared to the median download speeds of 18.8 Mbps in suburban, 10.5 Mbps in town, and 9 Mbps in rural libraries. Rural residents also lag behind urban and suburban residents in their home access to broadband with 78.4% of metropolitan residents having a broadband subscription compared to 68.1% of non-metropolitan residents, according to 2015 census data (Ryan, 2017). Although households with children are more likely to have broadband access than families without children, approximately 15% of households with children did not have a broadband subscription in 2015. Libraries are often the only source of internet access for these families, many with students who need internet access to complete homework. Improved internet speeds in rural libraries are one way to address the need for adequate broadband – for students in order to complete homework – and for community members in order to increase their digital literacies (e.g. health, apply for jobs, government benefits, etc.). This project will create a partnership between local libraries and school districts using a mini-consortium E-rate filing that will allow the local library and school district to share the school district's high speed internet.

Project Category: The *Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships* project is applying to the IMLS under the **Funding Category of SPARKS GRANT, COMMUNITY ANCHORS**—Promoting libraries as strong community anchors that enhance civic engagement, cultural opportunities, and economic vitality while exploring new approaches or implementation of existing approaches in new contexts.

Who Will Benefit? Rural libraries, their patrons, students and teachers without home broadband access, and schools in five Nebraska communities will directly benefit from the project. Upon successful completion of the demonstration period, the project could be replicated, benefitting additional libraries, patrons, students, teachers, and schools. More importantly, the broader E-rate community will benefit from the innovative model for E-rate filing being demonstrated through this project.

Nebraska has a large proportion (88.5%) of small, rural libraries, ranking third among all states in the percentage of small and rural libraries. These rural and small libraries often have internet access which does not meet the FCC's 25 Mbps down and 3 Mbps up definition of broadband for households. Data collected by the Nebraska Library Commission on the 2016 public library survey indicates that over 80% of Nebraska's public libraries have service below the 25 Mbps down and 3 Mbps up standard. (See Attachment 1) These underserved libraries are concentrated in the state's rural areas. The Nebraska Public Service Commission recently estimated that 17% of Nebraska households do not have broadband service of at least 25 Mbps down and 3 Mbps up available. (NITC, 2017) These underserved households are also primarily located in the state's rural areas. Public libraries are often the ONLY community internet access location for small, rural communities.

All public schools in Nebraska are connected to a statewide fiber network, Network Nebraska, which provides substantial internet speeds to public school buildings. Their scalable broadband could be shared with the local library, improving library internet access for their students and teachers. School curricula continue to place more of an emphasis on cloud-based resources, multi-media projects and school-issued computers to students. Rural students are part of the "homework-gap" as they face barriers to completing their homework assignments and school projects without a reliable internet source at home.

The public library is often the only free Wi-Fi available in the community. However, many small and rural libraries do not have adequate internet speeds to service both the student population and patrons in the community.

Creating a partnership between the local library and school district using a mini-consortium E-rate filing will allow the local library and school district to share the school district's high speed internet so students may complete their school homework. This innovative model will benefit the E-rate community by demonstrating the feasibility of forming a mini-consortium. Having an alternative network in the public library for students allows other library patrons to maximize their use of the internet. Students will be able to use their school-issued devices to access the school's internet (from the library), also freeing up computers at the library to be used by non-public school patrons. The process, organizational support and knowledge are already in place to aid rural school districts and public libraries to partner in this model.

Current Theory, Scholarship, and Practice: Small, rural libraries suffer from decreased staffing, declining revenues, and disproportionately lower occurrences of broadband internet. (Swan, 2013) McClaughlin (2016) aptly sums up the homework gap in these areas by noting that "approximately 70% of teachers assign homework requiring access to broadband. In addition, about 65% of students used the internet at home to complete their homework, which could include submitting assignments, connecting with teachers and other students through group discussion boards, working on shared documents as part of a group project and doing online research for a school paper. Parents rely on the internet as well to be fully-informed on their child's academic performance, with many schools turning to online student information systems." Further, both students and teachers have embraced digital learning, with over "50% of students in grades 6-12" indicating that they use the internet for homework at least *weekly*, and "29% of high schoolers" utilizing the internet *daily*. (Project Tomorrow, 2012)

