Lincoln County Local Technology Planning Team

Broadband Project Report

June 30, 2014

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

The Lincoln County Local Technology Planning Team (LCLTPT) project was a planning project to increase broadband awareness, access and adoption in Lincoln County Washington. Lincoln County secured a grant from the Washington State Broadband Office (WSBO) in June 2013 and hired the Lincoln County Economic Development Council (LCEDC) and Washington State University Extension Program for Digital Initiatives (WSU) to staff the project. The LCLTPT included representatives from local government, education, libraries, utilities and economic development.

Since July 2013, the LCLTPT has completed tasks associated with four goals:

> Goal 1: Establish and facilitate the Lincoln County Local Technology Planning Team
> Goal 2: Inventory existing infrastructure
> Goal 3: Assess current and potential future broadband access and use
> Goal 4: Evaluate the Lincoln County Public Utility District (PUD) as a middle mile service provider

During Goal 1 of this project five LCLTPT meetings were held where members provided input to project activities and reviewed findings. Subcommittees were identified and assisted with project tasks. Presentations about federal, state and local broadband efforts and opportunities were provided by staff from WSBO, USDA, Stevens County PUD and NoaNet. Participation was in-person as well as through the use of audio conferencing, Skype and two-way video, including a new interactive video conferencing system and high speed broadband available at the County Courthouse.

Goal 2 included an inventory of Community Anchor Institutions (CAI) to determine use of ARRA-funded fiber and provide input to the WSBO broadband state map. Staff gathered information about fiber use through a survey instrument and onsite interviews with professionals representing 19 locations. An inventory of broadband service providers initially identified 13, based on those reported on the WSBO map, but at the conclusion of the project, the list had grown to 27 providers. The Lincoln County Land Services Department offered in-kind support for the project through the development of a countywide broadband map. This offered a more detailed snapshot of broadband services and potential assets for future expansion than previously available on the WSBO map.

Assessing current and potential broadband access and use in Lincoln County was the focus of Goal 3. This was accomplished through a business and a community assessment. Thirty-two businesses responded to a survey which identified the need for additional awareness building about the business benefits of broadband and indicated an interest in skills training. To slow the outmigration of young people from the County and to address limited educational opportunities beyond K-12, the community assessment focused on the education community.

A focus group and survey gathered information from school leaders about youth outmigration, Internet access at home and online opportunities for post-secondary education.

Even with a $5 million investment of ARRA-funded fiber, portions of Lincoln County still lacked access to broadband resulting in Goal 4, an evaluation of the Lincoln County PUD as a middle mile service provider. Tasks included research regarding regulatory requirements related to PUDs and broadband, identification of Washington PUDs currently providing broadband services and interviews with five of those PUDs to help evaluate this as a solution for Lincoln County.

Project activities provided new information and insights about current and potential future broadband efforts for the County. Lessons learned will help leaders identify next steps related to increasing broadband availability and use.

INTRODUCTION

Background

Lincoln County is the seventh largest county in Washington State at 2,311 square miles of land and has a population of 10,570 which averages less than five people per square mile. Half of the population lives outside of the eight municipalities, either on farms and ranches or in unincorporated communities. This makes the availability of broadband a challenge, evidenced by the fact that the Washington State Broadband Office (WSBO) *Broadband in Washington 2012 Annual Report* reported Lincoln County as the eighth most un-served county in a state of 39 counties.

In 2010, Lincoln County learned that new high-speed Internet was coming as part of an expansion of middle mile fiber through the American Recovery & Reinvestment Act (ARRA). The US Department of Commerce Broadband Technology Opportunities Program (BTOP) awarded grant money to Northwest Open Access Network (NoaNet) to bring high-speed broadband fiber to rural counties in Washington. This included a $5 million investment in Lincoln County. The announcement of this, along with ongoing activities of the Lincoln County Economic Development Council (LCEDC), led to a series of events that are summarized on the *History of Broadband Planning in Lincoln County* document (Appendix 1).

As the fiber network was being built, the County and LCEDC began working on efforts to take full advantage of this infrastructure. A planning workshop was facilitated by Washington State University Extension Program for Initiatives (WSU) on April 15, 2013 to identify gaps, goals and determine next steps. This led to submittal of a proposal for funding to the WSBO Local Technology Planning Team (LTPT) program. Lincoln County was successful in the application and the one-year project began on July 1, 2013.

The project focused on four major goals:

> Goal 1: Establish and facilitate the Lincoln County Local Technology Planning Team
> Goal 2: Inventory existing infrastructure
> Goal 3: Assess current and potential future broadband access and use
> Goal 4: Evaluate the Lincoln County Public Utility District (PUD) as a middle mile service provider

This report provides a summary of the LCLTPT activities and findings. Sections of the report are dedicated to each goal and the associated tasks.

GOAL 1: ESTABLISH AND FACILITATE A LOCAL TECHNOLOGY PLANNING TEAM

TASK A & B: FINALIZE MEMBERSHIP AND ESTALISH QUARTERLY MEETING SCHEDULE

Background

Lincoln County's successful receipt of a round two WSBO planning grant provided an opportunity for local leaders to address broadband challenges and opportunities in the region. The first goal of this Lincoln County Local Technology Planning Team (LCLTPT) project was to "Establish and facilitate a local technology planning team".

Process

In July 2013, eighteen stakeholders came together to form the LCLTPT. During the course of the project, five LCLTPT meetings were held where team members provided input to project activities and reviewed project findings. Subcommittees were identified and assisted with project tasks. Presentations about federal, state and local broadband efforts and opportunities were provided by staff from WSBO, USDA, Stevens County PUD and NoaNet. Participation was in-person as well as through the use of audio conferencing, Skype and two-way video, including a new interactive video conferencing system and high speed broadband available at the County Courthouse.

GOAL 2: INVENTORY EXISTING INFRASTRUCTURE

TASK A: COMMUNITY ANCHOR INSTITUTIONS INVENTORY

Background
This section focuses on Task 2A, the Community Anchor Institutions (CAI) inventory.

During 2011 and 2012, Lincoln County received a $5 million ARRA-funded broadband fiber optics installation by Northwest Open Access Network (NoaNet). This middle mile project built fiber to libraries, medical facilities and government buildings. The investment was seen as an opportunity to address economic and educational challenges in the County. It supported a key business strategy in the Lincoln County Economic Development Strategy, "Provide the telecommunications infrastructure necessary to increase economic opportunity and quality of life". (Appendix 2)
Development of the infrastructure was a critical step but it must be used to be valuable to the residents and businesses of Lincoln County. To determine if this new broadband investment was in use the LCLTPT identified the need to follow up with CAIs that were recipients of the fiber. The purpose of this inventory effort was to assess current broadband access and use as well as barriers needing to be addressed in order to fully use broadband service at CAIs that had been recipients of ARRA fiber optics.

