Sublette County

Towns of Pinedale, Big Piney, and Marbleton

Wyoming

Request for Proposals

for

Public-Private Partnership to Lease Broadband Infrastructure and Provide Broadband Services

October 5, 2018

Contents

1. Introduction 3
2. Goals of this Procurement 5
3. Planned Fiber Route 6
4. Funding Sources 10
5. Selection Criteria 10
6. RFP Response Format 11
    1. Commitment 12
    2. Desired Technical Specifications of County Assets 12
    3. Service Offering Proposal 12
    4. Dark Fiber Lease Structure and Rate Proposal 12
    5. Partner Technical Viability and Experience 12
    6. Partner Financial Viability and Experience 13
    7. Partner Management Team Viability and Experience 13
    8. Fiber Maintenance Plan Proposal 13
    9. Timeline 14
    10. Commitment to First Responders 14
    11. Impact on Residential Service Offerings 14
    12. Privacy 14
    13. References 14
7. Response Process 15
    Interest in Questions and Answers 15
    Questions 15
    Responses to Questions 15
    Response Deadline 15
    Summary of RFP Process Deadlines 16
8. Respondent Presentations 16

1. Introduction

Sublette County (the County) and the towns of Big Piney, Marbleton, and Pinedale (the Towns), Wyoming, have worked collaboratively to address the availability of broadband in the County. Together, the County and Towns have identified a lack of robust broadband infrastructure as a major hurdle to economic development in the County, particularly in the business areas of the County's population centers—including, but not limited to, the Towns, and the community centers in Daniel and Boulder. To address this need, the County and the Towns (hereinafter, collectively referred to as "Consortium") intend to install conduit and fiber infrastructure to enable high-quality service to businesses in the key business areas of the Towns, and to facilitate private sector investment to the residential areas of the Towns and the entire County.

The goal of this effort is to enable the private broadband market to expand and thrive in Sublette County. The Consortium intends that this initiative will support and accelerate private providers' efforts to improve broadband service options and to build strong broadband businesses in the community. Though the Consortium is committed to building the infrastructure necessary to add networking capacity and route diversity to the area, **the Consortium does not seek to provide retail broadband service to customers**. Rather, the Consortium intends to lease the publicly owned fiber to one or more partner ISPs in exchange for a commitment to provide service.

Background

In March 2017, the County hired an independent consultant to prepare a strategic broadband plan. The consultant found severe limitations with existing communications infrastructure and recommended that the County construct conduit or fiber infrastructure between all the Towns and population centers, as well as to interconnection points with carriers to the northwest and the south of the County. A map of the proposed routes is included in Section 3. The entirety of the report is included as Appendix A.

In May 2018, the County released a Request for Information (RFI) seeking ideas from potential private collaborators regarding the deployment of broadband infrastructure in the County. The County received six qualified responses that informed its approach to this Request for Proposals (RFP).

Funding Sources

The Consortium is in the process of applying for federal and state grants to support this effort. The Consortium anticipates knowing the outcome of these grant applications in early 2019. Both the Towns and County have appropriated adequate funds to supplement grant awards for network construction costs. Provided these grants are awarded, the County Commission and

Town Councils will determine if they will move forward with deployment, based on the results of this competitive process.

Potential Business Relationship with Private Partner

Through this RFP, the Consortium seeks to identify one or more qualified private entities (Partner) to lease, operate, and possibly maintain the Consortium's conduit and fiber assets in exchange for a commitment to provide the businesses passed by the fiber with broadband internet service at comparable prices to nearby metropolitan markets.

The Consortium intends to develop a public–private partnership with one or more respondents that will ensure that businesses passed by the new fiber assets have the connectivity needed to compete in the 21st century economy. The Consortium will leverage their ability to apply for grants, and appropriate local funds if necessary, to cover the capital costs associated with fiber deployment. Once completed, the Consortium will lease the fiber to their private partner, through a 20-year Indefeasible Rights of Use (IRU), with potential for a renewal for another 20 years. The Consortium seeks a firm commitment from a Partner to provide service to every business passing at a regionally competitive price.

Governance

The County is working with the Towns to create a unified governance structure to oversee the public infrastructure, to formalize the existing, informal working arrangements of the Consortium. The County and Towns intend that there will be a single point of contact within this entity with whom the Partner will negotiate, work, and communicate.

Structure of this RFP

The sections below present a description of the goals of this procurement (Section 2) and the planned fiber route (Section 3). Section 4 describes funding sources the Consortium plans to use to deploy assets. Section 5 outlines the evaluation criteria and the weighting for each that the Consortium will consider in its partner selection process. Section 6 details response format requirements. The last two sections provide important dates and details related to the response and evaluation process.

Responses to this RFP are not intended to create a contractual relationship, or any type of contractual obligation or responsibility, between the applicant and Sublette County or the Consortium. Furthermore, Sublette County and the Consortium reserve the right to reject any and all responses to the RFP for any reason.

2. Goals of this Procurement

Through this RFP, the Consortium seeks a qualified private Partner to whom the Consortium will lease conduit or dark fiber connecting the Towns and community centers to connection points at the County boundary and passing all businesses in the three Towns. **The Consortium seeks a partner that will commit to make high-capacity, enterprise-grade and business-class data services available to businesses in the Towns and population centers at a competitive price, and that will further invest to extend services to residences in the Towns and to other areas of the County.** The Consortium wants the availability of broadband to be an asset, rather than a liability, in its economic development efforts. It intends to use the availability of next-generation broadband services to help attract and retain businesses.

The Consortium welcomes responses from incumbent internet service providers, competitive providers, non-profit institutions, cooperatives, and any other entity that is qualified and interested in such an opportunity.

Technical Goals: The Consortium seeks bids from potential Partner(s) with the technical expertise and capacity to meet the functional requirements of the project: to make enterprise-grade broadband services available to all the business that the fiber passes. The Consortium welcomes discussion of the technical specifications necessary for these goals to be met and has intentionally released this RFP before determining the specifications of the assets to allow for potential Partner input.

Financial Goals: The Consortium seeks bids from potential Partner(s) who are willing and financially able to take on the operational risks associated with leasing fiber and offering broadband service. The Consortium expects some financial remuneration for access to public infrastructure and may provide access at below-market rates in exchange for a firm commitment to serve all business passings at a regionally competitive price. Because the Partner(s) will benefit from the grants and public funds that will cover the capital cost of the network infrastructure, they must also be willing to commit their own resources to the project and assume the financial risk associated with ongoing operations.

Service Goals: The Consortium seeks bids from potential Partner(s) who will offer enterprise-grade and business-class broadband services to all the business that the public fiber will pass. The Consortium wants businesses in Sublette County to be able to access the same tiers of service as businesses have in nearby metropolitan areas, such as Idaho Falls, Idaho, and Jackson and Casper Wyoming, at a comparable price.

In addition to these primary goals, the Consortium has two secondary goals for its broadband initiative that will also factor into the Consortium's evaluation of RFP responses:

1. **Improve service options for Town and County residences.** While the Consortium is primarily focused on improving service options for businesses, it hopes that the proposed infrastructure will eventually be used to improve service options for residences, both in the population centers and in the more remote regions of the County.

2. **Ensure adequate dedicated services for the County's Fire and Sheriff departments.** The Consortium seeks dedicated, reliable capacity for the Fire and Sheriff departments to ensure adequate emergency services in the long term.

3. Planned Conduit or Fiber Route

The Consortium has identified two potential components for its proposed communications infrastructure efforts: conduit or fiber in conduit.

The proposed fiber or conduit network would be built along US 189 from LaBarge to Daniel Junction, and/or up from Rock Springs. At Daniel Junction this build would be bifurcated, and would:

- Extend north along US 189/191, first to Bondurant and then on to the County line. At that point, a partner could extend fiber to Hoback Junction, where connectivity could be completed with several regional and national carriers. This would allow diverse and/or redundant access to major internet and telephone service hub locations.

- Extend south along US 191 into Pinedale, where a countywide aggregation and control point could be built. From Pinedale, the network could be extended south along US 191 past the airport, Barger, and Boulder—and then to the Sand Draw area near the junction of 191 and 351. The route would also be extended further south on US 191 to the Erramouspe Road area to allow the extension of services via wireless technology to nearby gas fields to the south.

