



**Broadband Feasibility Assessment, Market Analysis
and Demand Aggregation Findings
and Recommendations**

Prepared for



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Executive Summary

Introduction

The Scope of Services agreed upon by NoaNet and Wahkiakum PUD in April 2018 have been completed by NoaNet and the resulting findings are presented in this document. These services were designed to assist the PUD to evaluate end-to-end Broadband and Telecommunications to support network development, business planning, and prepare Wahkiakum PUD to be able to make informed decisions to determine next steps for potential telecommunications infrastructure deployment.

Purpose

With the conclusions outlined in this document, the Wahkiakum PUD will understand the current market conditions in their defined jurisdictional area, public feedback collected, cost estimates for network construction, potential business case thresholds, and various broadband study conclusions. These findings will provide the data to support future funding applications.

Scope

The scope of services for this feasibility assessment to support network development, business planning, and prepare Wahkiakum PUD to be able to make informed decisions to determine next steps for potential telecommunications infrastructure deployment.

Summary

It was found that residents in Wahkiakum County have significant concerns about their access to high-speed Internet services. They are largely dissatisfied with the speed and reliability of the Internet services that are currently available to them. Reported satisfaction levels coupled with our market research suggest that incumbent providers are not meeting the needs of this market adequately. Low population density and difficult terrain are significant barriers to access as network deployment would be costly and a private company would not make the required return on investment to make investment feasible.

Public investment into open-access telecommunications infrastructure would allow for a public-private partnership to overcome these barriers. We recommend that the PUD seek grant/loan programs to allow them to deploy this infrastructure throughout Wahkiakum County to connect residents and businesses to the many economic and social benefits that reliable high-speed broadband infrastructure make possible. Private ISPs would be able to reach end users with the needed services by removing the barrier

of costly infrastructure investment. Open-access infrastructure would introduce competition onto the market to allow for the highest quality services and lowest prices for the end users to be guaranteed by the open market.

In the following document you will find the data to support these findings, as well as information required by the CERB broadband planning program which funded this market study.

Community Support

The Broadband Action Committee

A Broadband Action Committee (BAC) was created in June of 2018 consisting of Wahkiakum County broadband stakeholders to address the area's lack of quality high-speed broadband available in our area.

Members of the Broadband Action Committee are noted in Appendix A of this document.

Numerous BAC meetings were held over the course of 2018 and 2019. At the time of this report the committee met formally 7 times. Agendas and attendee lists as they were available are included as Appendix B of this document.

BAC meeting dates are as follows:

June 25th, 2018, 6pm— First Meeting of BAC. Guest Speaker Claire Ward from
NoaNet

July 23rd, 2018, 6pm

August 27th, 2018, 6pm— Guest Speaker Paul Avis from Kitsap PUD

October 29th, 2018, 6pm— Open Discussion: Experiences and Expectations
Regarding Broadband

November 26th, 2018, 6pm— Presentation from Mary Beth Henderson,
Broadband Digital Equity Advocate

April 29th, 2019, 6pm—Presentation from NoaNet about plans for survey

June 24th, 2019, 6pm—Presentation from NoaNet about Survey findings

Several area Internet Service Providers attended one or more of the BAC meetings:

1. Wahkiakum West Telephone Company
2. Smokey Waters
3. Century Link NW
4. Skamokawa Internet Services

Questionnaires from BAC attendees are attached as Appendix C of this document.

Project Focus

Broadband Needs and Goals

The Project Focus for the Wahkiakum PUD Broadband Planning Study was to determine the current levels of service available and utilized, the satisfaction with those services, determine the needs of the community, how those needs can be met, and the financial feasibility of providing desired services.

The FCC has defined broadband as minimum 25mbps download and 3mbps upload speeds. According to the survey results from Wahkiakum PUDs demand aggregation survey, many in Wahkiakum County are still experiencing difficulty accessing Internet services due to outdated infrastructure that cannot provide the minimum bandwidth necessary. The Wahkiakum community has the goal for every household and business to meet and exceed the 25/3 FCC defined broadband threshold to experience the economic and social benefits of broadband access today and into the future. The Broadband Action Team has set the goal of 100/100 Internet service to every premise in the county.

Existing Broadband Infrastructure Assets

There is a very small area (appx. 1 square mile) of Eastern Wahkiakum County in Cathlamet with a consolidated business population. This area is served by Wave Broadband with advertised high-speed services. Additionally, Wahkiakum West, a local ISP, is serving the West end of the county with high-speed Internet services and two fixed wireless providers serve about 100 residents and businesses. Outside of these areas, which is the majority of Wahkiakum County, the populations are experiencing crippling slow Internet services and frequent service interruption due to outdated and inadequate telecommunications infrastructure.

Gap Analysis

The only areas of Wahkiakum County that appears to be adequately served is the downtown district of Cathlamet and the Western edge of the county. The rest of the county is being served with outdated technology that cannot meet today's broadband bandwidth needs. Wahkiakum County needs a complete telecommunications infrastructure update outside of the two previously mentioned areas.