The importance of technology use in instruction and the digital divide presents a dilemma for teachers. According to the Bill and Melinda Gates Foundation Teachers Know Best report (2014), 42% of teachers acknowledge that their students lack sufficient technology access outside the classroom. Davis (2013) describes numerous initiatives by states and the FCC (e.g. Learning on-the-Go or LOGO), to address the importance of closing the learning gap by bringing speed equity to small and rural areas. Davis (2013) cites North Carolina Governor Beverly Purdue: “We can level that playing field through solid connectivity, so digital content at all levels can be accessed by the student.”

While recognizing the importance of closing digital and homework gaps, this project aims to address the extraordinarily low frequency of public school district/public library infrastructure cooperation by testing a mutually beneficial E-rate and internet sharing model. It also seeks to strengthen the relationship between community anchor institutions (schools and libraries), to increase both availability and quality of access.

PROJECT DESIGN

Project Summary: The Nebraska Library Commission (NLC), in partnership with the State Office of the Chief Information Officer (OCIO), plans to use the Sparks Grant of \$25,000 to incentivize up to five rural public school districts and five rural public libraries to work together to increase the internet speeds at the public library using fixed wireless technology; provide homework hotspots for students, teachers and media specialists who lack internet at home, and empower the public library to become a key Community Anchor. The *Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships* project will result in a replicable model for school/library partnerships that includes collaboration, interagency communication, diagnosis and resolution of technical impediments, and maximization of Category 1 and Category 2 E-rate funding for public libraries. A visual depiction of this project, with inputs, activities, and impacts is available from the attached Logic Model. (See Attachment 2).

Project Goals, Projected Outcomes, and Assumptions:

Goal 1: Augment rural public library internet speeds to the FCC minimum of 25Mbps down/3Mbps up or greater.

Library and School District will:

- Complete the Project Application of Interest and Commitment (See Attachment 3).
- Complete all steps required by their municipality to enable an antennae to be attached to each rooftop (school building and library), and in some cases antennae connected to the community high point (water tower, grain elevator).

Library, School District, NLC, and OCIO will:

- Discuss and implement a pragmatic plan for equipment installation, including an adequate timeline.

NLC will:

- Solicit contractor bids (RFPs) from WISP (Wireless internet Service Providers) vendors for equipment purchase and installation, pursuant to the guidelines of the procurement statutes of the State of Nebraska.

Goal 2: Upgrade internal public library networks to 802.11ac and Cat 6 and/or 6a wiring.

NLC and OCIO will:

- Oversee the awarded contractor(s) to complete the proper installation of equipment and wiring.

- Inspect and test installed equipment to ensure that it meets design standards and provides full functionality.

Goal 3: Create at least one supervised homework hotspot in each public library so that K-12 students can access public school networks and resources while in a public library setting.

Library will:

- Provide space in the library for one Wi-Fi Router, one table, four chairs and two desktop computers designated to be used as part of the library's homework hot spot.

Library, School District, NLC, and OCIO will:

- Test (both externally and internally) equipment to ensure proper performance.

Goal 4: Libraries nationwide will have access to a replicable model, enabling more rural and small libraries to break the ice, igniting new internet partnerships (relationships) in their communities.

Library and School District will:

- Be presenters at four Nebraska Regional Library Systems meetings (annual and quarterly), the 2018 Nebraska Library Association fall Conference, and the 2019 Nebraska Educational Technology Association (NETA) Conference.

NLC and OCIO team members will:

- Submit proposals at the 2018 NLA Nebraska Library Association fall Conference, the 2018 School, Health & Libraries Broadband Coalition (SHLB) Conference, the 2019 NETA spring Conference, and the 2019 American Library Association (ALA) Conference.
- Disseminate and promote project materials, specifications, standards, and reports so that others can more adequately implement similar programs.
- Promote project and project materials through state (NCompass Live, NLC's weekly webinar, newsletters, social media, etc.) and national sources (national newsletters and library media).