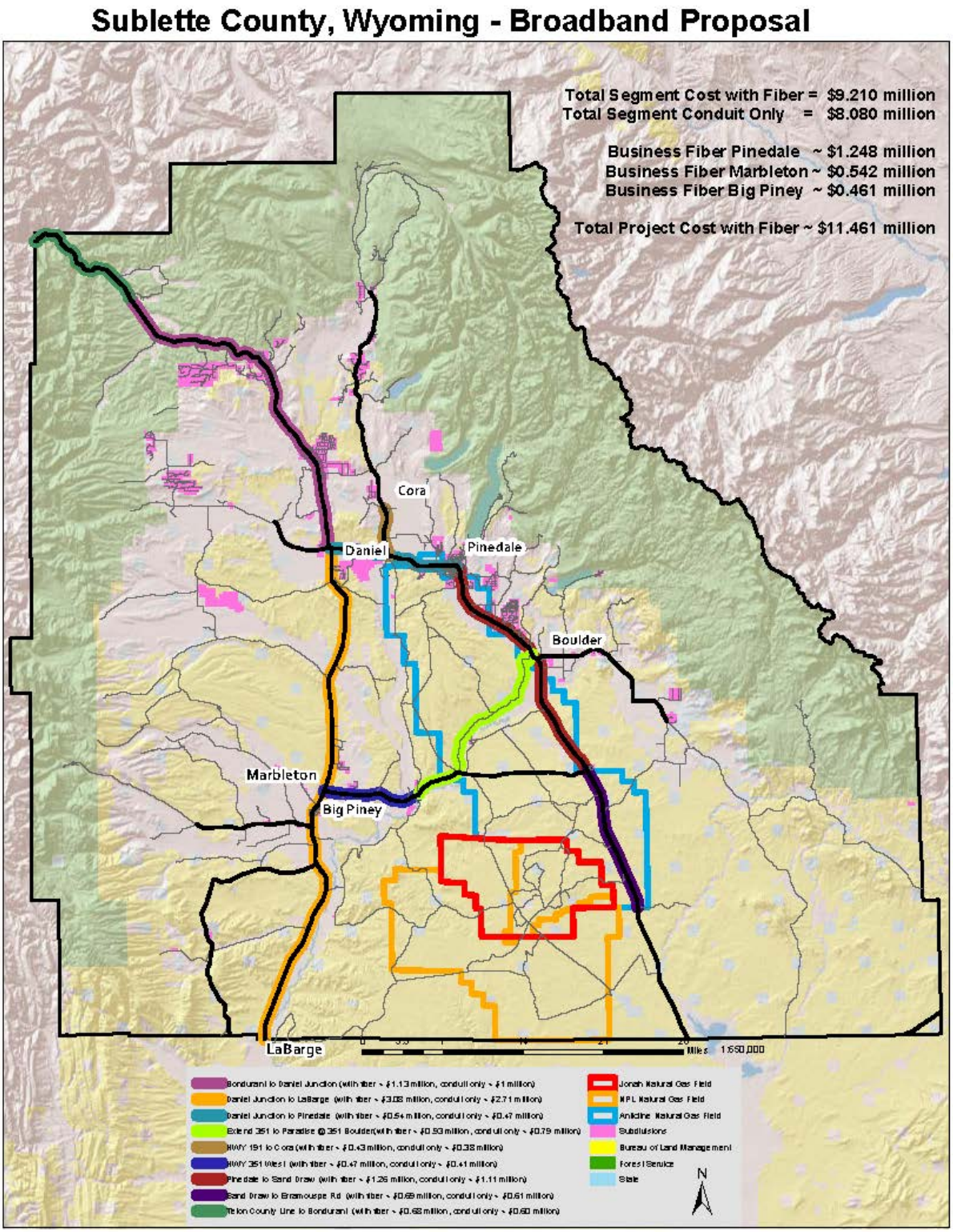
The Consortium could also build a route from US 189 along 351 to Paradise Road (CR 136), and along Paradise Road northerly to provide better access for Sublette County natural gas fields. This extension would complete a ring in the center of the County, facilitating increased reliability.

The fiber or conduit will be designed with a great frequency of connection opportunities to maximize efficiency and flexibility for additional middle- and last-mile connections.

These routes and the County's consultant's cost estimates for construction are summarized in Figure 1, below. The entirety of the County's consultant's report is attached to this RFP as Appendix A.

The routes proposed in this RFP are the Consortium's first cut at what it believes are the most useful routes. However, the Consortium welcomes responses that propose routes that the respondent believes will be optimal, including the respondent's preferred path into the County (i.e., via Jackson, Rock Springs, LaBarge, etc.). The Consortium anticipates that final routes will be negotiated after selecting a viable Partner.

Figure 1: Proposed Fiber and Conduit Routes in the County



The Consortium anticipates that last-mile infrastructure (i.e., conduit or fiber) will pass all the businesses in Big Piney, Pinedale, and Marbleton. Proposed routes in the Towns are included in Figure 2, Figure 3, and Figure 4, below.

Figure 2: Proposed Routes in Big Piney (Fiber Routes in Red)

Figure 3: Proposed Routes in Marbleton (Fiber Routes in Purple)

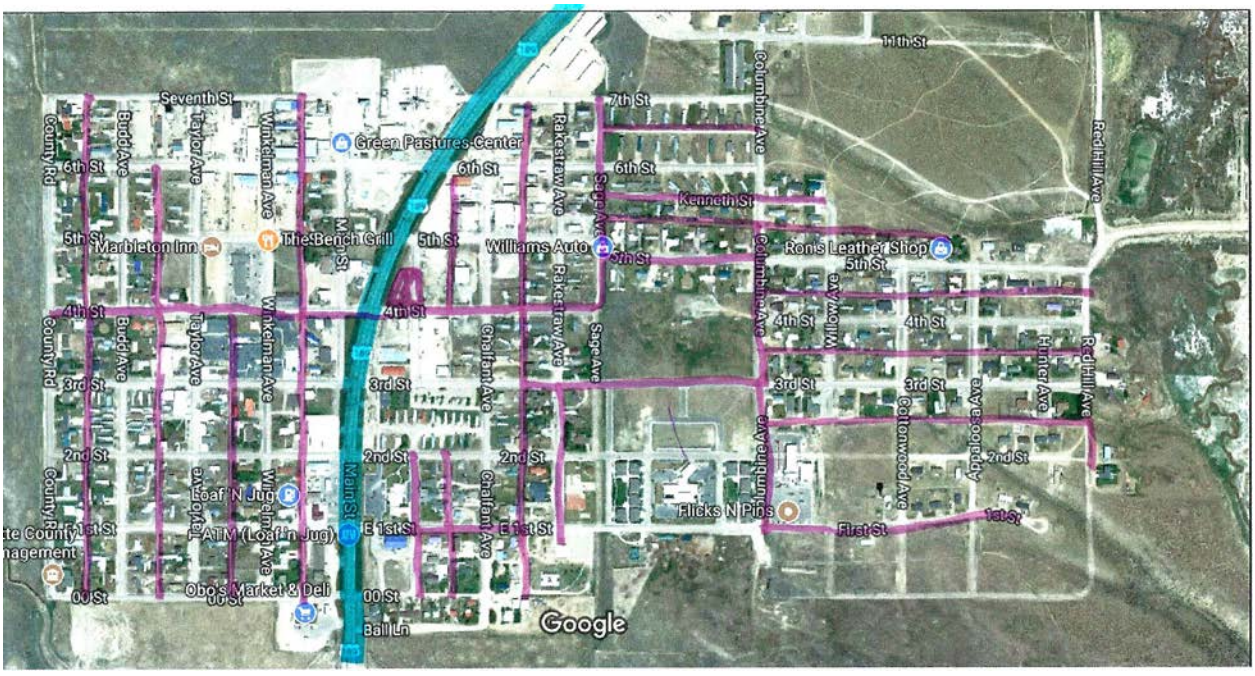
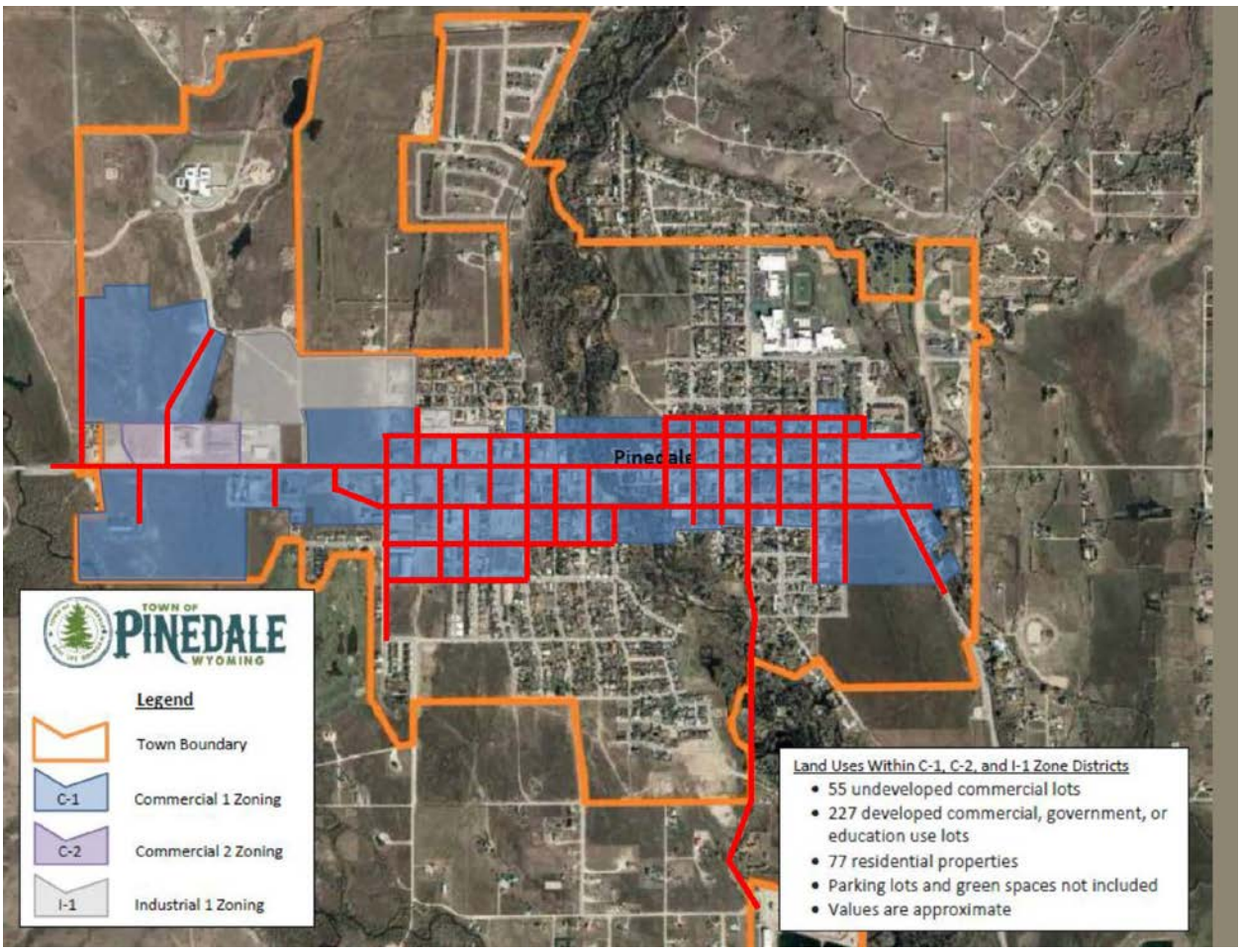


