



Growing Communities: Connecting to Broadband & Partnering with Local Providers

July 2020



Contents

Introduction	1
Gothenburg's Grassroots Effort Attracts Broadband Provider	3
Seward County Leverages LB 840 & Philanthropic Funds	6
Ravenna Facilitates Permitting, Has Fixed Wireless at 150 Mbps Down	8
Lincoln Leases Conduit, Forms Public-Private Partnerships	9
Local Investors Form Fiber Company to Improve Broadband Service in Imperial	11
Norfolk Attracts Telecommunications Provider, Plans Carrier Hotel and Data Center	13
Lancaster County Explores Leveraging FCC's Rural Digital Opportunity Fund	15
Partnership Brings E-Connectivity to Southwest Nebraska	18

Introduction

July 2020 -- Broadband is critical for Nebraskans. Yet, many rural Nebraskans do not have access to broadband services. There is unfortunately no easy, one-size fits all solution—but by working together at the local, state and federal levels, we can leverage resources and ensure that all Nebraskans have access to broadband services.

At the local level, broadband development usually starts with community leaders from local government, businesses, educational entities, public power districts, and health care providers coming together to address the broadband challenges facing the community or region. Broadband related-development doesn't require community leaders who know all of the answers. It does, however, require community leaders who have the passion and commitment to find the answers.



The Nebraska Information Technology Commission's Community Council has researched models used by Nebraska communities to suggest strategies that your county, region or community can use to improve broadband availability.

This booklet and additional resources are available at:

ruralbroadband.nebraska.gov and nitc.nebraska.gov

- Nebraska Information Technology Commission Community Council

Cover Photo: Computer Sale at Auction Barn. Photo credit Mary Ridder.



What is Broadband?

The FCC currently defines broadband as high-speed internet access at 25 Mbps down and 3 Mbps up or greater. As broadband speeds have increased over time, the FCC has periodically revised its definition.

How Much Broadband Do I Need?

Broadband of 25 Mbps down and 3 Mbps up is generally considered adequate for small families who use the internet for e-mail, web browsing, internet shopping, social media, and webstreaming from a limited number of devices.

As more Americans are working, learning and accessing health care from home, many families are finding that they need greater broadband speeds—especially greater upload speeds.

You can calculate your bandwidth needs by going to a bandwidth calculator such as Broadband Now's calculator at <https://broadbandnow.com/bandwidth-calculator>.

How Much Broadband Does My Community Need?

Businesses which are heavy broadband users may need 1 Gbps up and down or more. Some companies require teleworkers to have broadband of at least 300 Mbps down and 150 Mbps up.

How Can I Test My Broadband Speed?

You can test your broadband speed by going to a speedtest site such as www.speedtest.net. Factors such as the speed of your device or your modem or router can affect your speed test results.



Gothenburg

Nebraska

Model: Attracting a telecommunications provider

Champions and Key Supporters: Business and Economic Development Community

Funding: A no-interest loan from the Gothenburg Improvement Company helped fund construction.

Key Takeaways

- Community leaders learned about broadband and how to present a business case to invest in their community.
- Community leaders built community support by speaking to multiple community groups.
- A community survey helped document interest in subscribing.
- A no-interest loan helped finance construction.

From broadband conference panel presentations 2014 and 2017

Arial view of Downtown Gothenburg. Photo courtesy of Gothenburg Community Development Office

Gothenburg's Grassroots Effort Attracts Broadband Provider



Photo courtesy of Gothenburg Community Development Office

A grassroots effort to educate the community on the importance of broadband convinced Pinpoint Communications to offer broadband service, constructing an aerial fiber network in Gothenburg.

Educate the Business Community

"You have to educate the business community which is going to spill over into the residential side," said Nate Wyatt, investment officer & CFO at Flatwater Bank. "The amazing thing is that this started with maybe 20 business people in our community and this built to over 1,000 people in a town of 3,500."

The education effort included speaking at the fire hall, after church services and at meetings of community groups. The plant manager of a large manufacturer also gave presentations on broadband to all three shifts.

Learn About Telecommunications

After initial efforts to approach telecommunications providers were unsuccessful, community leaders worked to learn more about the telecommunications industry. "As an economic development person, understanding the industry has helped us tremendously," said Wyatt. "We as communities need to speak the industry talk and learn how to open their eyes to the fact that there may be a profitable business model within your community."

Document Interest in Subscribing

Community leaders surveyed residents on their interest in subscribing to Pinpoint. Over 80% of residences responded with approximately 70% indicating an interest in subscribing to Pinpoint.

Broadband Development Starts With Community Leadership

Community leadership is a community's greatest asset. Successful broadband development efforts don't require community leaders who know all the answers. Rather, it requires community leaders who have the passion and commitment to find the answers.