Proposed Network Design

Under RCW 54.16.330 and 340, public utility districts in Washington State are authorized to provide wholesale telecommunications services and infrastructure, but not retail services. This mean that Wahkiakum PUD cannot provide telecommunications services

to end users. The fiber network is “open access” with retail service providers licensing access and transport from the PUD wholesale system. Our charter was to evaluate a FTTP project to every residential and commercial subscriber in the serving territory, and a network designed to provide great value to the county and to maintain financial viability for the PUD. The system proposed by this project delivers high speed broadband capacity at speeds in excess of 100Mb/s symmetrical and can support 1Gb/s services based on customer requirements. Every subscriber will have access to these services through their selected Retail Service Provider (RSP). The RSP will have a physical and logical connection provided to them through the WPUD Passive Optical Network (PON) architecture deployed from this project.

Maps of proposed design are included as Appendix D of this document.

Digital Inclusion

Affordable Internet

Wahkiakum County is a small, rural area. Grant opportunities for building infrastructure will offset the cost to build infrastructure for service providers as well as the end users.

Affordable Equipment

The PUD is hopeful that grant funds and/or loans will afford the opportunity to provide broadband equipment at each home in each Wahkiakum County.

Digital Literacy Training

Wahkiakum PUD understands that access is only one piece of the puzzle for seeing the widespread benefits of Internet access for our community. The population must have the knowledge of how to leverage the Internet to maximize their benefits of access. If network expansion is successfully completed, the PUD will work with the local library and community center and news publications to provide digital literacy resources for the community members who do not yet know how to make the most of this lifeline infrastructure.

Public Computer Access

The Cathlamet Community Center and the Wahkiakum School District, the County and the Town will all benefit from more reliable Internet service. The Community Center provides access assistance programs or utilize distance learning programs. The School District offers participating in distance learning programs for students and can provide a place for students who lack Internet service at home to complete homework. Cooperative efforts have been discussed to provide public Wi-Fi in the local downtown and port areas.

Vision Statement

Our mission is to evaluate the feasibility of ensuring every premise in Wahkiakum County has access to high-speed affordable and reliable broadband infrastructure to meet current and future economic development needs.

The Wahkiakum Broadband Action Committee Vision Statement was created with input from the BAC stakeholders to set a direction for the community's future broadband efforts. The Cowlitz-Wahkiakum Council of Governments (CWCOG) supports the efforts to bring broadband to the community. The CWCOG economic development plan can be found as Attachment A of this document.

Financial Commitment and Budget

Budget and Proposed Plan

The proposed plan for the WPUD network is separated into three categories, Capital Expenditures, Operating and Maintenance Expenses, and Revenues. Each of the three categories are described below.

These categories are also further captured in the financial data as shown in Appendix E of this document.

Capital Expenditures:

Fiber Network Design

The fiber network design is based on providing connectivity to community subscribers and generally follows existing utility right of ways and would be deployed in a manner that would maximize the ability to extend to residential and commercial customers. The fiber network would be comprised of the backbone system which would provide the main transport systems, and the distribution system which would provide the connection to individual properties. The core aggregation point is at an outdoor cabinet in near vicinity to the PUD and long-haul fiber carriers.

The fiber network would be deployed with conduit sizing and fiber counts that allow for growth of services and connections as required. The conduit proposed is specifically selected to provide for adequate breakout points and room to accommodate the deployment of additional fiber cable. The fiber network would have adequate fibers to accommodate an aggregated fiber-to-the-premise network, dedicated point-to-point connections and support carrier/service provider connections as required. The system will have capacity to enable the PUD to take advantage of connectivity to support their internal services, both existing and planned.

The financial analysis divided the infrastructure into three categories, backbone, distribution, and drop. Each category of fiber optic systems is separated to manage the engineering, construction, and deployment of the facilities. The backbone constitutes the infrastructure associated with the high capacity fiber counts to deliver connectivity to the 5 neighborhoods in Wahkiakum. The distribution network extends the backbone network closer to the consumer and prepares the network for the additions of the service drops, the actual connection that goes either to the residence or the business

Fiber Network Services

The service network or home category provides the customer premise electronics that connect back to the core network electronics located on a network aggregation site. Presently this is designed to be a single site, but dual sites could be established to accommodate for redundancy. The proposed architecture shown will support both GPON and Active Ethernet deployments, with GPON as the primary service delivery mechanism for traditional residential and commercial subscribers.

GPON

The GPON system modeled is capable of combining up to 32 customer fibers in the field utilizing a single fiber to the aggregation site. The system can provide end users with Gigabit interfaces and the ability to provide varying levels of speeds and levels of service. The system is capable of 10 Gigabit capacity on the fiber. GPON systems are efficient at creating a large shared pool of bandwidth and is an excellent technology for addressing residential and small business services. The network aggregation device would be proposed with redundant modules and connections into the router network in order to minimize service outages.

Active Ethernet

The Active Ethernet system utilizes a dedicated fiber linking each premise to the aggregation site. The aggregation site has a fully redundant aggregation switch. This system can provide full symmetrical line rates in increments of 100 Megabits per second, 1 Gigabits per second, and if needed, upgraded to 10 Gigabits per second. Generally, Active Ethernet systems are deployed for commercial customers who require higher bandwidth than residential users. The customer premise electronics are predictably more expensive than GPON systems.

Each system is capable of addressing the customers' requirements and would be addressed in a detailed design. Depending on the service scenarios, a hybrid network consisting of GPON and Active Ethernet is a possibility. The Access Network can be deployed in a bandwidth only wholesale model, where RSP's lease bandwidth from the PUD for their customers. In addition to the network electronics, infrastructure to support routing, security, and operational management are required as outlined below.