Process
After reviewing CAI broadband tools from around the country, customized surveys were developed for each type of CAI – library (Appendix 3), municipal (Appendix 4)and medical facilities (Appendix 5). Given the ARRA broadband investment, each version included questions to verify that the fiber had been built to facilities, determine if it was operational and if not, identify why it was not in use. Additional questions were developed that identified the broadband service provider, details about current service (type, cost, satisfaction, etc.), broadband applications in use by staff and customers, as well as a discussion about possible funding sources. Both hardwire and wireless speed tests using the Washington State Broadband Office (WSBO) speed test tool were completed at each facility where interviews were held.

The LCEDC identified the staff member at each organization who could best answer questions about broadband access and use. A personalized email was sent to request an interview. A copy of the survey was attached to the email. It provided background about the LCLTPT project and the interview process. A 30 minute, in-person interview was requested with options for a phone call or returning the completed survey through email or regular mail if that was the preferred method of completing the survey. Follow up calls were made by LCEDC staff to schedule appointments.

Most CAI representatives opted for an in-person interview with one returning the survey via email. The interviews were completed by the LCEDC Executive Director along with either the WSU consultant or a member of the LCLTPT. During March, eight interviews were held with representatives from libraries, Lincoln County and the medical community. Interviews were

conducted with librarians (five branches), the County IS Director (on behalf of seven locations) and staff from medical facilities (representing two hospitals, four clinics and one assisted living unit). In total, this inventory includes results from 19 CAIs in Lincoln County that received NoaNet fiber. One library that was not included in the ARRA-fiber build out was also included in the interview process. Respondents answered all questions and most interviews were over an hour in length.

Survey and Interview Responses

Since the primary purpose of this inventory effort was to determine if the ARRA-funded broadband fiber in Lincoln County was installed and in use, several questions related to this were included in all three versions of the survey. Of the 19 CAIs, all had fiber built to locations by NoaNet or NoaNet subcontractors. Five libraries have fiber on premise, three of which have last mile providers using the ARRA-funded fiber. Of the seven County facilities, ARRA-funded fiber is only in use at the courthouse/administrative offices. During the LCLTPT project, only three medical locations were using fiber built with ARRA funds.
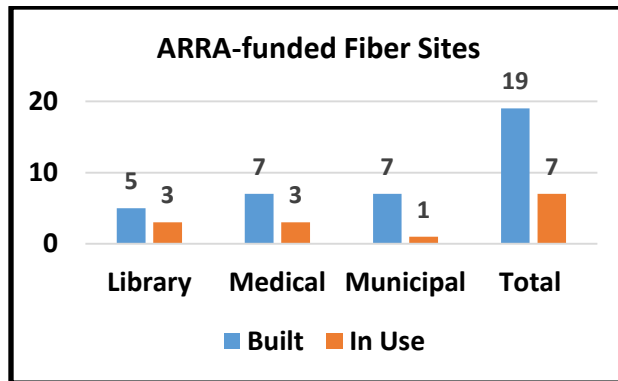
Facilities where the fiber was not in use were asked, "What is prohibiting you from using the fiber?" Respondents were allowed to choose multiple answers from a list of options. "Need for funding to pay ongoing costs" was selected by four respondents (representing 11 locations). Three, representing 7 facilities, selected "No provider is available to support the service". One identified "Need funding to pay for equipment needed to (fully) use the service" and several comments during interviews indicated this was a barrier.
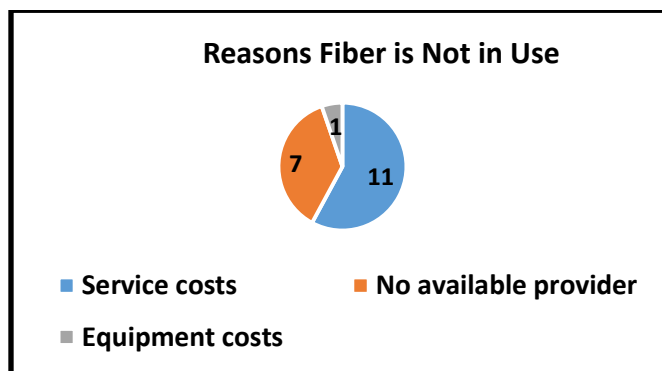
Conversations during interviews and since those meetings indicate that some of the facilities using this fiber are still experiencing challenges. For the County, although the courthouse and some administrative offices are using NoaNet, several county facilities continue to use their current provider until a long-term access agreement is in place with NoaNet and a retail service provider. During the NoaNet build out in Lincoln County there was a need for a permanent place to house the NoaNet data center. The County agreed to do this to off-set costs of the fiber use. This has allowed the courthouse to take advantage of the fiber. It has offered increased capacity and new opportunities such as the addition of a new big screen projector that is used by staff, commissioners and others including the LCLTPT. The County is continuing to work with NoaNet to determine appropriate pricing so the annexes will also be able to use the fiber.

When asked about Internet service at the three medical facilities where the fiber was in use staff stated they were "very satisfied" with speed and reliability and "satisfied" with price. However a WSBO speed test conducted during the interview resulted in a download speed of 4.53 Mbs and upload of 35.36 Mbs. Tests by hospital staff reported 2.27 Mbs download and 1.72 Mbs upload on March 26 and 2.34 Mbs down and 0.34 Mbs up on April 28th. Staff was also asked, "What challenges do you have with your current Internet service?" the response was "Too expensive". Interviewees commented that when invited to participate in the build out they were told the expense would be similar to rates prior to installation of the fiber. Once the new service was available, broadband service increased from $600 to $1000 per month. Further discussion about the price of service led to an expression of concern about the ability to continue using the fiber due to potential funding issues as the current rate is subsidized by the Critical Access Hospital Network (CAHN). Since that meeting LCLTPT project staff has been working with hospital staff and NoaNet to address current speed limitations and service sustainability issues.