The first step is to get organized and establish a core group dedicated to improving broadband. If possible, include representatives of business and industry, local government, local or regional economic development organizations, education, libraries, health care, financial institutions and community foundations, telecommunications providers, local public power districts or cooperatives, and nonprofits.



Fall trees Gothenburg. Photo courtesy of Gothenburg Community Development Office

Provide Financing

A no-interest loan from the Gothenburg Improvement Company helped fund construction.

How Pinpoint Evaluates Communities

Pinpoint looks at a number of factors when evaluating whether to overbuild in a community.

"We look at some of the economic

data, some of the demographics, what is the mix of people in that community as well as how vibrant is the community," said Tom Shoemaker, president, Pinpoint Communications.

"With Gothenburg their economic development efforts were high. They were identifying that fiber was important—a type of fifth utility concept—and they really wanted to have that happen. They were very united in their front of what they wanted. They knew exactly

what they wanted they knew how they wanted to come and get it and they had other potential funding opportunities that came along with that. Those are things that we look for in a community."

To kick off plans to bring fiber to Gothenburg, the community organized an opening celebration event with 28 community organizations present. "I believe we fed a thousand people the opening night so that was an eye-opener for us," said Shoemaker.

For more information, contact:

Nate Wyatt, Investment Officer & CFO
Flatwater Bank
nwyatt@flatwater.bank

Tom Shoemaker, President
Pinpoint Communications Inc.
tom.shoemaker@pnpt.com

Seward County Leverages LB 840 & Philanthropic Funds

Seward County has utilized LB 840 and philanthropic funds to leverage public-private partnerships to attract investments in broadband infrastructure.

Build Community Support

Building community support was important to Seward County's success. Through talking to business owners during business retention and expansion visits, internet connectivity was identified as an issue—especially in downtown Milford. Members of the LB 840 committee, which included the superintendent of the schools in Milford, also identified the need for better internet access for telecommuters and for students needing internet access to complete homework.

“So we were able to articulate all those things, and say we have frustrations in the business community,” said Jonathan Jank, President & CEO of the Seward County Chamber &

Development Partnership. “We educated our city council members about the importance of it, so everyone had a unified message that we were able to give as we sent out an RFP to see who wants to build in Milford.”

Provide Education on Importance of Broadband

“I think that just price points can be a challenge for people that don't understand what fiber can do for their company, or for their home, or for their family,” said Jank. “It's been important to us to help get that education out in the community as to how they could utilize it further to benefit their bottom line or benefit their family.”

Involve Chamber, Economic Development Organizations

Jank gave this advice to communities that want to improve their internet service: “If you are not engaging your chamber of commerce and your economic development organizations

Seward County

Nebraska

Model: Using LB 840 and philanthropic funds to attract investments in broadband infrastructure.

Champions and Key Supporters: Seward County Chamber and Development Partnership

Funding: LB 840 funds, philanthropic funds,

Key Takeaways

Start by articulating the need for better broadband and building community support.

Educate families and businesses on the importance of broadband and how it can benefit them.

Involve the local chamber of commerce in your broadband efforts.

Look at LB 840 funds as a possible source of funding.

Interview Date: February 2018

LB 840 funds support economic development

The Local Option Municipal Economic Development Act established by LB 840 in 1991 authorizes incorporated cities and villages to collect and appropriate local tax dollars—including sales and/or property tax for economic development purposes. In order to utilize LB 840 funds, a community must develop a local economic development plan and have it approved by voters. The approved plan becomes the basis for the collection and expenditures of LB 840 funds for economic development. Over 60 Nebraska communities are currently eligible to offer loans, grants, and other activities through LB 840.

in these broadband conversations, you should be. This is critical to the economic vitality of our state and so I would just make that general encouragement to talk with those professionals in and around your community.”

Utilize LB 840 and Philanthropic Funds

“We chose to incentivize a fiber optic service provider, Great Plains Communications, to build in our historic downtown business district, and we did that through utilizing our LB 840 funds,” said Jank.

Seeing the success in Seward, the county expanded its efforts to improve broadband infrastructure to Milford, Seward County’s second largest community. The county ran a similar game plan in Milford, utilizing LB 840 funds to incentivize fiber to the business district. The county also used some philanthropy funds to build fiber to the home in Milford as well.

“What is exciting about the investment that was made through LB 840 in Seward, in particular, is that investment tends to attract more investment. And investments along with fiber to the business district actually led to fiber to the home. We had Bluestem Fiber choose to come into Seward as one of their pilot communities to build fiber to the home. And really the only complaint we’ve heard is when are you going to get to my home. They can’t build fast enough. We are fortunate to have that level of investment in both Seward and Milford. And really our long-term goal is to be potentially the first fiber to the home county in the state.”