Goal 5: Improve the equity of access and digital inclusion of rural community citizens by increasing the speed of public Wi-Fi locations.

Library will:

- Record and report network usage statistics for K-12 students and other library patrons' from Aug. 2018 – March 2019 for both the library network and the augmented school/library network to determine if this goal is achieved.
- Provide a timetable to collect data from regular speed tests of both networks.

Library and School District will:

- Explore (with assistance from NLC and OCIO) cloud-based videoconferencing to bring virtual field trip programs to rural and small communities.

Goal 6: Deliver training and assistance in establishing credentials within the USAC E-rate Productivity Center (EPC) so that E-rate applications and funding can be maximized to improve external and internal networks.

Library and School District will:

- Attend E-rate training opportunities provided by NLC.

NLC and OCIO will:

- Provide training, support, and assistance to libraries to increase E-rate applications and leverage E-rate funding opportunities.

Goal 7: Libraries nationwide will have access to a replicable E-rate and infrastructure sharing model, enabling more rural and small libraries to break the ice, igniting new internet partnerships (relationships) in their communities.

NLC will:

- Offer products resulting from the project including a national webinar series, replicable guidebook, community template a white paper or published article.

Assumption 1: Public libraries *do* want faster internet but are unable to afford faster internet.

Assumption 2: Public libraries and public school districts will agree to work together within the E-rate program on a long-term basis and will consider joint applications and infrastructure sharing if it will benefit the community and disconnected students.

Assumption 3: Future sustainability of the project improvements will rely more on humans' ability to work together than the financial challenges inherent in a faster internal network and faster internet.

The performance goals and measures are further described under a detailed Evaluation Plan (See Attachment 4).

Potential Risks and Mitigation: While there are some risks associated with this proposal, the project partners have taken steps to minimize those risks. First and foremost, the project success depends a great deal on cohesive communication and collaboration between the local library and its school district. The application process will carefully consider these working relationships to minimize the risk and ensure project success. Additionally, E-rate promotion, training, and assistance is also an essential component of minimizing the risk of ongoing project success. NLC continues its commitment to providing these services through fall E-rate training throughout Nebraska, NCompass Live (NLC's webinar system) and a dedicated E-rate specialist on staff. Project risk is also minimized by limited investment (E-rate utilization), and by leveraging state networks already providing internet access to the school districts. The project's tiered approach (by first providing a Wi-Fi hotspot) to demonstrate accessibility, use, and access also mitigates potential risk by providing a lower cost opportunity before embarking on permanent, hardwired connections.

It is expected that by allowing the library to first demonstrate the full potential of the higher speed connection (for K-12 students, teachers and media instructor), demand among community members will increase. Such demand will likely result in community support for phase II of this project, a permanent hardwired connection and Category 2 E-rate funding.

Risk #1: Public libraries and public school districts opt not to apply to be project sites.

Risk Mitigation: Project partners have engaged in outreach activities, including webinars, conference presentations, and local library visits. With over 200 possible pairings of small, rural libraries and public school districts within Nebraska, the likelihood is good that five viable project sites will apply and be selected.

Risk #2: The fixed wireless, line of sight transport technologies prove to be unreliable in rural community settings due to tree and building obstructions.

Risk Mitigation: The Project Budget includes three direct link solutions and two relay link solutions to accommodate school/library projects that do not have line-of-sight.

Risk #3: Better internet service can lead to increased demand for longer library hours, which could require additional staffing.

Risk Mitigation: We believe that this project can be accomplished successfully with existing resources at the local level.

Appropriate Theory and Practice: The NLC/OCIO project team could not find any applicable theory or practice that indicates that a project design model exists to incentivize unlike political subdivisions to work together to share telecommunications infrastructure. There is a body of literature that speaks to aggregation of demand to achieve lower pricing, but that does not apply in this design model, since the source of internet is already in place. That being said, some offsetting theories and practices are included in this narrative to demonstrate how novel and groundbreaking this project proposal may be:

Theory: FCC policies and USAC rules currently permit public school districts and public libraries to form mini-consortia to jointly apply for Category 1 E-rate funding.