Figure 4: Proposed Routes in Pinedale (Fiber Routes in Red)



We note that in addition to the locations shown in these maps, the Consortium has prioritized connections to the community centers in Daniel and Boulder, as well as to the school complexes in Big Piney and Pinedale.

4. Funding Sources

The Consortium is in the process of applying for grants through both the U.S. Economic Development Administration (EDA), and the Wyoming Business Council Business Ready Grant programs, and anticipates knowing the outcome of these grant applications in early 2019. Additionally, the Towns and the County have allocated funds to supplement grant awards for network construction costs. Provided these grants are awarded, the County Commission and Town Councils will determine if they will move forward with deployment, based on the results of this competitive process.

5. Selection Criteria

The Consortium will evaluate bids based on the following general criteria:

1. Proposed service levels for business passings,
2. Consumer pricing, including installation fee (if any),
3. Proposed dark fiber lease rate,
4. Technical capabilities and respondent's track record, including management team capabilities and past performance,
5. Financial viability of respondent,
6. Affirmation of willingness to take responsibility for fiber maintenance,
7. Impact of proposed partnership on first responders,
8. Impact of proposed partnership on residential broadband service options, and
9. Privacy policy and commitment to protect consumer data

The Consortium will evaluate all responses to this RFP based upon these criteria, weighted as follows:

Criteria	*Evaluation weight*
1. Proposed services and pricing to be offered to businesses	20 percent
2. Impact of proposed partnership on residential broadband service options	20 percent
3. Proposed conduit or dark fiber lease rate, based on 20-year IRU with potential 20-year extension on mutual agreement (other proposals will be considered)	15 percent
4. Technical capabilities and track record of respondent	10 percent
5. Financial viability of respondent	10 percent
6. Commitment to, and terms for, fiber maintenance	10 percent
7. Impact of proposed partnership on public safety and first responders	10 percent
8. Commitment to protect consumer privacy policy	5 percent

6. RFP Response Format

The Consortium requests the following information, in as much detail as is practicable. Please adhere to the page limitations listed below, and provide your electronic response in either Microsoft Word or Adobe PDF format, using the following response structure.

Please identify any proprietary and/or confidential information contained in your response. In the event of a Wyoming Public Records Act request, information marked proprietary or confidential will be redacted from your response before its disclosure.

1. Commitment

Please affirm that you are interested in this partnership and will meet the requirements contained in this RFP if selected as the Consortium's Partner.

Please keep your response to no more than one (1) page.

2. Desired Technical Specifications of Assets

The Consortium has intentionally released this RFP before determining the technical specifications of the conduit or fiber it will deploy. Please describe your desired technical specifications of these assets (e.g., conduit size, distribution of pull boxes, etc.).

Please keep your response to no more than two (2) pages.

3. Service Offering Proposal

Please describe the services you would offer to businesses if selected as a Partner. Include information about what speeds you expect to be able to offer, and, to the extent possible, information about your pricing strategy. State whether you would be willing to commit to maintaining prices comparable to prices in nearby metropolitan markets.

Please keep your response to no more than two (2) pages.

4. Conduit or Dark Fiber Lease Structure and Rate Proposal

Please indicate your preference that the County deploy conduit or fiber and discuss whether you would prefer to lease this asset on a per-month basis, or in a long-term IRU. According to your preferred lease structure, state the maximum rate you would be willing to pay per linear foot of conduit or per strand per mile for one dozen, two dozen, three dozen, four dozen, five dozen, and six dozen strands of fiber. Please note that the Consortium prefers the stability of a 20-year IRU with potential 20-year extension on mutual agreement, but we welcome alternative proposals.

Please keep your response to no more than three (3) pages.

5. Partner Technical Viability and Experience

The Consortium seeks a Partner with the technical capacity and experience to meet the needs described in this RFP. This section is intended to explain how your firm is a suitable partner for

this project. Please provide a statement of experience discussing past performance, capabilities, and qualifications. Among other things, please address the following:

1. Identify other markets where your firm operates networks; include enterprise-grade and business-class service descriptions and pricing information from other markets in which you operate. If you already operate network infrastructure in Sublette or nearby counties, please describe your existing networking assets in the region.

2. Discuss partnerships with other service providers, government, or non-profit entities you have undertaken, particularly any in which you provide broadband services to businesses in rural towns and population centers.

3. Discuss your capabilities regarding operation and maintenance of fiber networks.

4. Provide example(s) of existing CRM system(s) that demonstrate your ability to deliver quality customer service.

5. Provide an example of a web customer interface you have provided in a business deployment.

Please keep your response to no more than three (3) pages.

6. Partner Financial Viability and Experience

The Consortium seeks bids from potential Partners with the financial capacity to meet the needs described in this RFP. Please provide an explanation and data to demonstrate your financial capacity and capability to provide broadband service to businesses for the lifetime of the proposed partnership. Suggested documents include audited financial statements, bank statements, or SEC filings.

Please keep your response to no more than two (2) pages. You may attach additional financial statements as an appendix to your response.

7. Partner Management Team Viability and Experience

The Consortium seeks bids from potential Partners that will assign an experienced and able management team to operate, and potentially maintain, the proposed network. Please identify the team members you propose for this project and describe their experience and capabilities.

Please keep your response to no more than one (1) page.

8. Conduit or Fiber Maintenance Plan Proposal

Please include a statement that you intend to assume responsibility for maintenance of the conduit or fiber and discuss the minimum service requirements your maintenance plan will support.

Please keep your response to no more than two (2) pages.

9. Timeline

Please provide your proposed schedule for initiation of service after fiber buildout is complete, including a timeline with key milestones.

Please keep your response to no more than one (1) page.

10. Commitment to First Responders

As part of this fiber buildout, the Consortium wants to be sure that first responders have the dedicated services they need for generations to come. The Consortium anticipates that first responders will seek commercial service over public safety-grade infrastructure from a Partner at an agreed-upon rate. Discuss how your proposed solution will make sure first responders have the dedicated services they need.

Please keep your response to no more than one (1) page.

11. Impact on Residential Service Offerings

If you expect to provide services to residential passings, please describe the services you plan to offer. Discuss any additional infrastructure deployments you are considering in the County. Please also describe the desired conditions of partnership (e.g., do you seek an exclusive agreement with the Consortium for a specific period of time, can the Consortium lease additional strands to other ISPs or mobile service providers focused on serving the residential market, etc.)

Please keep your response to no more than two (2) pages.

12. Privacy

Please describe your commitment to securing consumer privacy and your customer data collection policy.

Please keep your response to no more than one (1) page.

13. References

Please provide three references for your company, including contact information, from previous contracts or partnerships. References from past successful public–private partnership efforts are particularly welcome.

Please keep your response to no more than one (1) page.

Responses to this RFP are not intended to create a contractual relationship, or any type of contractual obligation or responsibility, between the applicant and Sublette County or the

Consortium. Furthermore, Sublette County and the Consortium reserve the right to reject any and all responses to the RFP for any reason.