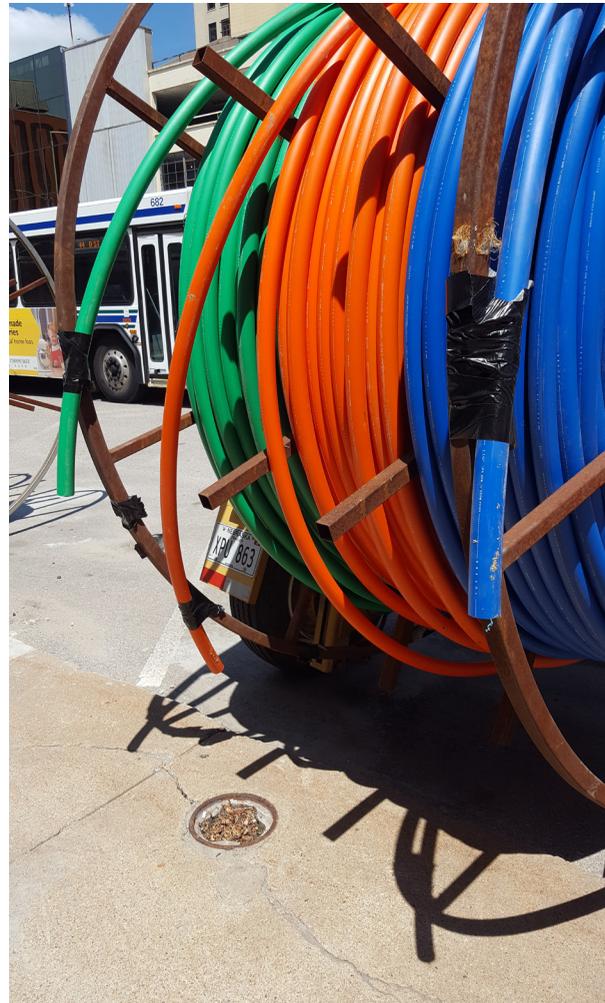
Expand to Rural Areas

Jank is also working with Bluestem Fiber and other providers to explore ways to better connect those in rural areas of the county.

When Bluestem came to the Seward County Fair and talked to people there, they discovered that the majority of the people interested in fiber connectivity were in rural areas.

“That’s critical,” said Jank. “It can’t just be to population centers, you have to think broader scale

because many of those people are our farmers and our agricultural producers that need that level of connectivity. If we are not able to help serve them, then we aren’t doing our job.”



Close up view of three color fiber. Photo credit Anne Byers.

For more information, contact:

Jonathan Jank, President & CEO
Seward County Chamber &
Development Partnership
Jonathan@CultivateSewardCounty.com

Ravenna Facilitates Permitting, Has Fixed Wireless at 150 Mbps Down

Fixed Wireless Can Offer Better Speeds

Prairie Hills Wireless is providing high-speed wireless internet access in central Nebraska with a service area including Amherst, Boelus, Cairo, Hazard, Kearney, Litchfield, Loup City, Miller, Pleasanton, Ravenna, Rockville, Riverdale, Dannebrog, and Farwell. Prairie Hills Wireless is owned and operated by Kent and Sara Urwiller. Kent Urwiller, who is a native of Ravenna, has been in the industry over 10 years.

Prairie Hills Wireless offers residential broadband of up to 150 Mbps down with up to 500 Mbps available. Plans include 10 Mbps upload, but upload speeds can be increased through traffic shaping if needed.

“We are using MicroPoPs in Ravenna,” said Urwiller. “This is a new concept. We are one of the first to do this. We deployed a bunch of small cells scattered at 18 sites in Ravenna. They are low to the ground covering 10 to 20 customers per site with 1 gig or more to each site. We do a lot of beta testing.”

MicroPoPs can be a cost-effective method of high-speed

broadband deployment in suburban areas and small towns, especially in areas with 400 or more households per square kilometer and which do not have broadband service being provided over fiber.

Facilitate Permitting and Easements



Wireless equipment on the Ravenna water tower.

The City of Ravenna worked with Urwiller on special use permits and allowed Prairie Hills Wireless to use the municipal water tower.

Offer Tower Space in Return for Free Internet Service

When asked about advice on attracting a competitive provider, Urwiller suggested contacting nearby wireless providers and offering tower space in return for free internet service.

Ravenna

Nebraska

Model: Work with telecommunications providers by facilitating permitting and by making tower space available

Funding: No funding from the city was provided

Key Takeaways

Fixed wireless technologies can provide broadband of 150 Mbps down or greater.

Facilitate permitting and easements and make tower space available.

Contact nearby wireless providers and offer tower space in return for free internet service.

Interview Date: February 2018

For more information, contact:

Kent Urwiller, Owner
Prairie Hills Wireless
308-240-0396

Streamline Permitting, Rights of Way Access and Inspections

Navigating bureaucratic application systems and long, unpredictable waiting periods increase costs for telecommunications providers. Municipalities and counties can facilitate broadband deployment by streamlining and publicizing procedures and timeframes for permitting, rights of way access and inspections.