Practice: This type of consortium relationship is virtually untested across the 50 states.

Theory: Finite public funding resources at the local level should make interagency cooperation between political subdivisions a necessity.

Practice: The budgetary autonomy of different political subdivisions, even within the same community, is the norm rather than the exception.

Theory: Home broadband subscription appears to have plateaued due to a number of barriers such as cost, availability, interest in using the internet, and the lack of digital skills.

Practice: Public libraries' internet service will remain a critical solution for underserved and unserved populations long into the future.

Theory: Adequate information and training is available to equip every public library director to be a successful, self-reliant E-rate applicant.

Practice: Actually, public library performance in the E-rate program is far below the norm, thereby suggesting that alternative approaches and support measures must be explored to assist the public libraries.

Sequence of Activities: The time frame for this project will be from **May 1, 2018-April 30, 2019**, with a preliminary, pre-grant activity of competitive applications (See Attachment 3) submitted and evaluated between January and March, 2018. The *Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships* project will use an aggressive one-year implementation plan, with periodic progress reviews, to:

1. Advertise for applications of participation from school district and library partners (January, 2018);
2. Accept, evaluate, and select applications of participation (March, 2018);
3. Notify five selected school/library partners of funding approval (April, 2018);
4. Inaugurate project partner planning meetings (May, 2018);
5. Kickoff five Sparks Grant projects (July 1, 2018);
6. Conduct E-rate training, local project planning, Form 470 and RFP procurements (Fall, 2018);
7. File E-rate forms for Category 1 and Category 2 services (Spring, 2019);
8. Implement Category 1 and Category 2 projects (June, 2019);
9. Complete projects, submit final report of best practices and replication models (June 30, 2019); and
10. Disseminate information and promote replicability statewide and nationwide (ongoing).

A specific project timeline can be found in the Schedule of Completion.

Input, Consensus Building and Buy-in: The possibility of sharing an augmented network between schools and libraries has already been presented at statewide events, including the 2017 NLSA/NLA Conference, 2017 Nebraska Broadband TODAY! Conference, and NCompass Live: The Next Best Thing to Having Your Own Gigabit internet through joint efforts by the NLC/OCIO team. Attendees at each of these presentations, including ISP providers and library staff, have expressed a high level of interest in how their community would be able to establish a partnership (schools and libraries) to provide faster internet speed at the local library.

Project partner meetings will ensue within weeks of the project award notification. Community engagement and interagency cooperation is a very critical component to the success of this project and will be highly emphasized. The key project staff are open to mid-course corrections of the project, should ideas and suggestions be uncovered by the project site personnel.

Project Audience: The intended audience of this proposal include the local school district and local public libraries, and their students, staff, and patrons. Their staff will directly participate by helping install, test and maintain the new internal and external connection hardware and also help supervise the homework hotspots. Regional library system staff and intermediate service agency staff supporting schools will take particular interest in this new E-rate application model as it benefits their other constituents.

If this E-rate application and infrastructure sharing model proves successful, it will be replicated statewide and communicated nationally to the top 15 states that have over 2/3 of their public libraries labeled as “Rural” (IMLS locale codes 41, 42, 43) and “Small” (service populations < 25,000). (See Attachments 5 and 6)

These 15 states include:

- Vermont, 90.8%
- Alaska, 90.1%
- **Nebraska, 88.5%**
- Maine, 87.2%
- Iowa, 85.7%
- Kansas, 85.3%
- South Dakota, 84.4%
- New Hampshire, 82.8%
- North Dakota, 80.8%
- Montana, 79.3%
- Wisconsin, 69.7%
- Idaho, 69.4%
- New Mexico, 68.9%
- Oklahoma, 67.6%
- West Virginia, 66.5%