For libraries to take full advantage of this high speed broadband, e-rate funding is typically required to offset the costs and funding for equipment is also needed. Three of the five libraries have received a Washington State Library (WSL) grant to help purchase the necessary equipment to use the fiber. One has secured e-rate funding approval, purchased equipment with a WSL grant and began using the fiber this spring. Two other branches receive service from a local ISP that is contracting with NoaNet to provide retail service. When the remaining three libraries were asked about the challenges to their DSL Internet service, all selected "Too slow". However, the speeds seem to match the monthly subscription fees. Two other challenges were identified during the interviews – the need for new hardware and software. An additional challenge is that these libraries are only open 6-10 hours per week.

Whether the CAI was using fiber, T-1s or DSL, Internet access was in use at all locations. Although the list of applications varied dependent on the CAI, when asked, "What do staff use broadband for at this location?", each selected multiple general uses (communications, professional development/training, etc.) as well as those relevant to the CAI (telehealth, checking out books/cataloging books, applying for licenses/permits, etc.). WiFi was also available for use by staff and customers at all CAIs.

Since funding is often an issue for CAIs, each interview included a discussion of potential public, private and non-profit broadband funding sources. CAI staffs were familiar with some resources but not all options listed in the survey. Each identified additional needs that would require funding and welcomed an opportunity to receive information about sources when available. When WSL and USDA Distance Learning and Telemedicine funding programs were announced, the LCLTPT project staff provided information to the CAIs.

TASK B: INVENTORY OF BROADBAND SERVICE PROVIDERS

Background
Task 2B challenged the LCLTPT to search out all broadband providers serving Lincoln County and to survey them regarding their services, the challenges faced, and plans for the future.

Process
Staff began this task with an inventory of Lincoln County's Internet providers using the 13 providers listed on the Washington State Broadband Office (WSBO) interactive map as of July 29, 2013:

1. Air-Pipe
2. AT&T Mobility LLC
3. CenturyLink (CenturyTel, Inc.)
4. HughesNet (Hughes Network Systems)
5. Inland Cellular LLC
6. Odessa Office Equipment
7. Skycasters
8. Spectrum Online Services LLC
9. StarBand Communications, Inc.
10. StarTouch Broadband Services
11. T-Mobile USA, Inc.
12. ViaSat, Inc.
13. Verizon Wireless (Cellco Partnership)

By the end of the grant year the provider list had grown to 27. Additions include providers that are new to the county; providers staff were unaware were already providing service; and known providers that were not included on the WSBO map. These included:

1. airFiber
2. Asisna
3. Bonneville Power Administration
4. Coulee Internet Services
5. DTMicro
6. EchoStar Communication
7. First Step Internet
8. NoaNet (middle mile only)
9. Noel Communications
10. Ptera
11. PocketiNet
12. RitzCom
13. Sprint
14. Zayo Group

A survey was developed to collect information from these providers about current service offerings and plans for expansion in the future. (Appendix 6) The goal stated in the introduction to the survey was "…to determine current and planned broadband services in

Lincoln County." Providers were asked to identify the communities in Lincoln County that they serve; whether they serve residential or commercial customers or both; what telecommunications services they provide; and what they see as challenges to providing service within Lincoln County. The survey went on to ask if they had formed a partnership with NoaNet and if they would consider a partnership with the County's Public Utility District if the opportunity were to present itself. Lastly, it asked providers if they would contribute to the countywide broadband infrastructure map described in Goal 2, Task 2C: Develop a countywide infrastructure broadband map.

The LCLTPT chose to conduct two provider surveys in person. CenturyLink, the leading provider in Lincoln County and an important partner of NoaNet, was interviewed by Monica Babine and Margie Hall through a phone conference on December 6, 2013. Odessa Office Equipment, Lincoln County's local provider, was interviewed by Monica and Margie on March 26, 2014. The remaining last mile providers were contacted by email, provided with a summary of our broadband planning project, and asked to take the same survey and return it to the LCLTPT. The survey saw a 25% return rate.

Survey Responses
The following is a summary of responses, reported in aggregate:

Q1: Please identify where in Lincoln County you currently provide high speed Internet/broadband services.
Lincoln County's eight municipalities and eight unincorporated lake and farm communities were listed. All of the municipalities were served by two or three of the providers with the exception of Sprague, which had just one. All unincorporated areas were served by two providers, with the exception the farm communities of Irby, Lamona and Mondovi which had one provider.

Q2: Please identify the types of customers you serve.
All providers reported serving both business and residential customers. Half provide service to Government and one has smaller providers as customers.

Q3: What types of telecommunications services do you provide?

SERVICE TYPES	PROVIDERS
Dial Up/DSL	100%
Cable	0%
Fiber	80%
T1/T3	60%
Ethernet	60%
Wireless – Fixed	80%
Wireless – Mobile	0%
Satellite	0%
Transport	40%

Q4: What are the challenges to providing broadband in Lincoln County?
Several cited population density as a barrier to expansion, the revenue not justifying the cost. The greatest geographic barrier identified was elevation (hills and valleys) and the impact elevation changes have on line-of-sight fixed wireless providers. Wireless providers also cited large areas without access to power as a barrier. The cost to extend power currently excludes some locations from receiving fixed wireless service. Another barrier cited was the growing number of competitors.

Q5: What broadband expansion plans do you have for Lincoln County (within 1-5 years)?
Responses ranged from countywide expansion to no plans to expand. Customer demand was cited as a factor in determining expansion for half of the responders.

Q6: Are you currently partnered or do you have service agreements with NoaNet or any other broadband providers to service customers in Lincoln County?
The surveys showed that 80% of providers have either partnered with NoaNet in the past or are partnering with them now, with the remaining 20% interested in partnering with them. One provider has a partnership with a larger ISP.

Q7: At the request of the Lincoln County Commissioners, the LCLTPT is investigating the potential for the Lincoln County PUD to provide broadband services in the County. If a decision is made to move forward with this, is your company interested in exploration of providing last mile services in partnership with the PUD?
The surveys showed that 80% of providers would be interested in investigating a PUD partnership.

Q8: As part of this WSBO funded project, Lincoln County GIS is developing a more granular broadband map than that available through WSBO or the national broadband map. Would you provide input to this local map?
Responders did provide service area information, but chose not to share infrastructure details.

New Providers & Services
As of May 31, 2014 NoaNet had reached agreements with two providers to utilize their fiber to service Harrington, Odessa and Wilbur. Negotiations continue with another provider that is interested in offering service in the Davenport area. Additionally, the Davenport City Library went live with their NoaNet fiber connection in May, 2014. The library worked with the Washington State Library system to secure the E-Rate discount program and contracted with an E-Rate eligible provider from the west side of the state. The west side provider was their only option. The library's patrons are now enjoying broadband speeds in the 25 Mbps range and 24/7 wi-fi inside and outside.