Lincoln Leases Conduit, Forms Public-private Partnerships

Need for Better Business Broadband Drove Efforts

The lack of affordable access to business class broadband as well as the lack of competitive access to regional and international broadband providers led the City of Lincoln to partner with the Lincoln Partnership for Economic Development (LPED), Downtown Lincoln Association (DLA), Lincoln Chamber of Commerce and Unite Private Network to invest \$700,000 in a downtown broadband conduit system. With the success of the initial project, the City of Lincoln has since partnered with 11 companies connect the entire city with competitive access to world class fiber-based broadband.

Strong Community Support was Key

Support from the mayor, the city council, and the business community was critical to the project's success.

Investing in a Conduit System Led to Partnerships

The City of Lincoln's investment in a conduit system resulted in an additional \$1.4 million a year in new revenue, over 400 new jobs with \$20 million in new annual salaries, over \$200 million in private investment, and over 1,000 miles of public and private fiber installed. The number of carriers has grown from two to eleven.

NebraskaLink signed the first contract to utilize the city's conduit system in February of 2013. The City also partnered with local engineering firms and contractors to connect every downtown building to the conduit system, which was completed in 2018. In 2015 Allo Communications agreed to lease space in the city-owned conduit network to provide residential service at a minimum speed of 100 Mbps to every resident by 2019. According to the conduit lease agreement, Allo pays the city of Lincoln an infrastructure

Lincoln

Nebraska

Model: Investing in fiber conduit system and leasing space to telecommunications providers

Champions & Key Supporters: City of Lincoln (including the mayor and city council) and the business community

Funding: \$700,000 initial investment in fiber conduit system downtown

Key Takeaways

Need for better business broadband drove efforts to improve broadband availability.

Support from the mayor, city council, and business community was critical to the project's success.

Investing in a conduit system led to public-private partnerships with multiple providers, improving broadband availability for businesses and residents.

Interview Date: December 2017

Putting in Conduit Can Reduce Costs, Attract Providers

Fiber is often placed in a reinforced tube called conduit. Conduit (with or without fiber) can be placed underground during road or utility construction. Conduit can then be made available to broadband providers via a lease agreement, reducing deployment costs and time. Some entities will also place fiber in the conduit. Fiber which is not lit or attached to any equipment is called dark fiber. In Nebraska, public entities can also lease dark fiber, although there are currently some restrictions regarding leasing dark fiber by public entities.

Information on available conduit or dark fiber should be documented and made available to prospective providers. Additionally, compiling and sharing information about existing utilities, locality infrastructure, rights-of-way, available easements, and locations that are potential co-location sites can also be helpful to providers.

support fee of \$3 per customer per month. The City has invested \$500,000 per year over four years to fund maintenance and upkeep on the city-owned conduit system.

Three contracts govern the construction of the system: a broadband franchise (the first of its kind in Nebraska), a cable franchise and a conduit lease agreement. The contracts are available from the City of Lincoln's website at Lincoln.ne.gov (keyword: fiber).

For more information, contact:

David Young, Chief Information Officer
City of Lincoln and Lancaster County NE
dyoung@lincoln.ne.gov
402.441.7823

Dave Miller, Director of Ethical Engagement
Allo Communications
DMiller2@allophone.net
(402)-641-7691. Link: [Allo's City Checklist](#)



Tower Square in Downtown Lincoln. Photo Credit Anne Byers.

Broadband Technologies

Digital Subscriber Line (DSL) provides internet access by transmitting digital data over a local telephone network with bandwidth capabilities ranging from 1.5 Mbps up to 50-100 Mbps. Speeds are distance dependent and are often provided as asymmetric bandwidth.

Fiber technology converts electrical signals to optical laser signals carrying data with bandwidth capabilities of up to 10 Gbps or more.

Cable modem technology delivers broadband using the same coaxial cable used to deliver cable TV service. This is a shared bandwidth service with broadband capabilities up to 10 Gbps down/1 Gbps up using DOCSIS 3.1.

Fixed wireless technologies using mid-band spectrums could potentially provide service of 100 Mbps or greater in rural areas.

TV white space may be suited for lower bandwidth agricultural internet of things applications. With Microsoft's support, the cost of customer service equipment has been coming down. Future reductions in the prices of customer service equipment to about \$100 would likely make this technology economically feasible.

Low Earth orbit satellites could potentially provide 100 Mbps or greater service with low latency by mid-2020.

Local Investors Form Fiber Company to Improve Broadband Service in Imperial

After working on a committee to improve broadband service in Imperial, a group of local business people—Ben Brophy, Bill Brophy, Russ Pankonin and John Paisley—pooled their resources and know how to form a new fiber network company, Gigabit LLC.

Gigabit Contracts with Provider to Manage Network

Gigabit contracted with Allo to build and manage the aerial fiber network. Allo provides internet, TV and phone services over the network. Construction started in November 2019 and Allo began offering service in March 2020.