Underserved Communities: From previous NLC grant projects, the annual public library survey, and interaction with local libraries, it is apparent that libraries are desperate for faster internet. Of the 227 Nebraska libraries that completed the 2016 public library survey, 181 do not meet the FCC’s new definition of residential broadband speeds of 25Mbps download/3Mbps upload, even though public libraries have many more internet devices simultaneously connected. (See Attachment 1) Most of these libraries are rural, but the NLC/OCIO project team is also particularly interested in the state and national potential of this project for urban library settings and tribal lands. By sharing fiber-based internet access from the school district (e.g. 200Mbps-1,000Mbps), the library will be able to increase its internet speeds by a factor of 10X or more. Since this Sparks Grant is a pilot to test untested collaborative relationships and infrastructure sharing, if successful, it will eagerly be replicated statewide.

Project Team Members and Partners: Partners include NLC, OCIO, and five yet-to-be-selected public libraries and school districts in the State of Nebraska. NLC, as the state library administrative agency, administers the federal Library Services and Technology Act (LSTA) state program in Nebraska to support

library programs and services. The NLC mission is statewide promotion, development, and coordination of library and information services. NLC serves as an advocate for the library and information service needs of all Nebraskans. NLC provides financial support for Nebraska's four non-profit Regional Library Systems by contracting for regional library services to help achieve the NLC mission. The Systems promote cooperation among all types of libraries and media centers through communication, training, consulting, and planning assistance. (See Organizational Profile)

The OCIO is the state agency that provides a wide range of technology services and networking to state agencies, boards, commissions, and political subdivisions. Its staff manages the Network Nebraska statewide network that serves public and private, K-12 and higher education with fiber circuits and enterprise services. Network Nebraska is uniquely positioned to assist public libraries with faster internet and additional E-rate expertise. (See Letter of Support, Attachment 7)

The role of the five yet-to-be-selected libraries and school partners in Nebraska rural communities is an essential component of this project. Effective collaboration among these partnered entities is crucial to its success. Holly Woldt, Project Officer, will coordinate the project. For more information about skills, experiences, and roles of the personnel needed to carry out the project, see Key Project Staff and Resumes.

Time, Personnel, Financial and Other Resources: As indicated in the Key Project Staff and Budget Justification, the NLC and OCIO are pledging considerable agency resources to make this project successful. The agency resources include dedicated time from seven expert project team members, practiced in rural telecommunications and library development, and travel support to in-state and out-of-state activities and conferences, both during and after the grant performance year. The total estimated cost share from NLC and OCIO exceeds \$51,000, and local project participants' cost share is estimated at \$4,800. For a detailed description of the recommended equipment, including pricing, see Attachment 8. For a specific equipment bid, see Attachment 9.

Progress Tracking: The OCIO and NLC has significant experience in statewide project planning and management. A traditional Gantt chart has been created and will be adhered to over the 12-month term of this project. (See Schedule of Completion) While *Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships* does not rise to the level of multi-million dollar I.T. project management oversight, the OCIO has a project management team office with nine project management professionals ready to be called upon to assist with Clarity Software tracking on this project. (See Schedule of Completion)

Evaluation and Performance Measures: NLC will use a developmental evaluation (Patton, 2006) that is designed to provide a flexible, team-based approach where members “collaborate to conceptualize, design and test new approaches in a long-term, on-going process of continuous improvement, adaptation, and intentional change.” The project activities will definitely result in findings that can inform future work. Additionally, the IMLS Agency-Level Goal 2: Community performance based surveys will be utilized. Within this framework, there are four basic questions (See Evaluation Plan, Attachment 4)

Question 1: Can local libraries and school districts effectively collaborate to provide an essential homework hotspot for K-12 students and teachers in the library (Phase I)?

Question 2: Will libraries, school districts, and communities proceed to a permanent model (hardwired) connection from the school district to the library (Phase II)?

Question 3: Will (and if so to what extent) will this project increase E-rate participation?

Question 4: What are the effects of dramatic increases in speed for K-12 students and teachers in the library homework hotspot, and eventually, the community as a whole?