7. Response Process

We ask that all respondents provide all requested material and submit their response in the format (structure and page limitations) specified in this RFP.

Respondents should submit their responses NO LATER THAN 4:00 PM MST on November 9 by email to BOTH Tom.Noble@sublettewyo.com and Mary.Lankford@sublettewyo.com.

All correspondence regarding this RFP should be directed to BOTH Tom.Noble@sublettewyo.com and Mary.Lankford@sublettewyo.com.

Interest in Questions and Answers

All respondents who are interested in receiving a copy of RFP questions and answers are asked to submit a valid email address via email by 4:00 PM MDT on October 12, 2018, to **BOTH** Tom.Noble@sublettewyo.com and Mary.Lankford@sublettewyo.com.

Questions

Questions related to this RFP should be emailed to **BOTH** Tom.Noble@sublettewyo.com and Mary.Lankford@sublettewyo.com no later than 4:00 PM MDT on October 19, 2018.

Responses to Questions

We will email a list of questions received and our responses to these questions no later than 4:00 PM MDT on October 26, 2018, to all respondents that have submitted questions or that have requested the responses.

Response Deadline

Final RFP submissions should be submitted by email no later than 4:00 PM MST on November 9, 2018 to **BOTH** Tom.Noble@sublettewyo.com and Mary.Lankford@sublettewyo.com.

Please identify any proprietary and/or confidential information contained in your response. In the event of a Wyoming Public Records Act request, information marked proprietary or confidential will be redacted from your response before its disclosure.

Responses to this RFP are not intended to create a contractual relationship, or any type of contractual obligation or responsibility, between the applicant and Sublette County or the Consortium. Furthermore, Sublette County and the Consortium reserve the right to reject any and all responses to the RFP for any reason.

Summary of RFP Process Deadlines

The following is the schedule for responding to this RFP. The schedule is subject to change.

- **October 5, 2018** – RFP released
- **October 12, 2018** – Deadline for submitting request for RFP questions and answers
- **October 19, 2018** – Deadline for submitting questions
- **October 26, 2018** – Consortium emails RFP questions and answers to respondents that have requested them
- **November 9, 2018** – RFP responses due

The Consortium thanks you in advance for your thoughtful response.

8. Respondent Presentations

At its discretion, the Consortium may request any party that provides a compliant response to this RFP to make an individual and personal presentation to better explain information or solutions identified in the response. These presentations, if requested by the Consortium, shall be held at a time and place of mutual convenience.

Appendix A: Independent Consultant Strategic Broadband Plan

Broadband Assessment and Improvement Strategy

----------For----------

Sublette County,

Big Piney, Marbleton and Pinedale

November 2017

Written by: Joseph Sharkey – Independent Communications Consultant

Joseph E Sharkey

Joe.sharkey22@gmail.com

801-201-2867

Introduction and Executive Summary

In March of 2017, Sublette County and the towns of Big Piney, Marbleton and Pinedale reached agreement with Joseph E Sharkey, and independent Communications Consultant, to develop an assessment of the current Internet Access/Broadband conditions in the County and Towns and to prepare a strategic broadband plan. Sublette County also includes several other communities or "neighborhoods" such as Barger, Cora, Boulder, Jim Bridger Estates, Hoback Ranches, Boulder and etc. Several individuals from the County and the towns have gotten involved as the "Working Group" to coordinate and support the consultant in his investigation of the current broadband environment and to develop ways to improve or upgrade services in the County and Towns

The members of the Working Group understand the importance of having substantially improved broadband services to manage their respective businesses and homes, and realize that access to high capacity broadband is a primary way to encourage economic development in the area. Throughout the Country over the last 10 years most communities that have improved broadband services have seen the remarkable economic impact from having substantially improved broadband infrastructure. These communities have fostered an environment of innovation, economic development and growth, collaboration, and creative activities. Today and for years into the future advanced broadband capacity and services is and will be a priority for businesses, entrepreneurs and work from home employees. In Wyoming alone communities like Cheyenne and Laramie that have fostered high speed broadband development & networks have substantially benefited by having attracted businesses and industries in areas such as manufacturing and technology to locate to their communities (Tungsten Heavy Metals & Powder, UL Labs, Microsoft Data Center, Walmart & etc.)

The consensus of the Working Group is to develop a strategy and plans that over the next few years will provide a path for Sublette County and the Towns to transition from a substantially under-served internet environment to a multi-vendor, redundant and affordable Internet service environment for citizens, existing businesses, new businesses and the growing tourist industry.

High Speed and improved broadband services provide many positive benefits. Having highly reliable, redundant high speed and high capacity Internet is no longer extravagant. It is becoming the next utility, like water, gas, sewage and electricity. Having access to abundant broadband is critical if you don't want to be left behind or totally out of any possible growth. Bandwidth for business and employees is now one of the top priorities for selecting a community in which to locate or re-locate a business. Indeed high speed, redundant/diverse broadband in a community is mandatory for:

- attracting new businesses and jobs
- transforming fallow communities into economically stable communities
- fostering an entrepreneurial and work from home environment
- access to educational opportunities and online learning applications,
- affordable healthcare,
- public safety and emergency management services -
- access to e-government services,

High Speed broadband and internet services have caused substantial changes in local, state, national and global societies, as well as markets, business and institutions around the world. Therefore, it will be imperative to have this infrastructure available to all citizens. To this end several Federal government agencies have

created programs including grants and low interest loans in order to foster the build out of High Speed internet into rural and extreme high cost rural areas.

We are aware of funds from the FCC and RUS/USDA that are earmarked for rural areas like Wyoming. However after months working with the FCC and USDA and of driving and assessing Sublette County for this project I have developed the following "facts":

- Based on the most current FCC Census Block data the FCC has approximately $2.9 million dollars a year for 10 years for Sublette County alone.
- USDA could (key word COULD) have up to a $3 million dollar 1 time grant to build fiber to an underserved/non served rural area in Sublette County
- The only way to quickly (2 to 3 years) improve internet access service (speed & capacity to internet hub locations) throughout the whole County will be to deploy multiple technologies and multiple service provider types (fiber backbone, wireless multi-point to point, WiFi, Cellular and Fiber to the Premise (FTTP)).
- New backbone or "Core" fiber routes will need to be built in order to provide access to the long haul internet hub locations
- Even with the combined grants from FCC and USDA the county is too geographically large with too few living locations for the funding to cover the construction of and operations of a whole new infrastructure in Sublette County.
- Additional State, County and Town funding will be required to attract a competent and certified service provider(s) to the county willing to accept the long term FCC and/or USDA financial and operational requirements of building and providing the requisite services.

In simple terms the above points indicate that Sublette will most likely not be able to attracted an existing State Of Wyoming certified ETC (Eligible Telecommunications Carrier) to come into the area, bid on FCC funds and then develop and build the requisite infrastructure unless CapEx cost reduction or sharing can be planned and executed.

There are many options and strategies that could be undertaken for improving broadband services throughout the County. There is no single "perfect" option.

We were recently made aware of another consulting firm's broadband assessment and strategy for Moffett County, Colorado. In that document the consulting firm had the following statement.

"There are a number of options and strategies for improving broadband services throughout region. Some of these options may be considered in the short-term and others may best be part of a longer-term plan. For example, in the short-term, the Committee and its members may decide to collaborate with the service providers and regional partners to share in the costs of leased Internet transport, backhaul and access costs and install a wireless middle mile connecting various towers in the County. In the long-term, a strategy to construct fiber facilities between the communities may be implemented. Another short-term strategy may be to implement broadband policies and ordinances and to build to anchor institutions, while the long-term strategy of implementing a fiber to the premise network for last mile connectivity may be further developed. This plan will provide a road map of both short-term and longer-term strategies for consideration."

At first pass one could look at this statement and think its approach might be the right approach for Sublette too. But there are a few points that will not work well for Sublette County and the Towns.

- USDA Notice of Funds Availability will be out by year end 2017 or early 2018 with only 90 days for placing bids. Bidders need to know there will be additional support to justify building throughout the County.
- FCC CAF II Auction funding is coming up early 2018. Before that happens Sublette needs to secure a relationship with at least one certified service provider/Eligible Telecom Carrier (ETC) who will agree to bid on the FCC CAF II Auction Funding. That/those service provider(s) need to know, before bidding, that they will have access to plentiful & reasonable cost internet services over backbone and even some middle mile fiber. If no one bids for FCC CAF II Auction funds the County will not have a strategic plan that pushes high speed internet beyond the town boundaries into the more remote areas.
- The suggestion that temporary networks (microwave/wireless) could be built to provide a short term solution for the backhaul and middle mile just means additional infrastructure investment that will, eventually, not provide the significant bandwidth needed to meet 5 or 10 year projections, will have weather dependent reliability, will be money lost in a few years – or will never get replaced by the ultimate solution - unlimited bandwidth fiber.
- Deploying microwave and wireless technologies, *for the short term,* will mean more towers in or near the towns which would then "shoot" into the remote areas to provide access to internet.
- Not providing backbone and middle mile fiber will most likely mean a continuation of the current hodge podge deployment of wireless in the denser population areas only
- Developing a backbone/Core and middle mile fiber network will mean cost recovery starts in the near future not years from now – if ever.
- Building Fiber To The Premise (FTTP) in several of the denser communities <u>now</u> means that service provider(s) will be able to pick up a significant numbers of new customers in the first year or two further guaranteeing financial reliability and longevity.
- Fiber To The Premise (FTTP) in several of the denser Communities <u>now</u> will primarily improve service availability to most businesses in the county not just anchor institutions, open new business opportunities and be eligible for potential Business Ready Grant(s) from the Wyoming Business Council.
- Getting a plan approved and in progress now will mean little or no revisiting the plan every year or so in the County Commission or the Town Councils with new Commission or Council members in the future not familiar with the original plans.