Imperial crowd. Photo courtesy of City of Imperial.

City Streamlines Permitting and Rights of Way

The City of Imperial also worked with Allo to streamline permitting and rights of way.

No Interest Loan Helps Finance Construction

A \$700,000 no interest loan from the city's LB480 fund helped finance the fiber-to-the-home network. "Gigabit approached the City with a proposal to provide fiber to the home and asked for an LB 840 loan, which was approved by our Citizens Advisory Committee and City Council to help the project," said Tyler Pribbeno, community development director for the City of Imperial.

Imperial

Nebraska

Model: Local investors form fiber company, contract with telecommunications provider to build and manage network

Champions & Key Supporters: Local investors and City of Imperial

Funding: \$700,000 no interest loan from LB 840 funds and private investment

Key Takeaways

Local investors formed a fiber company and then contracted with a telecommunications provider to build and manage the network.

No interest loan from the City of Imperial's LB 840 fund helped finance construction.

Gigabit contracted with Allo to construct and manage the network.

City of Imperial streamlined permitting and rights of way.

Interview Date: May 2020

For more information, contact:

Tyler Pribbeno, Community Development Director
City of Imperial
tylerp@imperial-ne.com

Dave Miller, Director of Ethical Engagement
Allo Communications
DMiller2@allophone.net or
(402)-641-7691.
Link: [Allo's City Checklist](#)

Improved Competition

“The competition has been great, other providers in the area have increased their offerings to the community,” said Pribbeno. “So competition is a blessing in that regard. It lifts up the quality of service or everybody.”



A crowd gathers in Imperial, Nebraska. Photo courtesy of City of Imperial.

Aerial vs. Buried Fiber

While many telecommunications carriers—especially incumbent local exchange carriers—prefer buried fiber—Allo tries to build as much aerial fiber as they can on existing poles. This keeps costs down and allows for a faster buildout.

“There are arguments on both sides,” said Dwight “Doc” Winger, director of external relations for Allo. “A lot of the traditional telephone folks say that with ice and wind they want the facilities buried. But I can tell you our experience has been that we have had a lot more problems with our buried facilities than we have with our aerial facilities as far as service disruptions go.”

Who owns the poles in your community?

In communities in Windstream’s territory, pole ownership is shared by Windstream and the municipality or public power district. This can lead to delays in getting pole attachments approved. If the delay becomes unreasonable, a municipality may file an eminent domain suit to get ownership of the poles.

Norfolk Attracts Telecommunications Provider, Plans Carrier Hotel and Data Center

Business and City Leaders Lead Effort

Business and city leaders in Norfolk wanted to expand options for fiber broadband service for businesses and residences.

Community leaders including Mike Flood, owner of News Channel Nebraska and former speaker of the Legislature, and Mayor Josh Moenning contacted Allo about providing service in Norfolk.

“When we look at a community we look at a lot of different demographics. We look at the density of the community, the cost to build, the access to resources,” said Dwight “Doc” Wininger, director of external relations for Allo. Those factors in addition to strong community leadership convinced Allo to come to Norfolk.

Building Relationships

Building a relationship with Allo was also a key to the project’s success.

“First you have to establish those relationships and open up that door for growth,” said Andy Colvin, city administrator and economic development director for the City of Norfolk. “And that is really all we did for Allo. And I am glad to see that they are under construction and I am really happy that we are going to have another broadband option for our businesses and citizens

to choose from.”

With the support of the mayor and the business community, the city worked with Allo to streamline the permitting and franchise process.

Construction of the aerial fiber network is expected to be completed by the end of 2020.

Carrier Hotel, Data Center Planned to Improve Capacity & Redundancy

To address the need for high capacity, high redundancy business class broadband to attract tech companies, Norfolk is also planning to build a carrier hotel and regional data center. With broadband providers using only two paths in and out of Norfolk for backhaul, the region needed additional carriers and fiber paths to improve redundancy.

“We didn’t have high speed, lots of capacity bandwidth and high redundancy bandwidth,” said Dan Spray, president of PrecisionIT in Norfolk. “The best way to do that is to get all of the carriers to come together into town and the best way to do that is to look at putting in a carrier hotel so that it entices those carriers to come into town.”

The carrier hotel and data center project is part of the Growing Together Northeast Nebraska’s multi-faceted development project designed to

attract and retain young people to Norfolk and Northeast Nebraska. The initiative is led by the Aksarben Foundation.

Norfolk Nebraska

Model: Local leaders attract telecommunications provider and plan carrier hotel and data center to improve broadband capacity and redundancy

Champions & Key Supporters: Business community, city leaders and Growing Together Northeast Nebraska

Funding: No public funds were used to support Allo’s broadband buildout.

A variety of funding sources will likely be used to finance the carrier hotel and data center.

Key Takeaways

Strong community leadership and support along with good demographics, density and cost to build made Norfolk attractive.