A fixed wireless Internet provider from Spokane County began to serve the northeast corner of the county during the grant period. They plan to expand south into the county. A second new provider of fixed wireless Internet is promoting service to communities in the northwest corner of the county. The company is utilizing PUD fiber and Ubiquiti Networks microwave technology.

We also learned that T-Mobile was a successful bidder in the Federal Communications Commission (FCC) Mobility Fund Phase I Auction (901.) The company was awarded over $3.3 million to provide 3G or better mobile voice and broadband services covering 2040 road miles within Lincoln County by 2015. Winning areas in the auction are mapped and posted on the FCC's website. (Appendix 7) On February 14, two LTPT members met with a representative from 52 Eighty, the firm that is doing the tower work for T-Mobile, and learned of their plans to install six new towers and co-locate on three existing towers. On June 19, 2014 the Davenport Times printed Public Notices for the first three towers to be constructed by 52 Eighty. One of the announcements included the following description "…a 301-foot overall height guyed-type telecommunications structure…" The towers are proposed for the Creston, Egypt and Harrington areas. [A notice for a tower near Wilbur has since been published.]

Utility Provider Survey
During the course of the completion of the grant tasks, staff learned about utilities that were partnering on broadband projects or leasing their infrastructure to broadband providers. Staff interviewed Lincoln County's two utility providers, Avista Utilities and Inland Power & Light, to determine if they are providing, or considering providing, any broadband services. Avista Utilities, an investor-owned utility headquartered in Spokane, provides electric service to Lincoln County's eight municipalities and is the County's only natural gas provider. Inland Power and Light, a cooperative that provides electric service to 13 counties in eastern Washington and northern Idaho, serves Lincoln County's unincorporated areas. On December 3, 2013 interviews were conducted with representatives from each company, both of which were members of the LCLTPT. We learned that neither utility is currently involved in the provision of broadband beyond the infrastructure that they use for their own purposes. Avista Utilities does lease power pole space to providers for hanging fiber or cable. Neither representative was aware of any plans to become involved in providing broadband services to their customers in the near future.

Shortly after conducting the utility interviews, the FCC Internet Protocol Technology Transitions Policy Task Force presented the FCC Commissioners with a set of recommendations that would enable utilities to deliver rural broadband with support from the Connect America Fund (CAF). The LCLTPT forwarded the Task Force's recommendations to both Avista and Inland Power so that they would be aware of the potential opportunity to participate in the CAF program. The Lincoln County Economic Development Council (LCEDC) also submitted a formal Expression of Interest in support of the FCC CAF IP Technology Transition Docket 10-90 voluntary experiments. (Appendix 8) Exploration of this new funding option was important as only 36.8% of NoaNet's anchor facilities in Lincoln County are using the ARRA-funded fiber. One of the primary reasons is that service providers are hesitant to invest in the last mile because of the County's low population. The LCEDC believes the Task Force's recommendations would address this.

Dig Once

During interviews with utility representatives both were asked if their companies support a Dig Once policy. Inland Power and Light does not bury utilities and thus has not found Dig Once policies to be necessary. Avista is aware of the Dig Once effort; however we learned that Avista uses subcontractors for excavation projects. We were told that trenching agreements would likely need to be worked out with them, not with Avista. While Lincoln County's utilities may not be ready to coordinate their projects with broadband build-out, some at the Washington State Department of Transportation (WSDOT) are. They see the benefits of coordinating their own communications infrastructure with the communications infrastructure required of emergency responders such as the State Patrol. The LCLTPT began talking to the County's elected officials about the Dig Once idea early on in the grant period and will continue to do so after it is over.

TASK C: BROADBAND INFRASTRUCTURE MAP

Background
Lincoln County's Broadband Infrastructure Map was included in the LCLTPT's scope of work under Goal 2: Inventory existing infrastructure. The objective of Task 2C was to map the ARRA-funded NoaNet fiber, the anchor institutions connected to it, and all other telecommunication infrastructure in the county. The map can be found at the end of this report. (Appendix 9)

Process
Lincoln County's GIS Department was asked to create a county map that included the following:
- NoaNet Fiber and Anchor Institutions
  Maps showing fiber locations and the anchor institutions connected to it were provided by NoaNet.
- Other Live and Dark Fiber
  A map of Zayo Group's fiber was available on their website. Bonneville Power Administration fiber resides on their transmission lines. The Touch America fiber map was available through Lincoln County. Others declined to have their fiber included.
- Utility Infrastructure
  Avista, Bonneville Power Administration and Inland Power infrastructure maps were available through Lincoln County and the utilities.
- Roads
  WSDOT roadways are included because WSDOT has included the goal "Improve information system efficiency to users and enhance service delivery by expanding the use of technology." in *Results WSDOT*, the agency's strategic plan for 2014-2017.
- Rail (BNSF & EGR/WSDOT)
  Burlington Northern Santa Fe is installing fiber and erecting telecommunication towers along their rail corridor. It is not known if infrastructure exists or is planned for the Eastern Gateway Railroad corridor at this time, but it was included as owner WSDOT could invest at a later date as the railway continues to be upgraded.
- Telecommunication Towers (existing and planned)
  Existing towers are identified with a different icon than the 52 Eighty (T-Mobile) towers going through the permitting process now.
- Water Towers and Grain Elevators
  Several wireless providers lease space on grain elevators and municipal water towers to install antennas.

The LCLTPT will encourage the County to maintain and update the broadband map as information becomes available.

GOAL 3: ASSESS CURRENT AND POTENTIAL FUTURE BROADBAND ACCESS AND USE

TASK A: BUSINESS ASSESSMENT

Background
The third project goal was to "Assess current and potential future broadband access and use". Goal 3 included two tasks, a business assessment and a community assessment. Task 3B was to develop and implement a broadband business assessment. A survey was developed to learn what Lincoln County businesses need from high-speed broadband in order to thrive. A LCLTPT business assessment subgroup reviewed several sample surveys to develop a survey that fit our project. A draft was presented to the full LCLTPT committee for review and feedback and was also distributed to a few select businesses for evaluation. The final assessment tool consisted of 19 questions followed by an opportunity to add further comment. (Appendix 10) All questions were optional and those taking the survey could remain anonymous if they chose to. This was an online survey and was available on the EDC website for the month of October, 2013.