Section 1. Current Broadband Assessment

Speed Test Results

Sublette County Speed Test Results between April 20 and June 23 2017						
Sites / Participants	47	46 sites with 1 site = Residence and Business				
	35	Residence				
	12	Businesses				
	147	Tests				
	23	May 17 - about 5:30 pm				
Community	Sites	Download		Upload		Tests
		High	Low	High	Low	
Big Piney Resi	1	0.8		0.17		1
Boulder all resi	11	10.25	2.06	1.92	0.37	15
Cora all resi	2	1.52	0.83	0.83	0.19	12
Hoback Ranches CL	4	1.77	0.48	0.25	0.18	12
Hoback Ranches Hughes	1	47.21	10.71	2.35	2.3	2
Marbleton Resi	4	1.47	1.42	0.77	0.46	12
Marbleton Business	3	9.89	9	1.47	0.9	5
Pinedale Resi	12	10.79	0.66	0.81	0.25	50
Pinedale Buseinss	8	47.09	9.75	12.5	0.98	32
Barger	1	6.03	5.81	0.42	0.3	6
Totals	47					147
Contract agreements may effect speed						
General anticipated speeds with CL		10	8	1	0.7	

In general the above indicates that the towns have marginal speed available while the more outlying areas have speeds well below the FCC minimum speeds of 10Mbps download & 1Mbps upload.

Current FCC targets are for US Citizens to have access to 25Mbps in the next few years with a 5 to 10 year target of 100Mbps download with 20 to 25Mbps upload speeds.

Currently many communities around America as well as a few in Wyoming are now wired or being wired for 1Gigabit down and up speeds. Just over the mountain the Star Valley has several communities with Gig internet. Recently Lander announced capability for Gig internet.

Google is in the process of building several Gig Cities now known as Google Cities.

Existing Service Providers & Pricing

In general the current internet access cost from the incumbent is at the high end of the cost comparison when you consider that a landline phone line is normally required to receive the DSL based internet service delivery.

A few of the competing internet service providers have better costs for the service but mostly this service is only available in the denser population areas like Pinedale, Marbleton and Big Piney where the incumbent is currently delivering only 10Mbps download speed.

Below is a cost comparison table for areas near Sublette County.

Broadband Costs Comparison - Sublette County to Nearby Communities									
Residential Service Cost Comparison not including taxes									
Location	Provider	incumbent/ competitor	10 down 768K-1 up	25 down-3 up	Landline required ?	If yes - cost/M	Other cost/Mo	Total/MO	Note
Sublette	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Sublette	NGL	Competitor	$ 64.95					$ 64.95	
Sublette	NGL	Competitor		$ 88.95					
Sublette	LR Computers	Competitor	$ 45.00					$ 45.00	
Sublette	LR Computers	Competitor		$ 89.00				$ 89.00	
Sublette	Wyoming.com	Competitor	$ 44.95	15Mbps				$ 44.95	
Sublette	Wyoming.com	Competitor						$ -	
Sublette	Visionary	10 down 5 up	$ 54.99		10 down 5 up			$ 54.99	
Sublette	Visionary	50 down 5 up		$ 59.99	50 down 5 up			$ 59.99	Says Yes
Sublette	HughesNet	Satellite	$ 85.00		50 down 3 up			$ 85.00	
Sublette	HughesNet	Satellite		$ 175.00	50 down 3 up			$ 175.00	
Thane	Silver Star	incumbent	$ 48.95					$ 48.95	
Thane		Competitor						$ -	
Afton	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Afton	Silver Star	Competitor	$ 48.95					$ 48.95	
Jackson	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Jackson	Silver Star	Competitor	$ 48.95					$ 48.95	
Evanston	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Evanston	NGL	Competitor	$ 44.95					$ 44.95	
Rock Springs	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Rock Springs	LR Computers	Competitor	$ 45.00					$ 45.00	
Cody	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Cody								$ -	
Dubois	Dubois Tel	incumbent						$ -	
Dubois								$ -	
Gillette	CenturyLink	incumbent	$ 65.95				$ 6.98	$ 72.93	AD = $45
Gillette								$ -	
Garden City UT	CentraCom	incumbent	$ 65.90		Yes	$ 27.77		$ 93.67	+ tax
Garden City UT	None							$ -	

Current Underlying Infrastructure / Key Infrastruture

Basically there is only one service provider with any major infrastructure in Sublette County. CenturyLink is currently the only service provider with fiber in Sublette County. Their fiber was built in sections over the previous 15 to 20 plus years including some sections built by Earle, Craig and Jo Crandall as Wyoming Telephone Company. Initially one section was built from Hoback Junction to the Pinedale area – our information indicates this is a 12 fiber run with at least 8 of those fibers in use. Later another leg was built from Daniel Junction to Marbleton then Big Piney. At some point fiber was extended from Pinedale south along US 191 to Boulder and then to the intersection of 351. In 2014 or 2015 a new fiber was run from 191 & 351 all the way to Rock Springs so CenturyLink could bid on the State Unified Network.

Generally CenturyLink will provide internet and broadband services to other/competitive carriers using Managed Services – in other words – services that are managed and controlled by CenturyLink and at individually negotiated prices under what is known as ICB Individual Case Based agreements. Generally other carriers in this area feel that the CenturyLink costs and restrictions do not provide a competitive product. This is why Union Wireless, Verizon, AT&T and other service providers will erect and operate standalone microwave networks – in an attempt to keep costs down by bypassing CenturyLink where possible.

In the general telecom industry many companies that have built long-haul and middle-mile fiber networks will lease or rent unlit fiber to other carriers which allows those other carriers to install and operate optical network systems on the fibers within the fiber owner's system. It should also be noted that fairly often some fiber owners do not agree to provide unlit fiber to others as a means of limiting competition in specific routes.

Today this leaves Sublette, and its towns, in the position of not having any other fiber option to reach the national broadband hub locations. During our interviews with 4 or 5 potential competitive providers looking to apply for the FCC CAF II Auction funding we were told that one primary concern they all had was the high cost of getting bandwidth sufficient to meet the requirements of the grants at an economical rate from CenturyLink.

Also our concern with the network today is that it is single thread. One cable cut can potentially knock out all telephone, internet, WiFi, several of the Cell Service sites and even some of the County Safety network. On Wednesday October 25th (2017) while I was in Pinedale for a broadband working group meeting we experienced a communication outage on the county system, Verizon (voice & text) LR, NGL, Sprint and any other new service provider(s). There was yet another outage the week of November 20th 2017.

The current CenturyLink network, now extended to Rock Springs, could have been configured to have redundancy or at least automatic route/fault restoration but it apparently is not set up that way. In order to attract new high tech businesses to the area Sublette will need to have more than one fiber backbone network allowing critical services and service providers a back-up or diverse route.

Access to "the internet" or Broadband requires backhauling traffic to/from hub locations such as Denver, Salt Lake City, Billings and Boise. Just like business services internet access should have diverse/back-up routes in order to have high reliability. Today this is lacking in Sublette County.

More and more services are now reliant on internet access! Smart TVs are driving viewing of programs, movies and serial shows (like Game of Thrones, Stranger Things, Ozarks) onto the internet away from broadcast or satellite. Virtually every channel now, including local stations are pushing viewers to "download the App" to watch their content - which increases demand on available broadband. Experts are indicating that about 50% or all content will be viewed over internet (not cable, broadcast or satellite) in the next 5 years. Assuming this

to be realistic then available broadband will need to increase in Sublette 5 to 10 times the current capacity and provided on more reliable and resilient networks.

The technologies, used by CenturyLink in Sublette, today to deliver broadband are a combination of older telephone line based services using DSL, T1 and DS3, and some high speed business services like 10, 20 and 50Mbps designed and delivered generally in the denser populated areas of the County.