Norfolk is planning a carrier hotel and regional data center to improve broadband redundancy and capacity to attract tech businesses.

Interview Date: May 2020

Through the Growing Together initiative, the community has an option on the land and is working on getting commitments from carriers before beginning construction.

The initial response from carriers has been positive. “We’ve had really, really good responses from the carriers,” said Spray. “They seem to be very interested in that concept.”

The community also plans to couple the carrier hotel with a regional data center to make the carrier hotel more attractive to carriers. Local businesses will be able to house their servers in the data center and replicate to other regional data centers or a large data center instead of housing their servers in Chicago or Omaha, explained Spray.



The Growing Together Norfolk IT Effort Summit held on March 5, 2020 attracted a large crowd. Photo Courtesy of Growing Together Northeast Nebraska

For more information, contact:

Andy Colvin, City Administrator and
Economic Development Director
City of Norfolk
acolvin@norfolkne.gov

Dan Spray, President
PrecisionIT
dan@myprecisionit.com

Carrier Hotel and More Broadband Terms

Most community broadband projects focus on last mile connections—connections to the customer. Norfolk is also focusing on improving middle mile connectivity and redundancy. The following definitions may be helpful:

Middle Mile – Network connection between the last mile (the local network connecting the customer) and the greater internet.

Last Mile – The local network connecting the customer.

Backhaul – A high-capacity network segment between a remote site or network to a central or core site where it connects to the Internet.

Carrier Hotel or Colocation Center – A building where telecommunications providers can rent cabinet, equipment, space, internet and bandwidth.

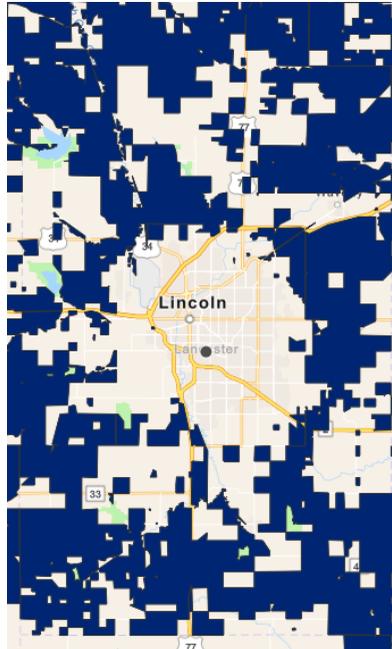
Data Center – A large group of networked computer servers for the remote storage, processing, or distribution of large amounts of data.

Lancaster County explores leveraging FCC's Rural Digital Opportunity Fund

Leaders in Lancaster County are exploring how to leverage up to \$2.5 million in funding from the FCC's Rural Digital Opportunity Fund (RDOF) reverse auction to bring broadband to over 4,000 residences and businesses in rural parts of the county.

Telecommunications companies may submit RDOF bids to provide broadband via fiber, fixed wireless or satellite. Forming a public-private partnership to leverage the Rural Digital Opportunity Fund may increase the likelihood that the award will support a fiber buildout by minimizing costs for providers or reducing uncertainty.

"So what you are trying to do in some ways is make fiber competitive with wireless," explained Loel Brooks, a telecommunications lawyer and consultant.



Initial RDOF-eligible areas for Lancaster County, Nebraska

Reverse Auction Will Award Broadband Support

Up to \$59 million in funding will be available to telecommunications carriers to provide broadband to 53,623 locations in Nebraska through the FCC's Rural Digital Opportunity Fund reverse auction. The Rural Digital Opportunity Fund will award support over 10 years to provide broadband of at least 25 Mbps down/3 Mbps up to areas identified as unserved.

In a multi-round process, bids will be placed as a percentage of the reserve price for the area. The FCC will assign support to the bidder offering the best combination of speed and latency, once the combined price of bids in each area in the auction falls below the available budget.

The reverse auction is scheduled to begin Oct. 29, 2020.

Lancaster County

Nebraska

Model: Leveraging Rural Digital Opportunity Fund to fund fiber buildout through public-private partnerships

Champions & Key Supporters: Lancaster County Commissioners, CIO David Young

Funding: Up to \$2.5 million in RDOF funding. Additional funding from municipalities, counties, private sources and philanthropies may be required.

Key Takeaways

The Rural Digital Opportunity Fund provides an opportunity for local entities in Nebraska to leverage federal funding to support broadband buildout in rural areas.

Leveraging RDOF will require multiple elements: having locations eligible for funding, local leadership, and a provider interested in providing broadband to the area.

Additional funding may be required to make bids to build a fiber-to-the-premise network competitive with those to build a fixed wireless network.

Community leadership can mobilize partnerships and secure funding.