Process
The survey was promoted in several ways. A press release was published in the County's four newspapers. (Appendix 11) The LCEDC distributed a request through their listserv and through their Facebook page. The survey was presented to the Chambers of Commerce who forwarded it to their members; presented to several town and city councils; at the annual Farm Bureau meeting; and flyers were distributed at every opportunity. It was estimated that news of the survey reached a minimum of 300 businesses which, if using that estimate, resulted in close to a ten percent (32 completed surveys) response rate.

Survey Results
In order to get an idea of who responded, four questions related to business location, type and size were included. One survey question asked "In what part of Lincoln County is your business/organization located?" From this question we learned that while the number of responses was small, they came from a good cross section of our 2,200-square-mile county. Approximately three-quarters came from urban areas with all of Lincoln County's eight municipalities represented with responses. One-quarter came from unincorporated areas – a mix of agricultural regions and communities along Lake Roosevelt. It is common knowledge that these rural areas are underserved.

The survey also asked respondents about their type of business. Those responses can be found in the table at right.

Next, it queried, "Do you or any of your staff use the Internet to work from home?" From 29 multiple choice responses, this is a glimpse of what we learned:

- 31% have staff that work from home part-time
- 13% work from home for another company
- 17% run a full-time, home-based business
- 17% run a part-time, home-based business
- 7% of respondents run a full-time farm business from home
- 15% don't work from home or have staff that work from home

Q17: Please list your type of business.	
	#
Ag Related	5
Education	1
Health Services	2
Internet Related	2
Manufacturing	1
Non-Profit	1
Retail	5
Service	4
Tourism Related	3
Wholesale	1

Lastly, to determine the size of the businesses that responded a question asked was "Counting yourself, what number of full or part-time employees are in your business?" Businesses ranged from 1 employee to 170. Fifteen businesses had 1 or 2; nine had 3 to 6; two had 7 to 10 employees; and one business each had 20, 44, 45, 90 and 170 employees.

One quarter of the questions explored the current Internet use of the business. The first asked about the visibility of the business on the Internet (Q1.) Results showed that the businesses had a combined 62 online presences. A website was the most widespread at 96% of responders with Facebook second at 53%. Use of Google+, Twitter, YouTube and LinkedIn all came in under 25% and four of the businesses indicated that they had no Internet presence by skipping the question as instructed.

In addition to questions that explored Internet presence, the survey asked responders to identify which of a dozen Internet services were currently in use at their business.

Q2. Please identify which of these Internet services are currently in use at your business. Mark all that apply.		
	Number of Response(s)	Response Ratio
Email	32	100.0%
Research	21	65.6%
Banking	24	75.0%
Placing orders	22	68.7%
Selling products or services	15	46.8%
Providing customer services	18	56.2%
Receiving payments	12	37.5%
Streaming medias (ex: audio or video from	11	34.3%

websites)		
Education/Training	12	37.5%
Uploading/downloading large files (ex: data, photos)	18	56.2%
Video conferencing (ex: GoToMeeting)	8	25.0%
Video chat (ex: Skype)	3	9.3%
Cloud computing (ex: online backup, network storage, Google Apps)	11	34.3%
Other	2	6.2%

When asked how difficult these activities are to complete, respondents had the most difficulty with uploading or downloading large files, video chat applications such as Skype, video conferencing with applications such as GoToMeeting, and streaming audio or video.

Question #4 asked "How important do you think high-speed Internet access is to the success of your business over the next five years?" All 32 businesses responded and the results show:
- 65.6% feel high-speed Internet access will be *extremely important*
- 25.0% feel high-speed Internet access will be *very important*

If a respondent selected either *extremely important* or *very important*, as over 90% of the businesses did, they were asked to comment on how high-speed Internet would help them be successful. Over half said their business is becoming increasingly dependent on the Internet. Some reported that their lack of high-speed Internet causes a loss in revenue. Many remote businesses find the Internet to be critical because they don't have reliable cell service.

Businesses were asked about their current Internet service. They were asked to select their provider from a list of the Internet Service Providers (ISP) available in Lincoln County (Q5). CenturyLink was the clear leader, providing connectivity to 23 of the 32 respondents (72%); 6 use Odessa Office, Asisna or RitzCom fixed wireless; 2 use ATT and Inland Cellular wireless cellular; and 1 uses HughesNet satellite service.

Responders were asked how much they pay per month for their business Internet service now and if they would pay more for upgraded service:

Comparison of Q7 & Q11: Price of Internet Service		
	Pay Now	**Willing to Pay**
Less than $50	5	6
Between $50 and $100	17	17
Between $101 and $200	6	3
Between $200 and $500	1	1
Between $501 and $1,000	0	0
Over $1,000	1	0
Don't know	2	5

Survey takers were asked how satisfied they were with their provider's price, speed, reliability and customer service. They were also asked to rate their overall satisfaction. For Overall Satisfaction, the majority of responses fell within the neutral range. However, when ranking the four categories individually, the count peaked at "Dissatisfied" for Price, Speed and Reliability:

Q8. How satisfied are you with your Internet service?					
1 = Very Satisfied, 2 = Satisfied, 3 = Neither Satisfied or Dissatisfied, 4 = Dissatisfied, 5 = Very Dissatisfied					
	1	2	3	4	5
Price	4	7	9	10	1
Speed	3	6	6	14	3
Reliability	3	6	6	11	5
Customer service	3	11	11	5	2
Overall satisfaction	3	5	14	8	2

A pair of questions were directed at download and upload speeds (Q9 & Q10.) The first asked for advertised speeds and the second asked responders to link to the Washington State Broadband Office website and take a speed test to determine their actual Internet speed. Results show that actual speeds appear slower than advertised speeds.

We learned that twelve businesses use the Internet for training (Q2) and four feel their current Internet service limits the training they can provide for their employees (Q12). The final training-related question is shown in the table below:

Q13. If resources can be made available, which topics would you or your staff benefit from? Please check all that apply.		
	Response(s)	Ratio
Internet basics (Ex: email, search)	10	33.3%
Selling online	12	40.0%
Building a website	9	30.0%
Getting website found by search engine	11	36.6%
Online advertising	13	43.3%
Cloud computing	13	43.3%
Using social media for my business (Twitter, Facebook, Linkedin)	13	43.3%
Setting up online payments on my website	11	36.6%
Marketing my website	14	46.6%
Optimize website for mobile devices (Ex: iPad, smartphone)	13	43.3%
Telework/ telecommuting	8	26.6%
Other	2	6.6%
Total	30	100%

TASK B: COMMUNITY ASSESSMENT

Background

In the grant application, Lincoln County chose to target the parents of school-age children for the community assessment, hoping to learn something that might help the county address concerns regarding youth outmigration and a lack of educational opportunities beyond K-12. The task would be achieved through a partnership with the area School District Superintendents who would rely on students to take the survey home to their parents.