Communications Plan: All partners will collaborate on dissemination of information to enable national replication. Products resulting from the project will include a national webinar series, replicable guidebooks, community templates, training materials, equipment specifications, marketing materials, and a white paper or published article. We will disseminate through print, online, social media, and other library communication outlets. State and local channels will be employed, including those from NLC, OCIO, and others. We will target communication to national library, educational, and information technology groups. The project's products will be widely disseminated to advance the role of rural libraries as community anchor institutions that provide essential community services, and strengthen partnerships between library and school anchor institutions.

The NLC and OCIO have devised a multi-point communications plan to support this project:

- Governor's media contacts: Press release of grant award and project sites;
- NLC, ALA, and Nebraska Association newsletters, websites and listservs;
- Nebraska Information Technology Commission public meetings, newsletter and website;
- Interviews/articles in EdScoop and StateScoop magazines;
- State E-rate Coordinators Alliance (SECA) listserv to 50 states and 6 territories;
- Direct contact with the 14 other states with the top rural and small public library concentrations; and
- Conference presentations at the Nebraska Library Association Conference in October, 2018, School, Health, Library Broadband Conference in October, 2018, the Nebraska Educational Technology Association Conference in March, 2019, and the American Library Association Conference in June, 2019.

DIVERSITY PLAN

Underserved Communities: The *Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships* project will make every effort to serve individuals of diverse geographic, cultural, and socioeconomic backgrounds; persons with disabilities; persons with limited functional literacy or information skills; individuals having difficulty using a library or museum; underserved urban and rural communities; and children from families with incomes below the poverty level. As mentioned in the statement of national need, Nebraska has over 17% (323,000) of its population without adequate internet at home, from rural, suburban and urban environments. On tribal lands and the further the farms and ranches are from a municipality, the percentage grows even larger.

Community Needs:

Anecdotal Story #1: One of the leading candidates for this project is the Walthill Public Library and Walthill Public Schools, located in northeast Nebraska. Walthill is a community of 780 people nestled within Thurston County, on the Omaha Indian Reservation. The free and reduced lunch student population of the school district is almost 100%. The newly remodeled public library, located in the former fire station, has an internet speed of 12Mbps, and struggles to meet its bills each month. The library is located within two city blocks of the high school, which has fiber access of 200Mbps, and scalable to 1,000Mbps. The rooftops of these two public buildings are close enough to view each other, but the two entities have never discussed sharing of infrastructure or internet access.

Anecdotal Story #2: Wymore Public Library is located in Wymore, Nebraska. Wymore is a community of 1,401 people situated in southeast Nebraska. The Wymore Public Library has a published internet speed of 6Mbps but receives wireless internet from the city's water tower. Every afternoon when the students from Southern High School (5 blocks away) come in to do their homework, the internet grinds to a halt. Southern High School has fiber internet speeds of 1 Gigabit, yet the school and the library staff have never talked about technology or shared internet access.

These are two real-life examples that this grant hopes to address.

Addressing the Needs: This project aims to incentivize a public-public partnership between the public school district and public library to provide an interim solution of publicly available, super-fast internet for (Phase I) students and staff from the public school district, and then (Phase II) to the community at large.

NATIONAL IMPACT

The anticipated national impact derived from this project could be quite large and far-reaching—to use existing fiber infrastructure from one community anchor institution to serve another underserved community anchor institution—but hinges on the unknown variable of the ability and desire of these very same political subdivisions to work together, when no prior collaboration history exists. The E-rate mini-consortium application model unifying public school districts and public libraries under one billed entity name and number is novel and unique, and has enormous potential for future E-rate applications and funding.

Leading to Systemic Change: Of the 15 top rural and small public library states, 12 have statewide networks similar to Network Nebraska, with a specific mission to serve schools and public libraries. The modest municipal budgets of public libraries are prevalent and finding a mechanism to properly augment or share fiber-based internet with libraries will be of utmost interest to other states, the “nut that hasn’t been cracked” and the “one idea that hasn’t been tried”.

Project Findings, Products, and Replicability: The action steps to achieving a mini-consortium E-rate model, and the conversion from internet Service Provider (ISP) to a Layer 2 circuit interconnecting the public school and the public library should be of great interest to almost every rural community.