Additional Resources are available at <https://ruralbroadband.nebraska.gov/resources>

Interview Date: April 2020

Key Elements

Leveraging RDOF will require multiple elements: having locations eligible for funding, local leadership, and a provider interested in providing broadband to the area. Additional funding from municipalities, counties, private sources and philanthropies will likely increase the competitiveness of bids.

Locations Eligible for RDOF Funding

Seventy-eight Nebraska counties have locations initially identified by the FCC as eligible for RDOF funding. The initial reserve prices range from \$2,653,788 for Gage County (2,233 locations averaging \$1,188 per location) to \$2,670 for Arthur County (1 location).

Leadership

Community leadership can mobilize partnerships and secure funding. Successful economic development projects require local leadership. “People that can gather people together to solve problems, to undertake projects, to bring bankers and main street and neighborhoods and schools and institutions and banks and everybody together to make decisions—that is really the heart of what our effort is,” said Brooks.

Telecommunications Providers

A number of Nebraska providers have expressed interest in partnering with communities.

Additional Funding

Funding sources in addition to the Rural Digital Opportunity Fund may be required to make bids to build a fiber-to-the-premise network competitive with those to build a fixed wireless network. Funding may include public funding sources such as LB 840, private funding, or philanthropic funds.



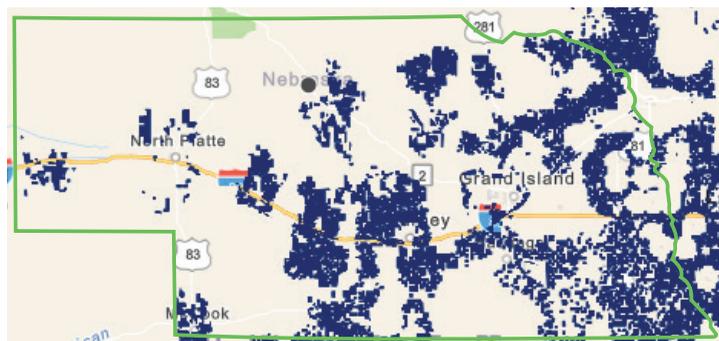
Photo Credit Anne Byers

Models for Leveraging RDOF

Lancaster County is exploring several options to leverage RDOF funding to improve broadband availability in rural areas of the county according to David Young, CIO for the City of Lincoln and Lancaster County as well as a telecommunications consultant.

Model 1. A community could act as an anchor tenant to help start off the network. In return, the carrier would agree to provide service to households in the surrounding rural areas that are eligible for funding over the term of the RDOF agreement.

“The carrier instead of going into RDOF by themselves making a reverse auction pitch of say \$100 a home to provide fiber—if they have the city’s partnership commitment to serve as an anchor tenancy—then they can probably drop that price to \$80 or \$75 a month because they have taken out uncertainty,” said Young. “They know they have an anchor tenant, and it is a large circuit.”



Initial RDOF eligible locations in Nebraska

Model 2. In less densely populated rural areas, supplemental funding may also be necessary in addition to RDOF funding in order to make a viable business case for a fiber-to-the-premise buildout.

“So other financing techniques with upfront money—low interest loans or grants—are all going to be probably at play whether it’s private money or public money or philanthropy or whatever it is,” said Brooks. “There are a whole host of combinations that are going to have come together to leverage the RDOF money.”

For more information, contact:

David Young, Chief Information Officer
City of Lincoln and Lancaster County, NE
dyoung@lincoln.ne.gov
402.441.7823.

Loel P. Brooks
Brooks, Pansing Brooks, PC, LLO
lbrooks@brookspanlaw.com
402.476.3300

Both Young and Brooks are also consultants with Universal Broadband Consulting.

What Counties and Communities Can Do:

1. Learn more about the Rural Digital Opportunity Fund and funding models for broadband.

Links to information on the Rural Digital Opportunity Fund are available at: <https://ruralbroadband.nebraska.gov/resources/index.html>.

2. Get organized.

- Identify champions.
- Form a committee.

3. Take action.

- Talk to telecommunications providers to learn if they plan to submit a bid or how the auction may impact them.
- Explore forming a public-private partnership to leverage RDOF funding.
- Leverage local assets, including:
 - **Community leadership.** The ability of local leaders to convene and engage stakeholders and partners is an area’s greatest asset.
 - **Demand for telecommunications services.** Local entities can act as an anchor tenant for expanded broadband services and can work with businesses and other users to quantify and aggregate demand for broadband services.
 - **Infrastructure assets** include conduit, dark fiber, poles, water towers, and GIS information.
 - **Control over rights-of-way, permitting and inspections.** Local entities should review their processes and take steps to clearly communicate these processes and to streamline them if needed.
 - **Access to financing.** Public funding sources including LB 840, private funding, and/or philanthropic funds may be used.

Partnership Brings E-Connectivity to Southwest Nebraska



Nebraska truck and silos. Photo credit Mary Ridder.