Competitive Service providers like NGL, LR, and Wyoming.com used unlicensed Multi-Point to Point wireless radio to deliver service while Visionary uses licensed Multi-Point to Point wireless radio. These systems use a locally based radio tower to broadcast a signal to proprietary antennas located at the homes of businesses that are being served. These systems can generally serve a radius of about 8 to 12 miles from the antenna with 10, 25 to 50 Mbps depending upon the distance. These systems require line of sight between the tower and the premise based antenna but hills, buildings and dense foliage can affect or kill the signal. To serve more distant locations the service provider(s) would need to put up additional microwave towers to reach out to a local wireless antenna – or, if it were available, use fiber to reach a wireless antenna site. Generally the mentioned service providers are installing systems in the denser population areas while the more remote living locations are generally not yet being serviced.

DSL technology has been around for about 20 years and there have been several "upgrades" to DSL over the years which would increase the delivered bandwidth of the systems. However the majority of the DSL installed in Sublette by CenturyLink is the older technology and has speed and distance limitations. 10 - 12Mbps download and distance of up to about 1&1/4 mile of actual copper wire distance is the reach of DSL depending upon the age, size, repairs & splices in the old copper wire cables. In some cases for very close to the cabinet locations a speed over 10 or 12Mbps might be possible but our 150 speed tests do not reflect anything above 9.9Mbps in Pinedale.

Regardless of the technology or the service provider there are two other conditions that can limit the overall speed available to the home/premise.

1) The available bandwidth between the local DSL cabinet or Wireless Tower and the central "switching" location in town. Not too long ago many of the DSL cabinets only had about 6Mbps available between the cabinet and the central office – so no matter how close a location was to the cabinet they would never have better than 6Mbps if they were the only user on at a given time. Over time many of the DSL cabinets were upgraded to 20 to 50Mbps but with 25 to 100 users in a cabinet that still substantially restricts speed when several users are on simultaneously. The Wireless service providers also have a similar issue – limited bandwidth between the tower and their aggregation location. Some sites are feed by private microwave and may have much higher bandwidth available between the tower and the aggregation location.
2) The bigger issue, especially during high usage time periods like after school or about 6pm, is limited bandwidth between the provider's Sublette facilities and the outside world of the internet. It may be possible that for years the total bandwidth available for internet access from all of Sublette for one carrier with hundreds of customers was only 55Mbps. This would mean that if only one (1) hundred users were using the internet simultaneously they could possible only be able to download at .55Mbps (that's point 55 – about ½ of a Mbps). We understand this has been recently increased to 10Gbps (10 Gig) which would accommodate about 900 users at 10Mbps. Competitive providers today are all offering good speeds in Pinedale, Marbleton and Big Piney but as customer bases grow they too will have backhaul issues unless they upsize the circuits they currently have in service. According to these service providers the costs to upgrade are substantial and they may look to build microwave networks

to reach out of Sublette (and Lincoln) to access more cost effective internet connectivity. In other words – they don't believe they can financially thrive under the present cost to do business environment. CenturyLink, in much of Wyoming, has infrastructure, albeit old & limited in many areas, to link fiber back to internet hubs. CenturyLink to date has not allowed other service providers or government entities to connect directly into their fiber as is common with utilities in a new housing development like power and water. Even if CenturyLink did allow leases of their fiber we understand the old fiber routes in Sublette have very limited excess fiber (if any) and since they are the only company that has fiber in the County the lack of competition for backhaul keeps the monthly operating cost very high compared to areas with multiple backhaul providers.

These high monthly backhaul charges and capital costs to connect to Internet hubs are difficult to justify financially since most rural areas do not have the population to support an adequate return on investment for any provider to upgrade their networks. Interestingly this also applies to CenturyLink as their customer base continues to decline with the on-going shift of landlines to the ubiquitous use of mobile phones and devices.

We discussed this issue with other service providers including a few not in Sublette County and found that all thought the only way they could even think about trying to provide County wide internet and voice services would require having connectivity between the towns and the smaller communities as well as alternative and redundant or diverse (from CenturyLink's current network) fiber backhaul options to get to two (2) or more internet hub locations at better costs then are currently offered.

Middle Mile, Core and Last Mile – what are they?

Backhaul or Long-haul is how we get out of our area across the country or for our purposes to internet hub locations. Middle Mile or Core for Sublette is how we connect the towns and population communities in order to get to the service and aggregation location(s) within the County which then access the long-haul.
Since there is so little fiber between the towns and communities building fiber between the communities will improve the cost of getting to the local aggregation point(s) to then connect to long-haul and transport for the existing service providers and provide more bandwidth capability to the communities. This, however, will not resolve the connectivity problem between the Middle Mile/Core network and homes/premises that are prevalent within the County. "Last mile" is the connectivity medium required to extend the last "mile" from the middle mile or core to home and business locations.
Today the entire CenturyLink network in the County is based on copper wire technologies. In denser populated areas DSL uses final mile copper to deliver service to customer locations. In the more remote areas of the County we may find remote switching cabinets or Digital Line Carrier equipment that then uses final mile copper to deliver service to customer locations. Indeed in some extreme remote areas of the County where old line powered amplifiers are still in use dial up is still in use. In these areas many residents use satellite based internet and cellular (if available) for telephone service.

The "google cities" or gigabit standard for solving last mile connectivity is building fiber to every home and business. Known as "Fiber to the Home," or "Fiber to the Premise," This design is currently the proven dependable way of delivering Gigabit broadband services to end users. There have been dramatic improvements in wireless technologies and although we are now seeing the ability for wireless to support 50Mbps and 100Mbps speeds, the wireless access points need to be fed with fiber in order to provide multiple customers with these speeds. A few wireless systems can offer Gig speed but you have to be within 500 feet of the premise(s) –so then it is probably cheaper to install fiber to the premise rather than installing a tower (which itself would need a fiber feed and continual power) as well as an antenna at the service premise.

In Sublette County there are locations where the proverbial last mile can be 25 to 30 miles or more from a town, community or middle mile fiber route. Building fiber to every last living or working location is not practical in a County as large as Sublette with so few population. We will look to combine short lateral fiber builds to locations with smaller local towers to provide multi-point to point wireless internet service to many of the more rural resident.

What is the Big Deal about Improving Broadband in Sublette County?

You can't buy a cell phone, computer, tablet, car or even many appliances anymore without those devices requiring access to the internet. It's in the cloud! Where is the "Cloud"?? it is in New York, Seattle, LA, Denver, Salt Lake City, Boca Raton, Miami – virtually anywhere large data bases can be stored and accessed easily – but it AIN"T in Sublette County.

Our environment has changed completely over just the last 10 years and it will continue to change even more rapidly over the coming 5 to 10 years. Technology has transformed every part of our lives whether we acknowledge it or not – where and how we work even if we survive economically and socially. The Internet has changed the way most of us work and live including how our entertainment is delivered, our culture, the way government services are provided and accessed, the way healthcare is being delivered, and the way we educate our children and our workforce. With the introduction and accelerated advancement of technologies, having access to affordable, redundant and abundant broadband is quickly becoming the most critical infrastructure of our time, just like electricity and transportation were in the early 1900's

Even the Federal Government has acknowledged the importance of broadband based on the recent Federal Communications Commission's (FCC) determination that broadband Internet access is a utility, as necessary to contemporary life as electricity, roads, and water systems. Advanced broadband infrastructure has the potential to create more jobs, increase the community's competitive ability globally, create new technologies, increase opportunities for the region's companies, enhance public safety, provide better and less expensive healthcare, and provide greater educational opportunities throughout our communities.

Advanced broadband networks are creating seismic changes in local, state, national and global societies, as well as markets, business and in institutions around the world. Access to social media and the Internet has shifted governments, threatened political boundaries and changed us culturally. Advanced broadband networks are fundamentally changing our world in ways that were not expected or anticipated. Much like electricity, advanced broadband networks are the enabling technology in which all things are impacted. Electricity was invented to turn on the lights, but empowered – literally, the transformation to an industrial society.

Just as it was impossible to predict the impact that electricity would have to power modern appliances, computers, health monitoring systems, manufacturing facilities, computers, radio and television, and financial markets; so too, is it impossible to predict the impact and reach of advanced broadband networks. We do not yet know the far-reaching impacts that the Internet will have on our lives and on generations to come. However, it is certain that NOT having access to advanced broadband networks would be equivalent to being in the dark without electricity.

Why should the Towns, County and State get involved with fixing the Broadband Situation? What about Cost Recovery? What other services would be improved?

As noted several times in this report – due to the geographic size and the small population base of the County it does not make fiscal sense for a private enterprise telephone or internet access company to attempt to provide high end service throughout the County without substantial support even with the expected "available" FCC CAF II Auction funding. This problem is compounded for CenturyLink by the declining population in the County and the continuing decline in customer base.
In many rural communities local and state governments are struggling with this very same issue. In general people want "the government" to be responsible for all matters that need fixing but when it comes to paying for it few want to bear the extra cost. But much of rural America does not have the wherewithal to take on correcting issues like broadband without impacting the tax payers. In more populated areas with many large businesses it could be expected that some public and private relationship might be the answer but Sublette, other than the Energy Industry, does not have a lot of potential partners.