Process

After experiencing the resistance of the business community to be surveyed about their broadband use, it was determined that a third-party survey was likely to be ineffective. After consulting with the Superintendents, they agreed that a survey sent home to parents would likely get a poor response. When asked if teachers would be the next best alternative most did not want their teachers surveyed. Some additional ideas were shared, including a survey of students, before it was determined that the LCLTPT would work directly with the Superintendents.

The Superintendents agreed to meet as a focus group with the EDC Director. If unable to attend the focus group, they agreed to provide information through a survey. (Appendix 12) A few Superintendents asked their career counselors take the survey as well.

Focus Group & Survey Results

On March 20, 2014 a focus group of Superintendents met at the Northeast Washington Educational Service District 101 administration building. Superintendents representing school districts for Almira, Creston, Harrington, Reardan, Sprague and Wilbur were present. Two Superintendents from neighboring counties joined the group, the Lamont Superintendent (Whitman County) from the Sprague-Lamont School District and the Superintendent for the Lind-Ritzville School District (Adams County) which shares sports teams with Sprague-Lamont School District.

A survey was emailed to Superintendents who were unable to attend the focus group. Two Superintendents and two Career Counselors responded to the survey. The responses gathered from both the focus group and the surveys are reported in aggregate:

Q1: Please identify the percentage of your students do not have Internet access at home.
Responses ranged from 10% to 55%.
Q2: Of those who do not have Internet access at home, what are the most likely reasons?
Unaffordable or unreasonable cost, no provider available, service not worth the cost, and religious reasons were the reasons given.

Q3: What are the key reasons that our youth leave Lincoln County after high school?
Most common responses were to get a job, to go to college or trade school, and to enter the Military.

One commented that there would need to be business growth bringing more employment opportunities plus better housing options to keep our young people from moving on after graduation. Another relayed that many students feel they have to go to Spokane in order to find jobs and employers who are willing to hire youth. The cost of commuting to Spokane for job and educational opportunities can be prohibitive and public transportation is extremely limited, was another response.

Q4: If a high school student does not plan to go to college, what types of opportunities do they hope to find locally?
One participant commented, "Without training, very few. With training, lots of opportunities exist."
Other responses included work on a family farm, work at a family trade or work for a local farmer or business owner.

Q5: Do you believe that access to high speed Internet would lead to an increase in the number of students who would take post-secondary classes online?
Most respondents said yes. One was unsure because their school has high speed Internet and this has not increased the use of online coursework. He questioned whether availability of high speed Internet in the community would substantially increase participation in classes online for those who have already graduated. The career counselors, however, reported addressing a lot of inquiries about online coursework and how it works.

NoaNet in Lincoln County Schools
Public schools were not a requirement of the federal ARRA grants that NoaNet received. When NoaNet was making initial decisions regarding build out to anchor institutions, Lincoln County schools were not included. However, during the LCLTPT process staff received a list from NoaNet of all locations within Lincoln County that received fiber during the ARRA build out. The list included six schools that were considered infill by NoaNet and were connected at a later date. When staff asked NoaNet if the schools were using the fiber, the response was that all have "services turned up." This does not necessarily translate to using the fiber, but rather to the fiber being ready to use. These schools are:

    Creston School District (K-12)
    Harrington School District (K-12)
    Davenport Elementary/Middle School
    Davenport High School
    Odessa Elementary/ High School
    Wilbur School District (K-12)

TASK B: STUDENT OUTREACH PROJECT

Background
Task 3B included a second activity, a student outreach project. Section 4 of the WSBO grant application asked, "Does this proposal include methods that provide an innovative approach…to broadband deployment or adoption issues?" Lincoln County's response was:

> *Our innovative approach to community needs assessment is to partner with our school districts and focus our community outreach on their students and their families. Targeting this audience would provide a direct link back to our SWOT survey and the findings about youth outmigration and our lack of postsecondary educational opportunities. We will promote participation among parents by linking broadband access and adoption to the very threats and weaknesses they identified through our SWOT survey. <u>We will promote participation among students by sponsoring a competition or contest or both.</u>*

Process
The LCEDC teamed with Business Instructor Stacey Nash and the Senior Class of Wilbur High School to participate in Global Entrepreneurship Week. The students created business plans for business start-ups *in Wilbur* and were encouraged to include *unlimited access to the high speed NoaNet fiber* that cuts through their town. In early January fifteen students presented ten business plans.

Only two of the businesses were dependent on high speed broadband – a resource center and a senior health services provider. Even though only a few students made high speed broadband integral to their plan, staff had their attention and talked about the project to get access to the NoaNet fiber that cuts through town. Interestingly, several students did not know about the new fiber or they saw the project going on, but did not know that it was Internet related. All of the students used Facebook and Twitter in their marketing plans. What they did not include in their marketing plans was a website. When asked why they didn't they said, "We won't need one." In response to a follow up question about why they explained that no one uses websites. They can find everything they need on Facebook. That was enlightening. Not only was the project featured on the front page of The Wilbur Register (Appendix 13 & 14), it was submitted to the Washington State Department of Commerce to represent Lincoln County in their StartUp Washington Global Entrepreneurship Week event.

GOAL 4: EVALUATE PUBLIC UTILITY DISTRICT AS A MIDDLE MILE SERVICE PROVIDER

TASK A & B: IDENTIFY AND INTERVIEW PUD BROADBAND PROVIDERS

Background

The first task, 4A, was to identify Washington PUDs currently providing broadband service and develop a tool/process to gather information from these PUDs. Task 4B was to conduct phone interviews or site visits and to summarize the findings from this investigation.

As stated earlier in this report, Lincoln County is the seventh largest county in Washington State at 2,311 square miles of land and has a population of 10,570 which averages less than five people per square mile. Half of the population lives outside of the eight municipalities, either on farms and ranches or in unincorporated communities. It would be extremely difficult to a make the business case that would result in a private sector company offering broadband services to many of the more sparsely populated areas of the County. Given this situation, the Lincoln Board of County Commissioners identified that a potential solution for countywide connectivity was to have the Lincoln County PUD provide broadband services. Although an inactive PUD, the PUD Commissioners were interested in helping meet this need.