The project action steps should be replicable in almost every rural setting where: The public school district is connected by high bandwidth fiber to a statewide network where internet access is commoditized; the public school district participates fully with the E-rate program; the public library is within 20 miles of the public school district, either by direct line-of-sight, or by relayed line-of-sight.

Adaptability: Rural, sparsely populated states are more alike than different. The criteria for school/library participation and replication will be a published list once verified by the project outcomes and successes.

References: See Bibliography, Attachment 10.

Nebraska Schools and Libraries—Breaking the Ice and Igniting Internet Relationships Schedule of Completion

Tasks completed prior to project start date of May 1, 2018: Researching the most cost effective fixed wireless equipment, development and distribution of the application document to determine project sites 1-5, evaluation of submitted applications, rank ordering of Project sites 1-X, and notification of grant award to Project sites 1-5.

2018-2019 (Year One of Project)	2018								2019			
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Inaugurate project partner planning meetings												
Project news releases sent to media outlets												
Conduct equipment procurement and purchases												
External equipment installations and testing												
Internal equipment installations and testing												
Local project promotions and open houses												
Augmented Internet testing and patron counts												
Library E-rate trainings												
Apply for mini-consortium Billed Entity Numbers												
File Forms 470 for interconnection circuits												
Sign contracts and file Forms 471 for 2019-2020												
Submit work orders to service providers												
Formulate final report and models of replication												
Submit final grant report (Date TBD)												

DIGITAL PRODUCT FORM

Introduction

The Institute of Museum and Library Services (IMLS) is committed to expanding public access to federally funded digital products (i.e., digital content, resources, assets, software, and datasets). The products you create with IMLS funding require careful stewardship to protect and enhance their value, and they should be freely and readily available for use and re-use by libraries, archives, museums, and the public. However, applying these principles to the development and management of digital products can be challenging. Because technology is dynamic and because we do not want to inhibit innovation, we do not want to prescribe set standards and practices that could become quickly outdated. Instead, we ask that you answer questions that address specific aspects of creating and managing digital products. Like all components of your IMLS application, your answers will be used by IMLS staff and by expert peer reviewers to evaluate your application, and they will be important in determining whether your project will be funded.

Instructions

Please check here if you have reviewed Parts I, II, III, and IV below and you have determined that your proposal does NOT involve the creation of digital products (i.e., digital content, resources, assets, software, or datasets). You must still submit this Digital Product Form with your proposal even if you check this box, because this Digital Product Form is a Required Document.

If you ARE creating digital products, you must provide answers to the questions in Part I. In addition, you must also complete at least one of the subsequent sections. If you intend to create or collect digital content, resources, or assets, complete Part II. If you intend to develop software, complete Part III. If you intend to create a dataset, complete Part IV.

Part I: Intellectual Property Rights and Permissions

A.1 What will be the intellectual property status of the digital products (content, resources, assets, software, or datasets) you intend to create? Who will hold the copyright(s)? How will you explain property rights and permissions to potential users (for example, by assigning a non-restrictive license such as BSD, GNU, MIT, or Creative Commons to the product)? Explain and justify your licensing selections.

A.2 What ownership rights will your organization assert over the new digital products and what conditions will you impose on access and use? Explain and justify any terms of access and conditions of use and detail how you will notify potential users about relevant terms or conditions.

A.3 If you will create any products that may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities, describe the issues and how you plan to address them.

Part II: Projects Creating or Collecting Digital Content, Resources, or Assets

A. Creating or Collecting New Digital Content, Resources, or Assets

A.1 Describe the digital content, resources, or assets you will create or collect, the quantities of each type, and format you will use.

A.2 List the equipment, software, and supplies that you will use to create the content, resources, or assets, or the name of the service provider that will perform the work.

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG) you plan to use, along with the relevant information about the appropriate quality standards (e.g., resolution, sampling rate, or pixel dimensions).

B. Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan (i.e., how you will monitor and evaluate your workflow and products).