Routing and Security Network

The routing and security network provide the functionality to interconnect to the service providers and delivers the necessary security to protect the Broadband Network and, to a certain extent, the customers from outside threats/outages. A high availability router and firewall is proposed to provide adequate capacity for

expansion. These devices would have redundant modules and connections between the various devices to minimize service outages. Routing and security require specialized skill sets in order to continually optimize as well as secure the infrastructure.

Management, Activation and Billing Systems

The management, activation and billing systems are the back-office servers required to run the service. These systems provide monitoring, control, configuration and reporting. Early phases of deployment would not require significant deployment of this hardware as this can be scaled as the system grows. A small server with Open Source Monitoring software will provide additional management and monitoring functionality. The PUD may already have a usable system in place to support these requirements.

Operating and Maintenance Expenses:

Network Operating Expense

Managing a broadband business for the PUD will require an assortment of skills and support systems. The overall network operating expenses include those personal, outsourced firms, circuits, and machinery necessary to operate implement and operate the system on a day to day basis.

Sales and Marketing Broadband Manager

Managing a broadband business for the PUD will require a full-time employee for the foreseeable future, this person will act as the liaison between the customer, the Retail Services Provider and the PUD to ensure successful project management of the system and its service offerings. They will work closely with outsourcing agencies and internal staff to ensure customer acquisition, sales and marketing, execution of new services, and customer service are maintained at the highest level

Demonstration Center

This is for the setup of a center to showcase the services offered to the customers of this project. We recommend a local location to demonstrate the PUD service offerings and capabilities of high-speed broadband. In addition, we would showcase telehealth and smart home applications, to name a few, that will encourage customer acquisition.

Customer Service Zones Portal

As the project advances, customers will use the online system and portal to acquire broadband services from local and regional service providers, select types of services desired, and allow the customer to manage the connection

phase for their new services. This fully integrated system will allow customers to manage their service and their service provider and supply seamless invoicing between the PUD and the RSP's.

One of the main features of the management platform is the Service Providers' ability to work themselves in the systems from their user profile. They can create new service offerings and change prices and terms by themselves. This opens for competition between providers, making sure the cost of services on your network will be kept affordable and contract terms reasonable. The benefit is also that Service Providers already setup in the platform will have minimum barriers to enter new networks, meaning we don't have to spend any effort trying to attract service providers. We will bring them. As other PUD's are using this platform, there are already a number of Service Providers ready to come serve your community. As we expand our operations services, and more subscribers get connected, it will be even more attractive for service providers to connect, since they will be able to reach all these networks and subscribers from one single system.

Marketing, Branding and Collateral

The key to a successful project is customer service, branding, and consumer loyalty. This project will leverage the Customer Services Zones Portal, advertising, social media, marketing collateral, and local champions to engage the community and proactively solicit support across all community members for the PUD public benefit network. This project will develop branding and broadband logo solutions that will encourage citizen engagement. The PUD network and their story are also one that will we will want told to the nation to further support public benefit networks across our rural neighbors.

Business Administration

This category of expenses includes general office requirements, managing the grant process over time, maintaining and operating client billing and low-cost programs, and includes the debt service necessary to support the grant match process.

Revenues:

Assumptions

With this program, revenues to support the large operational expenses of the network are critical to success. We predict an incredibly high initial take rate, in fact, our model encourages early adoption of the community network by eliminating any financial installation compensation from the consumer, specifically residential, encouraging high early take rates.

We predict the first-year market share to be aggressive, with subsequent years tapering off pretty quickly as the model requires consumer contribution towards installation. We do not predict revenue shortfalls as the consumers have limited alternatives to services in this area, reducing the likelihood of churn.

Residential

The homeowners in the serving area are in desperate need of bandwidth capacity, currently many consumers have little to no access to broadband therefore no access to quality of life applications seen in more urban communities. In many locations, there is even an absence of cellular services.

Commercial

The marketplace consists of small to medium businesses who rely on broadband and access to the internet to support business operations. These can be point of sale organization, those that require access to the cloud and internet of things solutions, or generally require a more reliable service than what generally is seen in the residential marketplace

High Cap Services

These services will likely occur when a commercial entity requires high capacity bandwidth with service level agreements that support and require 100% uptime. These circuits are likely to be equal to or in excess of 1Gig and generally are for longer terms than other less costly services. In rural communities, these types of services can occur with large industrial or technical firms, cell tower connections, schools, public safety organization, or

Budget Matrix government offices.

Budget for proposed plan aligned to significant project plan milestones, costs and tasks may be found as Appendix E of this document including:

Pro Forma Income Statement and Expenses

- ii. Income Statement
- iii. Balance Sheet
- iv. Cash Sheet

Potential Sources of Funding for Broadband Infrastructure

NoaNet has reviewed available funding mechanisms to support a future capitalization of the network plan. If it is determined that grant solutions are viable, NoaNet staff are available to manage, draft, and apply for any suitable broadband grants necessary to reach the agencies goals.

Community Economic Revitalization Board Rural Broadband Program:

CERB provides funding for construction and planning for broadband projects in Washington State that are in rural counties and rural communities only.