Process

At the first LCLTPT meeting members were invited to join various committees in support of the project. A PUD Evaluation Committee was formed and included representation by a LC County Commissioner, LC Information Systems staff, three LCPUD Commissioners, staff from two electrical power providers and NoaNet. This committee performed advisory and resource roles for the evaluation task.

Research about Washington PUDs began with a review of applicable legislation. In 2000, the Legislature authorized the state's PUDs to provide wholesale telecommunications services.


RCW 54.16.330

A PUD in existence on June 8, 2000, may construct, purchase, acquire, develop, finance, lease, license, handle, provide, add to, contract for, interconnect, alter, improve, repair, operate, and maintain any telecommunications facilities within or without the district's limits for the following purposes:

(a) For the district's internal telecommunications needs; and

(b) For the provision of wholesale telecommunications services within the district and by contract with another public utility district.

Next, an informational meeting was held with the Washington Public Utilities District Association (WPUDA). Representing 27 nonprofit, community-owned utilities, the mission of the WPUDA is to support, protect and enhance members' ability to conserve power and water resources of the state and to provide not-for-profit, locally-controlled utility services for the people of Washington. The WPUDA Executive Director provided additional insights about PUD broadband requirements and activity in the state and also identified PUDs offering broadband services.
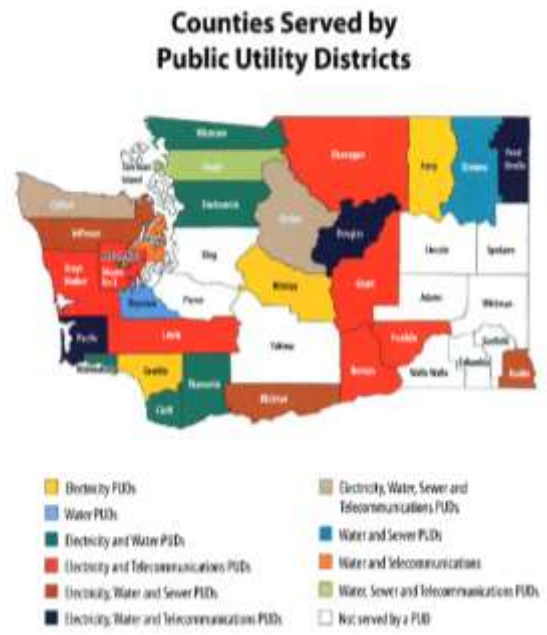
An overview of Washington PUD broadband regulations and activity was presented at the September 3rd LCLTPT meeting. In addition, the broadband lead for Stevens County PUD shared information about recent experience expanding service offerings from water and septic to include broadband. He discussed the costs associated with this expansion which included ARRA-funded fiber and a $280,000 match contributed by Stevens County. He provided a status of work with NoaNet, noting that there is a 3-year agreement where NoaNet will manage the entire network.

Incorporating input from the WPUDA and lessons learned from Stevens County PUD initial broadband efforts, LCLTPT project staff and PUD Evaluation Committee members identified criteria (i.e., rural counties, demographics, mix of broadband services, a variety of technology offerings, business and residential customer bases) and then selected the PUDs to contact. The PUD Evaluation Committee also provided feedback on the development of a questionnaire for use during phone and in-person interviews. (Appendix 15) The survey included questions focused on four major areas:
- *Broadband Background and Planning*
- *Broadband Infrastructure Development*
- *Broadband Services and Operations*
- *General Feedback*

During the fall of 2013, PUD staff was contacted via email to request a 45-60 minute interview. The email included an overview of the LCLTPT project. Prior to the interviews, the survey was sent to the PUD staff for review. Five interviews were completed with staff supporting telecommunications services at each of the following PUDs:

- Chelan
- Douglas
- Okanogan
- Pend Oreille
- Stevens

Two LCPUD Commissioners joined the LCEDC and WSU Extension PDI staffs to conduct telephone interviews on October 30th with Chelan and Okanogan PUD telecom engineering staff. This team also held in-person interviews on the same day with Pend Oreille and Stevens PUD broadband operations staff. LCEDC and WSU Extension PDI performed a phone interview on November 6th with the Douglas County Community Network Coordinator. An initial summary of the interviews was presented to the LCLTPT at the December 2nd quarterly meeting.

Highlights from the *Broadband Background and Planning* questions include that broadband services for the five PUDs interviewed began between 1999 and 2013 and were already providing other services (five water and four electrical). Four of the five PUDs initially deployed fiber for internal communications and data transmission needs.

When asked about *Broadband Infrastructure Development*, the type of network supported all five answered "Ethernet transport", four offered "fiber to the premise" and "dark fiber" and three provide "Internet to the premise" and "wireless to the premise". The estimated broadband infrastructure builds ranged from $1.2 million (serving two communities, Colville and Kettle Falls) to $120 million (approximately 12,000 customers).
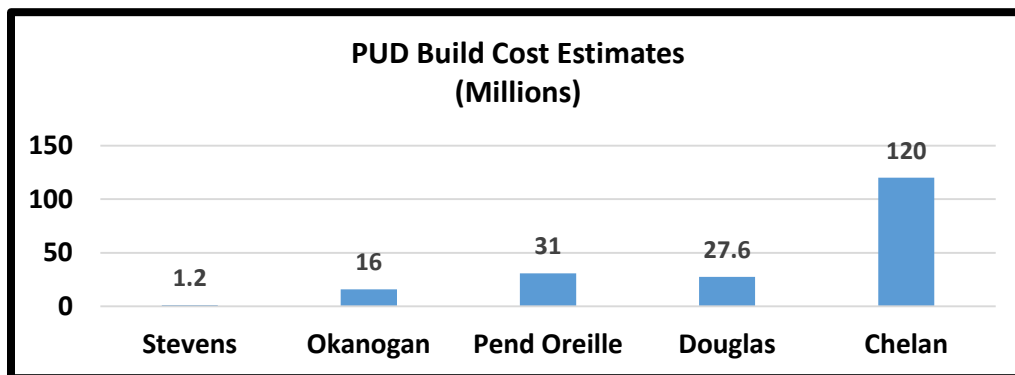
Multiple funding sources were needed to support broadband construction for all five PUDS. Three received federal grants/loans, three had revenue from other PUD services/reserves, two used local bonds and other sources included County .09 Sales and Use Tax monies, electrical power sales, internal loans, leasing of fiber and storage of equipment. In addition, existing assets PUDS were able to leverage in construction of broadband networks included four that used/shared Right of Ways (ROW) and pole attachments, two used conduit and one was able to use towers.