B.2 Describe your plan for preserving and maintaining digital assets during and after the award period of performance. Your plan may address storage systems, shared repositories, technical documentation, migration planning, and commitment of organizational funding for these purposes. Please note: You may charge the federal award before closeout for the costs of publication or sharing of research results if the costs are not incurred during the period of performance of the federal award (see 2 C.F.R. § 200.461).

C. Metadata

C.1 Describe how you will produce any and all technical, descriptive, administrative, or preservation metadata. Specify which standards you will use for the metadata structure (e.g., MARC, Dublin Core, Encoded Archival Description, PBCore, PREMIS) and metadata content (e.g., thesauri).

C.2 Explain your strategy for preserving and maintaining metadata created or collected during and after the award period of performance.

C.3 Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of the digital content, resources, or assets created during your project (e.g., an API [Application Programming Interface], contributions to a digital platform, or other ways you might enable batch queries and retrieval of metadata).

D. Access and Use

D.1 Describe how you will make the digital content, resources, or assets available to the public. Include details such as the delivery strategy (e.g., openly available online, available to specified audiences) and underlying hardware/software platforms and infrastructure (e.g., specific digital repository software or leased services, accessibility via standard web browsers, requirements for special software tools in order to use the content).

D.2 Provide the name(s) and URL(s) (Uniform Resource Locator) for any examples of previous digital content, resources, or assets your organization has created.

Part III. Projects Developing Software

A. General Information

OMB Control #: 3137-0092, Expiration Date: 7/31/2018

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A.1 Describe the software you intend to create, including a summary of the major functions it will perform and the intended primary audience(s) it will serve.

A.2 List other existing software that wholly or partially performs the same functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

B. Technical Information

B.1 List the programming languages, platforms, software, or other applications you will use to create your software and explain why you chose them.

B.2 Describe how the software you intend to create will extend or interoperate with relevant existing software.

B.3 Describe any underlying additional software or system dependencies necessary to run the software you intend to create.

B.4 Describe the processes you will use for development, documentation, and for maintaining and updating documentation for users of the software.

B.5 Provide the name(s) and URL(s) for examples of any previous software your organization has created.

C. Access and Use

C.1 We expect applicants seeking federal funds for software to develop and release these products under open-source licenses to maximize access and promote reuse. What ownership rights will your organization assert over the software you intend to create, and what conditions will you impose on its access and use? Identify and explain the license under which you will release source code for the software you develop (e.g., BSD, GNU, or MIT software licenses). Explain and justify any prohibitive terms or conditions of use or access and detail how you will notify potential users about relevant terms and conditions.

C.2 Describe how you will make the software and source code available to the public and/or its intended users.

C.3 Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:

URL:

Part IV: Projects Creating Datasets

A.1 Identify the type of data you plan to collect or generate, and the purpose or intended use to which you expect it to be put. Describe the method(s) you will use and the approximate dates or intervals at which you will collect or generate it.

A.2 Does the proposed data collection or research activity require approval by any internal review panel or institutional review board (IRB)? If so, has the proposed research activity been approved? If not, what is your plan for securing approval?

A.3 Will you collect any personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information? If so, detail the specific steps you will take to protect such information while you prepare the data files for public release (e.g., data anonymization, data suppression PII, or synthetic data).

A.4 If you will collect additional documentation, such as consent agreements, along with the data, describe plans for preserving the documentation and ensuring that its relationship to the collected data is maintained.

A.5 What methods will you use to collect or generate the data? Provide details about any technical requirements or dependencies that would be necessary for understanding, retrieving, displaying, or processing the dataset(s).

A.6 What documentation (e.g., data documentation, codebooks) will you capture or create along with the dataset(s)? Where will the documentation be stored and in what format(s)? How will you permanently associate and manage the documentation with the dataset(s) it describes?

A.7 What is your plan for archiving, managing, and disseminating data after the completion of the award-funded project?

A.8 Identify where you will deposit the dataset(s):

Name of repository:

URL:

A.9 When and how frequently will you review this data management plan? How will the implementation be monitored?