Eligible projects are those that encourage, foster, develop, and improve broadband within the state in order to:

- Drive job creation, promote innovation, and expand markets for local businesses; or
- Serve the ongoing and growing needs of local education systems, health care systems, public safety systems, industries and businesses, governmental operations, and citizens; and
- Improve accessibility for underserved communities and populations.

Wahkiakum County PUD has obtained their planning dollars through the CERB program and appears to meet the program qualifications for their grant/loan program for broadband infrastructure development. NoaNet recommends further investigation into applying for funding through this program.

The Washington State Broadband Office:

As part of the 2019 legislative session, SB 5511 created a statewide Broadband Office with the objective to disseminate state and federal funds to facilitate broadband expansion projects in unserved areas of Washington State. The office is being established under the Department of Commerce and has been awarded a budget for fiscal year 2020 of \$21.55 million. This program is still in the rule-making process but is expected to provide grants and loans for telecommunications infrastructure for unserved areas of Washington.

Wahkiakum County PUD is expected to qualify for this program once it is established. NoaNet recommends Wahkiakum PUD continues to follow this program as a possible funding mechanism for their broadband infrastructure development.

The USDA ReConnect Program for Broadband Infrastructure:

The ReConnect Program offers unique federal financing and funding options in the form of loans, grants, and loan/grant combinations to facilitate broadband deployment in areas of rural America that don't currently have sufficient access to broadband, defined by the law as 25 Mbps (megabits per second) downstream and 10 Mbps upstream.

This program's goal is to generate investment to deploy broadband infrastructure to provide high-speed internet e-Connectivity to as many rural premises as possible, including homes, community facilities for healthcare and public safety, schools, libraries, farms, ranches, factories, and other production sites.

A significant portion of Wahkiakum County has already been granted funds through a USDA program to a private broadband entity and therefor disqualifies those areas from receiving funds for further broadband investment. The areas that this private entity did not claim remain eligible for this program. The cumbersome application process may make this funding opportunity a difficult program for WPUD to access.

Local Utility/Improvement Districts to Fund Broadband Infrastructure:

Long before the FCC recognized broadband as a utility, citizens and communities were finding high-speed internet access absolutely necessary to their well-being and future success. Broadband telecommunications are increasingly becoming how people communicate, conduct business, access government services and engage in distance education opportunities.

Kitsap Public Utility District (KPUD) recognized that broadband is a utility in their community and has worked to expand their fiber optic network to increase access to all residents of Kitsap County through the use of Local Utility Districts (LUDs).

Wahkiakum PUD could leverage LUDs as a funding mechanism for telecommunications infrastructure as KPUD has done. NoaNet recommends keeping this model in mind for builds that fall outside of the standard build parameters such as locations that are exceedingly difficult and costly to access as a way to help mitigate costs.

How does an LUD with Kitsap PUD work?

1. Homeowners petition the Public Utility District to form a Local Utility District. If a majority (50% + 1) of the homeowners petition the LUD is formed.
2. Once the LUD is formed, the PUD begins the process to construct the infrastructure
3. When construction is complete, the homeowners are provided a final assessment amount
 - a. The assessment can be paid:
 - Upfront or over a determined period of time
 - Or a combination of the two with some upfront and the

- rest over the determined period of time
4. The county administers the assessment and homeowners receive a tax bill for their assessed amount annually

“Fiberhoods” with Construction Adders:

Mason PUD #3 in Mason County is running a “Fiberhood” program where residential areas have an opportunity to show interest for fiber broadband connectivity in a defined build area. If that area reaches a 75% interest rate, the PUD builds an open-access network out to their homes. Each month in addition to their service fee from their selected Internet Service Provider, they pay a \$25 “construction adder” to pay for the cost to build the network to their homes. That fee is paid for 12 years, and then retired after it has covered the cost of the build to the premise. Customers also have the option to pay the \$3600 total cost upfront to lower their monthly bill, qualify for seasonal service, or write the cost off as a business expense.

If the PUD decides to move forward commercial or residential buildout and is unable to secure grant/loan this method of homeowners/businesses self-financing could be a potential path forward.

Capital from Private Investment Firms:

Private investment firms are funding community networks that are either unable or unwilling to use bonds to support network investments. These firms partner with real estate developers, municipal, county and other governmental entities, as well as a variety of private partners to deploy last-mile fiber optic network infrastructure.

Wahkiakum PUD is well-positioned to qualify for state and federal grant and low interest loan programs. NoaNet recommends that they exhaust those avenues of project funding before considering private equity investment options.

Letters of Commitment for Community Funding

Letter of commitment from Wahkiakum PUD can be found as Appendix F in this document.

Letters of Commitment from Internet Service Providers

Letter of support from area Internet Service Providers can be found as Appendix G in this document.

Key Documents and Existing Efforts

Does the municipality use broadband to deliver municipal services?

Wahkiakum PUD do not use broadband to deliver services. If Wahkiakum County had county-wide broadband, the PUD may be able to deploy Automated Metering Infrastructure in the future.

Is there local or regional economic development plans in which broadband could play a role? If so, provide a list of these documents.

Yes, the Cowlitz-Wahkiakum Council of Governments has an Economic Development Plan included in this document as Attachment A.

Are there any on-going community projects focusing on the digital divide or information technology (public access through schools or libraries, training, improving access to broadband, etc.?)