A few "fast fact$" provided by interviewees about costs included:
- Fiber costs about .41 per foot to purchase but labor is 99% of the expense.
- Cost to deploy overhead fiber was $30,000 per mile (including approximately 20 poles per mile). If you invest in your own poles, the cost will be closer to $40,000 per mile.
- From Lincoln County, a 1G pipe will be needed to Spokane. Cost will be $3000 per month.

When asked about *Broadband Services and Operations*, services offered included wholesale fiber, wire and wireless broadband, data centers and transport. Customer base ranged from 6 to 12,000. One respondent noted, "If not for the carrier customers, the 1700 customer hook-ups would not cover it (expenses)." Each PUD had a limited number of last mile providers and the quality of those providers was critical to the success of broadband efforts.

> "Your system is only as good as your last mile providers."

All noted that during construction and ongoing maintenance required use of staff resources from other departments. The number of dedicated broadband staff ranged from 1-18, with broadband skills critical for some positions.

Number of PUD Broadband Staff

Stevens	Okanogan	Pend Oreille	Douglas	Chelan
1	5	5	12	18
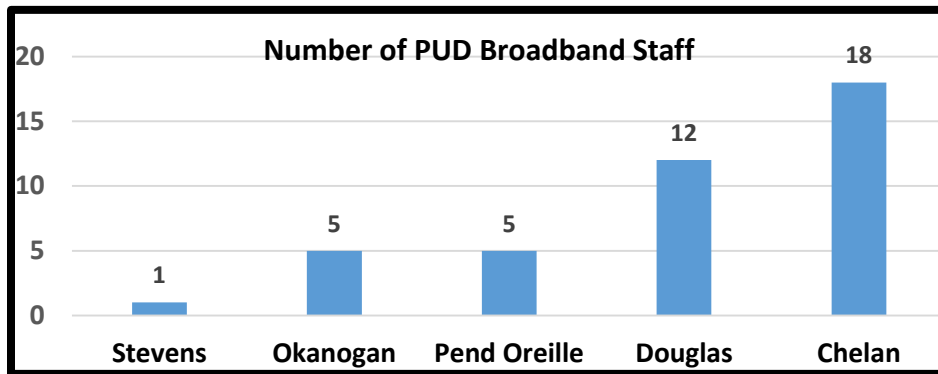
Each interviewee was asked to provide *General Feedback* and the following were highlights from the responses.

- Need a vision and need to engage the community.
- Learn the true costs of owning, operating, upgrading and maintaining your own system.
- A strictly subscriber model will not cover ongoing monthly operation expenses.
- Get your customers to put some skin in the game.
- Don't get caught up on, "build it and they will come".

SUMMARY AND NEXT STEPS

Summary and Next Steps: Anchor Institutions
Up from 26% reported at the May LCLTPT meeting, by mid-June 36.8% of the 19 CAIs surveyed were using ARRA funded fiber. To help increase the use of this federal investment, LCLTPT project staff will continue to:

- Provide information to WSBO staff to address issues related to leveraging use of the fiber.
- Participate in ongoing communications with NoaNet about challenges such as speed, high cost, lack of retail service providers, etc.
- Engage and identify retail service providers to help meet last mile needs.
- Share new information with CAIs about broadband funding sources when available.
- Identify resources for CAI staff to increase awareness about broadband benefits and training for greater use.

Summary and Next Steps: Internet Service Providers
Considering the influx of last mile providers interested in serving the area, the LCEDC could continue to track new providers and their services.

Summary and Next Steps: Dig Once Policy
Staff learned that many counties are requiring infrastructure installers to conform to a Dig Once policy. Local governments could look into these policies as a low cost way to build out their networks.

Summary and Next Steps: Broadband Map
The WSBO map will no longer be accessible when that office closes in December. LCLTPT staff strongly recommends the county continue to maintain and update the broadband map created during this project.

Summary and Next Steps: Businesses
While the low number of responses to the business survey precludes any true statistical analysis, we feel that some simple deductions can be made:

- Business stakeholders need to experience the opportunities that high speed broadband can offer before they can determine how they will benefit or what they would pay.
- Business stakeholders are open to learning new skills related to broadband adoption.
- The survey responses, in particular those regarding the importance of high speed broadband in the future, highlight the need for the LCLTPT to continue to network with our business stakeholders.

During the project the LCEDC offered a WordPress class and social media training. LCEDC will continue to identify resources to provide broadband technical assistance and training for businesses in the region. Working with WSU, LCEDC supported submission of a USDA AFRI proposal to provide broadband-related training for rural businesses in nine states.

Summary and Next Steps: Student Project
The Global Entrepreneurship Week business plan competition held at Wilbur High School was a success. The instructor has invited the LCEDC back to repeat the challenge in 2015. The LCINTERNETEDC has accepted and should consider expanding the project to other schools in the county.

Summary and Next Steps: PUD Evaluation
Based on the results of this PUD study, it appears that for the currently inactive PUD to succeed in the broadband business, it would require a significant amount of capital investment, staff with broadband and customer service experience, a diverse product line/monthly revenue stream and strong support from residents of Lincoln County.

Following review of the PUD survey findings, the WPUDA Executive Director offered these thoughts for consideration if Lincoln County decides to proceed with PUD broadband services:

1. *Key Questions:*
    a. *The PUD should establish a clear policy for **why** they are getting into the business (unserved, underserved populations?)*
    b. *The PUD should adopt a resolution establishing the policy.*
    c. *Do they have public buy-in?*
    d. *They need a very **realistic** business plan.*
    e. *Do they have sufficient sustainable retail service providers in their PUD service territory?*
    f. *What happens if the service providers go out of business, what's their backup?*
    g. *How will they fund the development of the business plan, the construction and operation, future losses during startup?*
    h. *How many years do they think they have until the business can support itself?*
    i. *Will they use the PUD general taxing powers to support the business?*
2. *He does not expect any major new funding sources for PUD telecom activities. He also does not see any appetite to changed state policy related to PUD telecom authority. He would make sure that the plan does not assume any changes.*
3. *Next steps should include evaluating the items identified in question #1.*

Although many of these items were addressed in this report, a review of the considerations along with data gathered during other tasks of the project is a logical next step for the LCLTPT project staff and the Lincoln County Commissioners. At that point, a decision can be made regarding if the LC PUD should begin steps to offer broadband services.