There are a few public/private partnership options that the working group has discussed which, if planned & committed properly could improve and enhance service delivery throughout Sublette County. These options include working with private sector Telecom Companies that have Wyoming PUC Eligible Telecommunications Carrier (ETC) certification to share in the capital costs, bid on and receive FCC CAF II grant and USDA grants to guarantee use of new assets, build a County wide network that should long term mitigate potential risks.

We are talking about a serious amount of commitment. But we are also talking about engineering, planning and building significant infrastructure that when combined with private sector investments will covert Sublette County from one of the 10 worst in the country to a Gigabit community. And as private sector communication companies enter or expand in the County they will purchase, lease or rent portions of the public financed infrastructure providing significant cost recovery. This infrastructure will have a 30+ year life and could provide recurring revenue throughout its life.

The proposed infrastructure for the "Core" of the network could also provide connectivity for the County Safety Network (Sublette Simulcast System or SCS) with low cost, almost limitless bandwidth and very high reliability for the entire life of the fiber network.

Sublette County, Wyoming – Broadband Proposal

Any plan to substantially improve overall services within Sublette County will require that the County have significant infrastructure (conduit, fiber cable, access points and connectivity to CenturyLink's network as well as at least one or two other carriers that will provide access to long-haul networks such as those along I-80 to several major hub locations like Denver, Omaha, Chicago & Salt Lake City or going north toward Jackson through western Wyoming and Idaho to multiple major hub locations like Boise, Seattle and Salt Lake City.

The Core design we are recommending would be built along Us 189 from LaBarge to Daniel Junction. This would meet Union Wireless in LaBarge after they finish their planned build from Rock Springs via I-80 to Little America to Granger then via Opal to LaBarge.

At Daniel Junction this build would be bifurcated and would:

- extend north along US 189/191 to Bondurant and then onto the County Line where a carrier such as SilverStar could extend fiber to Hoback Junction where connectivity to could be completed with several regional and national carriers including SilverStars own regional network. This would allow diverse and/or redundant access to major internet and telephone service hub locations.
- extend south along US 191 into Pinedale where a county wide aggregation and control point would be built.

From Pinedale the network would be extended south along US 191 past the airport, Barger, Boulder and then to the Sand Draw area near the junction of 191 and 351.

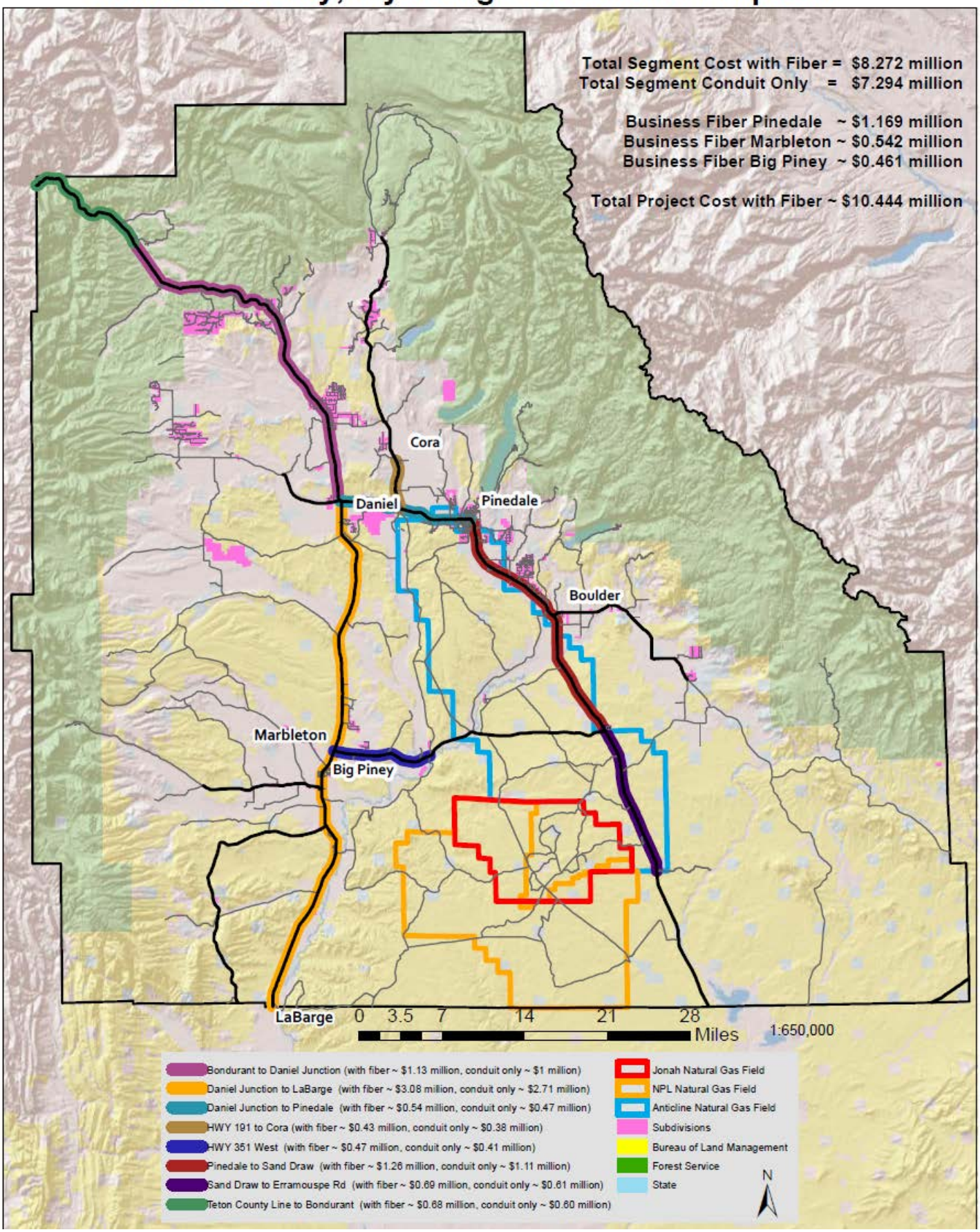
The route would also be extended further south on US 191 to the Erramouspe Road area to allow extending services via multi-point to point wireless to nearby remote living locations and cable to an existing communication tower location near this point. From this point it could be expected that Union would then complete a ring route back to Rock Springs sometime in the next few years.

There would also be a route built from US 189 along 351 to about CR 110 to allow extending services via multi-point to point wireless to nearby remote living locations and fiber cable to Ross Butte an existing communication tower location near this point.

All of these route segments have high potential for cost recovery from several service providers including 3 or more cell service providers. These routes could also be used to connect all County wide safety systems (Sublette Simulcast System or SCS).

These routes and estimated costs are outlined in the map on the following page.

Sublette County, Wyoming - Broadband Proposal



Fiber to the Premise (FTTP) for the Towns

Initially the working group is looking at building business/commercial only (but including some Residential Locations) FTTP in each of the towns. These builds would have the best potential for receiving Business Ready Grants from the Wyoming Business Council. These builds would make the business communities of each of the towns gigabit ready (actually 10Gigabit possible) on par with the best cities in our country – as well as with Google Cities. Estimated costs are:

Pinedale – $ 1,169,000

Mableton - $ 542,000

Big Piney - $ 461,000

The above cost estimates include a hut build by the same firm that manufactured the Google City Huts which include optical fiber termination panels, DC power systems, Battery Back-up (4 to 8 Hrs.), dual heat & AC systems and environmental alarm systems. The Hut included in the Pinedale configuration would be large enough to be the central aggregation point for the entire County.

Additional Infrastructure Builds to be considered

In addition to the Core network infrastructure, delineated above for Sublette County, there are some additional builds that should also be considered. Some of these are upgrades to the FTTP towns to cover all residential and Business locations, a few are what we call laterals which would be considered Sublette Middle Mile builds, another is completing a ring in the Core network (351 from 110 to US 191) which would provide redundancy and automatic self-healing if a fiber gets cut in the county and lastly - several are for extending fiber to existing or new tower locations for the county safety network (Sublette Simulcast System or SCS) and for cost recovery access to tower locations on Mountain Sites allowing Wireless coverage for the more remote areas by several service providers.

One of the most compelling reasons for completing all the Core, Middle Mile and FTTH/FTTP build is that the County would then own and operate all of the primary infrastructure in the County that would allow any service provider as well as the Sublette Simulcast System or SCS network to be controlled by the County which would assure carrier neutral access and reasonably pricing to the infrastructure for many years to come.

FTTH/FTTP

In the preceding we recommended building Fiber To The Premise in the business and commercial areas only of each of the towns. This makes sense because it could be relatively low cost to the County and Towns because there may be Wyoming Business Council Community Ready Grants available to cover 80% to 90% of the costs for these areas.

I believe the towns should be fully built out, to the majority of homes (living locations) at the same time as the business/commercial zones. Engineering for both Residential and Commercial would need to be done initially and the close in fiber placement would need to include the residential areas in order to minimize changes and/or damage to the commercial only infrastructure later on if the network is expanded in a few years.