There has been limited discussion to make public Wi-Fi available as a collaborative effort with the Town, the County and the PUD.

Potential Community Anchor Institutions and Businesses

Community Anchor Institutions:

1. Cathlamet City Library: 115 Columbia Street, Cathlamet, WA 98612
2. Cathlamet Community Center: 100 Main Street, Cathlamet, WA 98612
3. Cathlamet City Hall: 375 2nd Street, Cathlamet, WA 98612
4. Wahkiakum County Courthouse: 64 Main Street, Cathlamet, WA 98612
5. Wahkiakum County Health & Human Services Campus: 42 Elochoman Valley Road, Cathlamet, WA 98612
6. Wahkiakum PUD: 45 River Street, Cathlamet, WA 98612
7. Wahkiakum School District: 500 South 3rd Street, Cathlamet, WA 98612
8. Cathlamet Fire Department: 255 2nd Street, Cathlamet, WA 98612
9. Wahkiakum Fire Districts #1, #2, #3, #4
10. Wahkiakum Port District #1: 500 2nd Street, Cathlamet, WA 98612
11. Wahkiakum Port District #2: 12 Vista Park Road, Skamokawa, WA 98647
12. Wahkiakum Historical Society and Museum: 65 River Street, Cathlamet, WA 98612
13. St. James Family Center: 1134 Columbia Street, Cathlamet, WA 98612
14. Wahkiakum County Post Office: 30 River Street, Cathlamet, WA 98612
15. Wahkiakum Family Practice Clinic: 33 Una Avenue, Cathlamet, WA 98612
16. Wahkiakum County Emergency Services: 64 Main Street, Cathlamet, WA 98612
17. Washington State DOT: 286 WA-4, Cathlamet, WA 98612
18. WSU Extension office: 25 River Street, Suite E, Cathlamet, WA 98612
19. Bank of the Pacific: 56 Main Street, Cathlamet, WA 98612
20. First Interstate Bank: 75 Main Street, Cathlamet, WA 98612
21. The Wahkiakum County Eagle: 77 Main Street, Cathlamet, WA 98612
22. Wahkiakum Community Network: 100 Main Street, Cathlamet, WA 98612
23. Wahkiakum County Chamber of Commerce: 102 Main Street, Cathlamet, WA 98612

Local Businesses:

There is a very small area (appx. 1 square mile) of Eastern Wahkiakum County with a consolidated business population. This area is served by Wave Broadband with high-speed services which limits the potential for future business-customer growth in that area.

However, there are many home-based and farm-based businesses in the community that are currently unserved or under-served and would benefit from Internet presence or better Internet speeds and reliability. Local core retail business such as pharmacy, grocery, fuel/convenience, hospitality, hardware and

restaurants would benefit from improved speed and reliability for processing digital transactions, upload/download orders, and Internet presence. Tourism could grow with Internet reliability and speed; marketing could be expanded, booking hospitality and restaurant venues. Internet marketing is a fast and economical way to reach an unlimited number of people.

Management Plan

The Eastern county-wide network will operate as a wholesale open access network, as allowed by RCW 54.16.330 and 340 should leverage partnerships and a business model that will allow for partnerships and provide positive returns for the PUD and their constituents. This is a utility infrastructure project, so all modeling assumes long term payback, and partnerships with agencies whom have been actively supporting rural open access broadband networks in the residential and commercial space.

Wahkiakum PUD	Wahkiakum PUD has been serving Wahkiakum County with reliable electrical and water service at the most reasonable costs along with quality customer service to its ratepayers. As of the 2010 census, Wahkiakum county has a population of 3,978, making it the second least populous county in Washington
Northwest Open Access Network (NoaNet)	NoaNet is an open-access network in Washington State, they provide whole-sale wide area and last mile broadband solutions to rural communities on a fiber optic high capacity system. Owned and operated by Public Utilities, NoaNet has been assisting successful public benefit broadband programs since 2000.
Nokia	Nokia Networks supplies next generation Passive Optical Networking solutions for residential and commercial networks. Their PON solutions power some of the most advanced fiber networks in the world and continue to deliver value to future networking solutions.
COS Systems	Business Support System to aggregate demand for the PUD services while allowing subscribers to shop on line 24/7 for Internet services offered on the PUD network. This system allows for hassle free sales with a customizable online marketplace.
OSP Insight	Software for network operators to plan, design, and operate a complex fiber network. This system integrates NoaNet's GIS Technicians and advance software solutions to provide fiber management documentation for the design and operations readiness of the system
ZENOSS Inc. ServiceNow	NoaNet offers a 24x7x365 network operations center in Washington State that provides end to end network operations and management services to public benefit networks through integrated incident management and network performance monitoring solutions through the ZENOSS intelligent monitoring applications solution. Leveraging the

	ServiceNow platform, technicians and analysts deliver intuitive IT workflows to support network and customer management
Wahkiakum West Communications	Current Internet Service Provider for the West end of Wahkiakum County and have expressed interest in expanding on community network to serve the greater Wahkiakum County area.
Wave Broadband	Current Internet services provider for the downtown business corridor in Cathlamet.
Skamokawa Internet Services	Local Wireless Internet Service Provider serving Skamokawa and the Flandersville area in Wahkiakum County.