A public-private partnership between public power districts, telecommunications providers, wireless internet service providers, and Paige Wireless may make southwest Nebraska and eventually the rest of the state a leader in the use of sensors and other connected devices for agriculture and the power industry. The partnership also aims to improve broadband availability in the area.

Identify Mutual Benefits to Public and Private Partners

The partnership started with a discussion between NPPD and Paige Wireless on the benefits of Paige Wireless's low bandwidth wireless network using the LoRaWAN® protocol. According to Julie Bushell, president of Paige Wireless, LoRaWAN is beneficial in rural areas where cellular connectivity is scarce and where lowcost remote telemetry is needed.

"The benefits of LoRaWAN are very, very low subscription rates and an incredibly long battery life on sensors," said Bushell. "The sensors we deploy average between a 5- and 10-year battery life depending on the application. Typically, for a cellular data plan that is about \$30 a month. LoRaWAN is about \$2 a month. The goal of LoRaWAN is to realize the true potential of everything connected, so the sensors are very cost effective as well."

NPPD realized the benefits of LoRaWAN for both agriculture and for the power industry.

"The LoRaWAN low-speed sensor network is potentially a huge value for a utility," said Dave Webb, the director of technology integration at NPPD.

The Electric Power Research Institute (EPRI) has a whole set of advanced sensors for utility transmission operation and substations. The institute is converting all of its sensors to LoRaWAN. Nebraska will be a primary test site for the use of these sensors, explained Webb.

Some of the agricultural data collected on the network such as soil moisture probe and weather data data is also helpful for load management for utilities.

Southwest

Nebraska

Model: Aggregating demand and streamlining permitting and processes for colocation of facilities

Champions & Key Supporters: NPPD, Paige-Wireless, rural public power districts, wireless internet service providers and telecommunications providers

Funding: No additional public funding required

Key Takeaways

Identify mutual benefits to public and private partners

Facilitate discussions with customers and providers

Facilitate identification of assets, colocation of facilities

Aggregate broadband requirements and engage in strategic sourcing

Interview Date: May 2020

LoRaWAN stands for Long Range Wide Area Network and is a low power networking protocol designed to connect battery-operated sensors and other devices to the internet. It is being used for a number of applications including monitoring soil moisture and ground water levels and collecting weather station data. The number of applications is expected to grow as network availability grows. Paige Wireless anticipates covering all of Nebraska with its LoRaWAN network by the summer of 2020.

Facilitate Discussions with Customers and Providers

NPPD invited telecommunications providers and rural public power districts to meet with Paige Wireless to better understand the initiative and the benefits of LoRaWAN.

“And then the relationship grew into essentially helping us deploy our network, and I would say that most of that help has been through facilitation,” said Bushell.

Streamline Identification of Assets, Colocation of Facilities

NPPD helped Paige Wireless identify the locations of their towers and power poles that could be potentially leveraged.

“We have communications towers and structures that we let any communications company attach to through a standard process, but we are hoping we can streamline that process and make sure that they have knowledge of where our towers are,” said Webb.

Aggregate Broadband Requirements and Facilitate Partner RDOF Efforts

The need for better broadband for backhaul and high bandwidth agricultural applications also emerged from the discussions among Paige Wireless, public power districts and telecommunications providers.

A pilot in southwest Nebraska was initiated in late 2019 to identify and aggregate the need for backhaul services for Paige Wireless and wireless internet service providers as well as the backhaul and overall e-Connectivity needs of McCook, Southwest, Twin Valleys, and Dawson Public Power Districts. However, as more information became available about the Rural Digital Opportunity Fund (RDOF), it made sense to consider a larger, potentially statewide effort. To that end Pat Pope, NPPD’s former CEO, invited Public Power Districts from all over the state to participate in a network design and RDOF enabling effort with the National Rural Tele-

communications Cooperative. The NRTC, made up of rural electric and telecom COOPs nationwide, specializes in designing a network and plan that optimizes the use of electric infrastructure to satisfy both the e-Connectivity needs of the utility and in our case, enable better business cases and RDOF bids for any private telecom partners who are involved. Pope stated, “We hope this effort can be coordinated with other statewide efforts. When the FCC looks at Nebraska’s effort we want them to say ‘WOW! This is how to get it done!’ If we work together, Nebraska could be the blueprint for the nation for rural e-connectivity deployment.”

For more information, contact:
Julie Bushell, President
Paige Wireless
jbushell@paigewireless.com

Dave Webb, Director
Technology Integration NPPD
dwwebb@nppd.com

Pilot Will Demonstrate Precision Ag Technologies

The pilot in southwest Nebraska will also serve as a demonstration project for precision ag technologies.

“We want to bring in some very interesting technologies that will require real-time data transfer, and also autonomous vehicle pilots on tractors and planters in the pilot area, so that we can really show what this awesome connectivity can do for the rural communities and the precision ag that surrounds them,” said Bushell.



Ranch view. Photo credit Mary Ridder.