Also to be considered is - that business/commercial is only about 15% to 20% of the total locations to be built but will cost from 52% to 58% of the total costs. But there would be over 1,500 residential locations that would be able to offer overnight service upgrades to 100Mbps or 1Gbps by new service provider(s). This would rapidly increasing cost recovery for the County. If only 40% of the 1,500 residential locations in the towns took the service it would result in an additional $6,000 to $9,000 per month in cost recovery for the non-grant expenditure.

The costs to finish total build out of FTTH for the Towns would be:

Pinedale – $ 711,557

Mableton - $ 461,540

Big Piney - $ 196,560

All Three - $ 1,369,655

New Build of FTTH for:

Barger - $ 567,000

Hoback Ranches - $ 622,000 (could be alternate path to Bondurant and reduce cost by about $400,000)

Conduit and Fiber Builds to Peaks for Sublette Simulcast System and Wireless Internet Service Providers

Fiber Construction to Peaks for Wireless and Fire/Sheriff			
	Miles	**Avg $$ / MIle**	**Estimated Cost**
189/191 to Kismet Communications Peak	1.6	$ 45,000.00	$ 72,000.00
189/191 to Aspen Peak	2.8	$ 45,000.00	$ 126,000.00
Pinedale to Skyline	3.8	$ 75,000.00	$ 285,000.00
Skyline to White Pine	7.3	$ 45,000.00	$ 328,500.00
189/235 Calpet Road to Hogsback	14.7	$ 45,000.00	$ 661,500.00
191 to Cora Peak	4.2	$ 48,333.00	$ 202,998.60
191 to Mt Airy	2	$ 55,000.00	$ 110,000.00
191 to Stuart Point- part of Airy	6.05	$ 45,000.00	$ 272,250.00
352 to Ross Butte by CR 110	2.8	$ 45,000.00	$ 126,000.00
191 at Erramouspe RD to Enterprise /Signal Hill	2.8	$ 45,000.00	$ 126,000.00
			$ 2,310,248.60

Why build conduit and fiber to Peaks for Wireless and Fire/Sheriff System Sublette Simulcast System.

- One primary consideration would be for the County to maintain control of the Core network as well as all lateral fiber routes to Mountain Peaks for the Sublette Simulcast System and for all wireless tower locations
- Cost recovery of the lateral routes – which also generates higher demand (revenue) on the Core network
- Control of what gets built on the Mountain Peaks

Build Extended Fiber route to create Sublette Core Ring along Paradise Road

US189/351 to Paradise Road – 351 & Paradise to US 191 near Boulder – with Fiber $1,228,500

This includes the cost previously shown from US 189 & 351 to 351 & 110 of $382,500

Building this route would allow the installation of optical network equipment that would create a network Ring in the County's Core network. This would mean a backup path matched with network routers architecture capable of automated self-healing in case of fiber cuts anywhere in the County's Ring.

This would mean no outage due to conduit or cable cuts anywhere within the County's Ring.

Build Extended Fiber routes (laterals) to include the Pinedale Energy area(s)

In the current environment the energy industry in Sublette is working with much the same limited broadband access as is the case in all the remote areas of the County.

Energy companies and sites, such as:

- Jonah Natural Gas Field,
- NPL Natural Gas Field,
- Pinedale Anticline Natural Gas Field or Pinedale Anticline Project Area (PAPA) and
- yet to be developed field(s)

The energy companies or the operators are all working to comply with more stringent requirements for near instantaneous monitoring, managing, controlling and reporting at the State and Federal levels.

These entities need high speed broadband access to comply with these requirements but more importantly to operate more efficiently in order to assure they will remain in operations in the County for a long time. The current use of Supervisory Control and Data Acquisition (SCADA) systems to monitor and control processes, pumps, compressors, pressure, valves and storage facilities is somewhat hampered by the limited bandwidth in the field and in backhaul/long-haul which often means slow response times or long file load times.

Consultant recommended Broadband Friendly Policies

- Consultant recommends putting in place broadband friendly policies and ordinances to encourage further broadband infrastructure deployment which will increase the recovery of capital costs of fiber builds. This will substantially reduce the initial capital costs of constructing new broadband networks by service providers while increasing the recovery of the county's costs.
- Consultant recommends putting in place policies in the County and Towns which would coordinate public and private projects (sidewalks, bike paths, trails, lighting, road & highway, energy pipelines, housing & commercial property developments) and other utility projects – would all be opportunities to install conduit at about 20% of normal costs.
- Consultant recommends a Streamlined & Coordinated Permitting Process (if not in place today) – placing responsibility for approval of broadband infrastructure projects solely in the public works department via encroachment permit processes.
- Consultant recommends An Abandoned pipeline or Conduit Policy - which can be put in place if so any abandoned pipeline or conduit infrastructure that has not be utilized or claimed by the owner within a reasonable time period, the ownership of that infrastructure would revert to the local government agency.
- Consultant recommends setting up a funding mechanism to allow for the placement of conduit when any open trench or directional boring project is permitted for any public or private project that could provide opportunities to take advantage of open trenches or joint builds. This type of funding mechanism could allocate monies to build broadband infrastructure when projects arise.

Consultant recommended Project Realization Next Steps

Although getting to this point has been several months with significant time and effort have been put into understanding the overall costs and effort to build infrastructure that will move Sublette County and the Towns into a substantially improved broadband environment – the actual implementation work is now just about to begin.

- Work with Wyoming Eligible Telecommunication Carriers (ETCs) and other service providers to establish potential partners and infrastructure users.
- Find ETCs that will apply for FCC CAF II Auction funding for Sublette County Wyoming
- Continue to communicate with FCC to understand auction timelines
- Continue to communicate with FCC to understand timing and procedures for extreme cost funding areas (census blocks)
- Find ETCs that will research and apply for any RUS/USDA grants for the Sublette County area
- Research USDA Telecom and Broadband Loan Programs to Furnish and Improve service in Rural areas
  - 5 year rate – 0.7%
  - 20 to 23 year rate – 2.5%
- Research E-rate Grant programs – determine if and how they apply to Sublette
  - The FCC's E-rate program makes telecommunications and information services more affordable for schools and libraries. With funding from the Universal Service Fund, E-rate provides discounts for telecommunications, Internet access and internal connections to eligible schools and libraries.
- Research USAC grant programs for Telemedicine Distance Learning & Rural Health Care grants specifically focused on rural areas.
- Continue to work with the Wyoming State Economic Diversification agency (ENDOW) to find any available financial support
- Continue to work with the Wyoming Business Council relative to securing Community Ready/Business Ready funding for:
  - FTTP/FTTH Pinedale
  - FTTP/FTTH Marbleton
  - FTTP/FTTH Big Piney
  - Core Fiber Network along Business areas of US 189, US 191 and US 189 & 191 north of Daniel Junction
- Work with major commercial companies and property managers to acquire “partners” for extending broadband access in specific areas of the County
    - Johan – NPL – Anticline – HOAs and developers
- Work on Legislative Bill to secure Fiber or Broadband funding allocation in the next legislature for the purpose of building Fiber in the State & specifically in Sublette.
- Start the preliminary planning and discussions with Rocky Mountain Power (RMP) – (Ron Wild) for pole attachment agreement(s) for the FTTP/FTTH areas
- Start preliminary planning and discussions with Town, County, State and Federal agencies to gain support and find issue early:
  - WYDOT – including current highway widening project on US 189 between Marbleton and Daniel
  - BLM –
  - US Forest Service – address their needs as well as gain support for build into their domains
  - Wyoming Unified Network (office of the Wyoming State CIO) for potential inclusion with a carrier in the next round of network contracts

- Sublette County Public Works for accelerated permitting process and coordination with any other private or public projects that might allow placing conduit &/or fiber into other plans
- National Oceanic & Atmospheric Administration (NOAA) – if weather stations are located in Sublette
  - Director National Geodetic Survey, Department of Commerce

- Select or hire a "local" construction project manager that will manage all construction contractors and material handling for the build phase of the plan. This could save 10% to 15% of the costs to build compared to selecting a 3rd party like a communication company (with 20% or more mark-up) to build the infrastructure
- Start working with local construction companies using current high level build design to get estimates

- Develop 2 step RFI then RFP process and documents for network Build
- Develop 2 step RFI then RFP process and documents for network operations after build is completed

- Develop user agreements for Fiber and/or Conduit for:
  - FTTP/FTTH areas
  - Long Term fiber or conduit leases (20 years +) called an Indefeasible Right of Use (IRU)
  - Leases of fiber or conduit for 2 year to 15 years
  - Rental of fiber short term
  - Hut use & power in the hut
- Develop carrier neutral costs for:
  - FTTP/FTTH areas
  - Long Term fiber or conduit leases (20 years +) called an Indefeasible Right of Use (IRU)
  - Leases of fiber or conduit for 2 year to 15 years
  - Rental of fiber short term
  - Hut use & power in the hut