Year Zero - Implementation Stage:

Below are the next steps WPUD should take toward addressing the broadband issues in its community as part of the modelling from the study, we call this Year Zero, and is the time from when WPUD leadership is prepared to develop a Broadband Business, to when the business is ready to serve its first customer:

1. Broadband Management Staff
 - a. The PUD should consider hiring a full-time broadband manager/administrator focused specifically on the creation of a Detailed Business Plan. This report details the attributes and skill sets required of a broadband manager and can be referenced when searching for an appropriate person. Magellan can provide detailed job specifications and salaries and wages upon request.
2. Transition Feasibility Study Materials into an approved Business Plan
 - a. The feasibility study and associated financial statements are a model, it is necessary to expand upon the assumptions and develop decisions that best suit the needs of the PUD, the local community, and any participating retail service providers. The Business Plan should cover detailed items such as per connection pricing and service offerings, marketing and sales strategies, financing and accounting, construction and installation mechanics, and network operations and staffing assignments is the next level of executable detail required to move forward.
3. Develop and execute upon the Construction, Business Planning, and Sales and Marketing Milestones
 - a. Although the milestones will be generally outlined within the business plan, the Year Zero Stage is for implementation of these three requirements. To keep consistent with the financial modeling, the backbone, distribution, and 50% of

the service drops need to be completed within this first implementation Year Zero stage. At the beginning of the first year of the business, customer contracts and service drops can be provisioned. During this implantation stage, qualified service provider(s) need to be engaged to resell these services. Together, WPUD and the ISP should establish qualify assurance customer service agreements, master sales agreements, and all provisioning and invoicing mechanics.

4. Develop Network Operations

- a. Establish network operations systems and procedures, either by leveraging outsourced services, such as how this model is recommending, or by establishing internal resources to support the ongoing network needs of this system, this includes but is not limited to system and electronics management, trouble ticketing and reporting, alarm and restoration management, network management, repair and restore, and installation and provisioning services.

Year One – Customer Acquisition

Below are the next steps WPUD would take toward operating as a wholesale broadband provider, These steps years are designed to manage the day to day operations of a fiber to the premise network to support PUD operations and their customers:

1. Customer Service and Provisioning

- a. The PUD will have new customer orders to support, with those orders, a workflow will need to be established to work with technicians who perform installations, provisioners who manage the network connectivity, billing and service activation administrative agents.

2. The Service Network

- a. Simultaneously the PUD will manage new network connections, while during year one completing the remaining 50% of the fiber cable service drops to the remaining communities. This will be a busy time as the intent is to acquire 40% market share within the first year of operations, using the energy created by the newly established business unit, the aggressive sales and marketing campaign, promotion installation credits, and community recognition of the project.

Initial Service Offerings

The model supports typical service connections found in residential, business (commercial and small to medium businesses), and high-capacity commercial services. Model includes 100Mbps symmetrical service to Residential and Business Customers. High Cap bandwidth would be managed on an individual case basis, but for modelling purposes is shown below. Additional services could be provided.

Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
<i>Net New Residential</i>	634	79	79	79	79
<i>Install Revenue per subscriber</i>	\$0	\$250	\$250	\$250	\$250
<i>Recurring Revenue per subscriber</i>	\$49	\$49	\$49	\$49	\$49
<i>Net New Business</i>	14	2	2	2	2
<i>Install Revenue per subscriber</i>	\$0	\$1,000	\$1,000	\$1,000	\$1,000
<i>Recurring Revenue per subscriber</i>	\$89	\$89	\$89	\$89	\$89
<i>Net New High Cap</i>	2	1	0	0	0
<i>Install Revenue per subscriber</i>	\$2,500	\$2,500	\$2,500	\$2,000	\$2,000
<i>Recurring Revenue per subscriber</i>	\$350	\$350	\$350	\$350	\$350

Business Plan should consider:

Managed Wi-Fi

A system to allow a customer to subscribe to a service offered by the PUD that supplies one or more Wi-Fi routers depending on requirements of the end user.

Voice over IP Line

One or more voice lines that would operate over the public network, this is a great solution for those customers who want a traditional land line without the traditional expense.

Access and Surveillance

Over the top solutions needed by the business community, could include security access systems, digital video surveillance, and cloud storage of data developed by these solutions.

Cloud Storage

Remote Storage for business applications needing Disaster Recovery, or other cloud storage services to support business operations.

Utility Based Applications

Services governmental agencies and other public serving agencies would find useful, such as SCADA, electric smart grids, early warning detection systems, smart pole lighting and traffic management.

Readiness Self-Assessment

Assessment Completed

Dave Trambly, General Manager at Wahkiakum County PUD completed the online Readiness Self-Assessment Survey from CERB in January of 2020.

Health and Safety Benefits

First Responders

Investment in high-capacity broadband network infrastructure will have major impacts for Wahkiakum County public safety. Broadband is vital to improve the communications between first responder agencies. Broadband can enable faster response times, an increased ability for first responders to share important information about events, and even allow the public to access 911 services through data-enabled services such as VoIP. With improved telecommunications services, Wahkiakum County residents could benefit from these improved first responder communications.

Remote Consultations

High capacity broadband will break the Internet bottleneck and allow healthcare providers to deliver lifesaving telecommunications-enabled services in real time. Rural community' healthcare systems, like those in Wahkiakum County, cannot afford to staff experts for every situation. Through high-capacity connections, like the ones being proposed for Wahkiakum County, healthcare providers can seek the assistance of subject matter experts through remote consultations. This life-saving expertise should not only be available to residents of our state's largest cities. Telecommunications infrastructure investment would put it within reach of Wahkiakum County.

Telehealth Services

Broadband enabled access to telehealth services for Wahkiakum's residents. When getting to the doctors is a cumbersome task, many will choose to not engage in the healthcare they need. Through the implementation of telehealth services, which are now covered by Apple Health in Washington, patients can log-in via their phones or computers and have a remote consultation with doctors to get the medical assessments they need, many times without having to go into the clinic at all. This would allow Wahkiakum County residents to take the best care of themselves as possible.

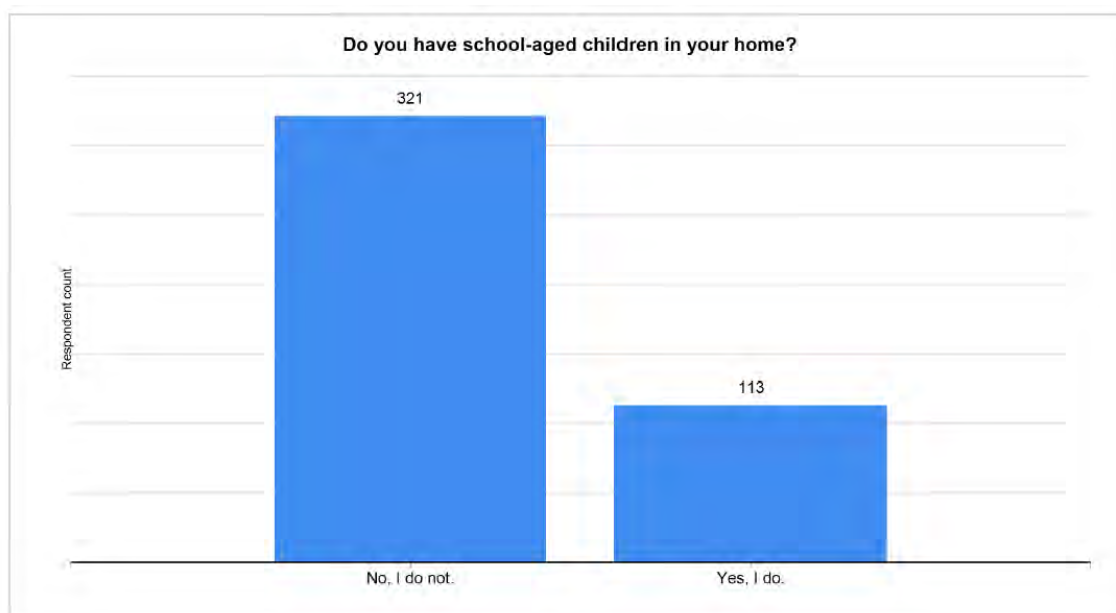
Education Benefits

School-Aged Children

There are many ways that a lack of Internet access can affect a student's academic performance. Students without internet can't connect with teachers or classmates, do independent research, or get online homework help. For families, not having internet access can mean missing out on information or losing out on a direct line of communication with schools and teachers.

The Covid-19 pandemic has shown us all a timely real-life example of how this type of infrastructure impacts the availability of education for our students. With schools being closed for weeks at a time to curb the spread of the virus, teachers and students have had to pause their schoolwork until schools re-open. If ubiquitous broadband access was available to their students, schools may have been able to maintain a modified curriculum while the students were away from the physical classroom.

Of the residential respondents in Wahkiakum County who engaged the community survey 26% reported having school-aged children in their homes. Nationally, an increasing amount of schoolwork is requiring the use of the Internet. It is critical that students have access to a reliable and sufficient broadband connection outside of school hours. Without reliable Internet access at home, students are limited to being able to do homework that requires online engagement to times when they are at school or when the library is open or leaving them to access the Internet through their phones if they need to get online late at night.



In 2015, the Pew Research Center analyzed data from studies on Internet access and found that students lacking Internet access at home has a strong correlation with household income. Among households with an annual income under \$50,000, 31.4% don't have broadband Internet access. For households with an annual income over \$50,000, the number is much smaller—only 8.4% lack access to broadband Internet.

If the PUD moves forward with this infrastructure the 113 survey respondents who reported having school-aged children in their homes could have access to the high-speed Internet that their students need to overcome these educational obstacles.

With increased infrastructure the PUD could also consider creative solutions to give students more time to complete their online homework outside of school hours such as WIFI on school buses or in public areas.

Helping Senior Citizens Understand the Value of Broadband Services

While the Internet is understood as a valuable resource for many community members, for many seniors it often proves a challenging and frustrating technology whose value is easy to dismiss. In communications with especially the senior community, it was clear that the understanding of the value of high-speed Internet at home was not well understood by this population. Introducing and familiarizing what the online world has to offer will give them access to greater control over their daily lives through online shopping, telemedicine services, communication with distant relatives, research, etc. However, fusing everyday with technology is no simple task for many seniors.

These issues shape the senior influence on technology - with physical challenges, lack of services education and technology challenges keeping these men and women from experiencing the value that the Internet could bring to their lives.

We recommend that an educational initiative be launched by the PUD in conjunction with the library and community center to create programs to increase confidence, skills and online safety for older community members who are not currently utilizing the value of digital technology.

According to a study by the Pew Research Organization, those 65 and older express these key doubts about the Internet:

Physical Challenges:

Pew Research reports two out of every five seniors suffers from a physical handicap (including chronic pain or disease). These individuals are 20% less likely to use the Internet than those in good health, and they're also 18% less likely to have broadband access.

However, access to the Internet and utilizing search engines, social media and entertainment that the web offers, seniors can connect to current events to stay engaged with developing information, engage others through social media, and maintain a link to the world when physical barriers make physical connections more difficult.

Services Education:

Pew Research notes that 35% of seniors believe that the Internet offers little to no value, unsure of the accuracy of the information it offers. A lack of access, they claim, has no negative effect on their daily lives. This leads them to avoid logging on to engines, news portals, and other social hubs.

Often this apathy toward broadband access is due to a lack of knowledge of utilizing the Internet. Grocery delivery services, online banking, social media engagement, Skype with family on the opposite coast, and online games are often things that are considered valuable once senior citizens are informed about the opportunities available for free once connected.

Technology Challenges:

Pew Research discovered that a staggering 77% of seniors feel unprepared to adopt new technology (such as desktop computers, smartphones, or tablets). 56% of these individuals also admit to an inability to utilize online sites actively - including Facebook or Twitter - without guidance. This creates a surge of uncertainty, with those living alone unable to understand the Internet fully.

Education on Cutting the Cord

We are seeing an increase in consumers who are “cutting the cord” and moving away from traditional cable TV options and are instead switching to streaming content services such as Netflix and Hulu for their video entertainment needs. Traditional cable providers have also made a move to offer streaming content with the surge in content apps available from HBO, Cinemax, NFL, Disney and others which allow consumers to pay a la carte for programming they want rather than cable TV packages. Industry experts expect to see streaming content continue to emerge as a consumer-favorite way to engage with TV content into the future. “Triple Play” packages will likely evolve into all Internet-based products with IP-based phone service, Internet access, and streaming video content that the consumer selects.

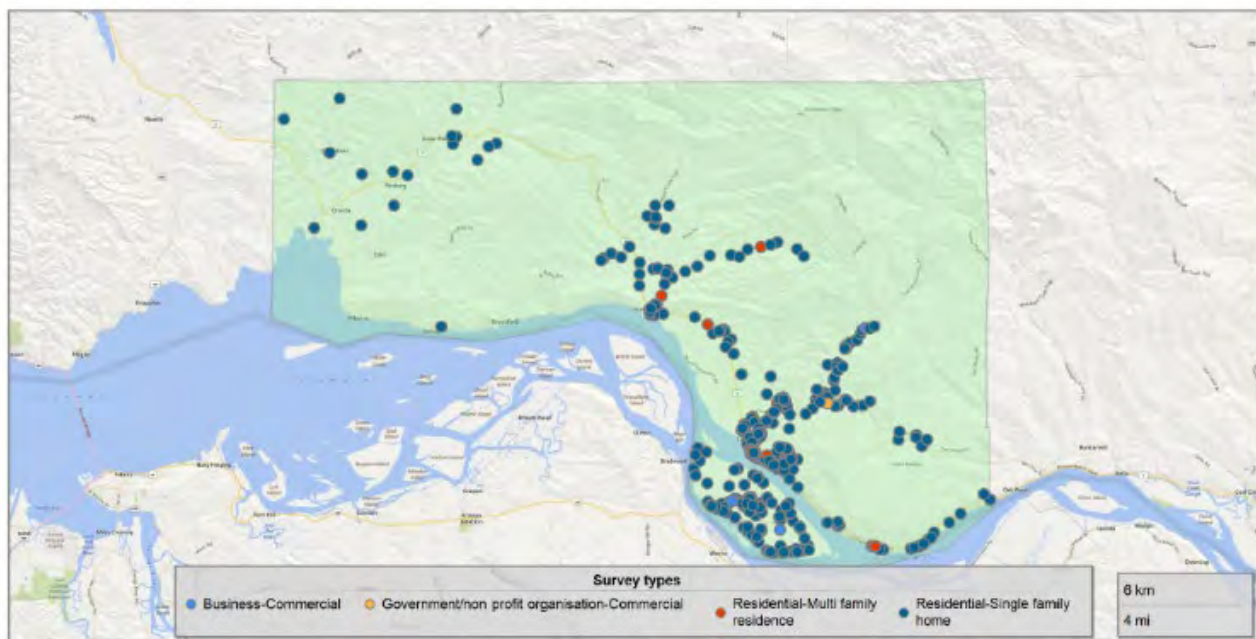
If the PUD moves forward with this project, community education on streaming services could help residents and businesses cut costs and bring services into reach of more customers.

Served or Underserved

The Community Survey

An online portal for community feedback on broadband access was activated in May of 2019 providing residents and businesses the opportunity to log their current broadband service levels, costs associated with services and their satisfaction with their current service's price, speed and reliability. The survey was also available in paper format at the local PUD office and could be taken over the phone to ensure accessibility for those who did not have Internet and/or computer access.

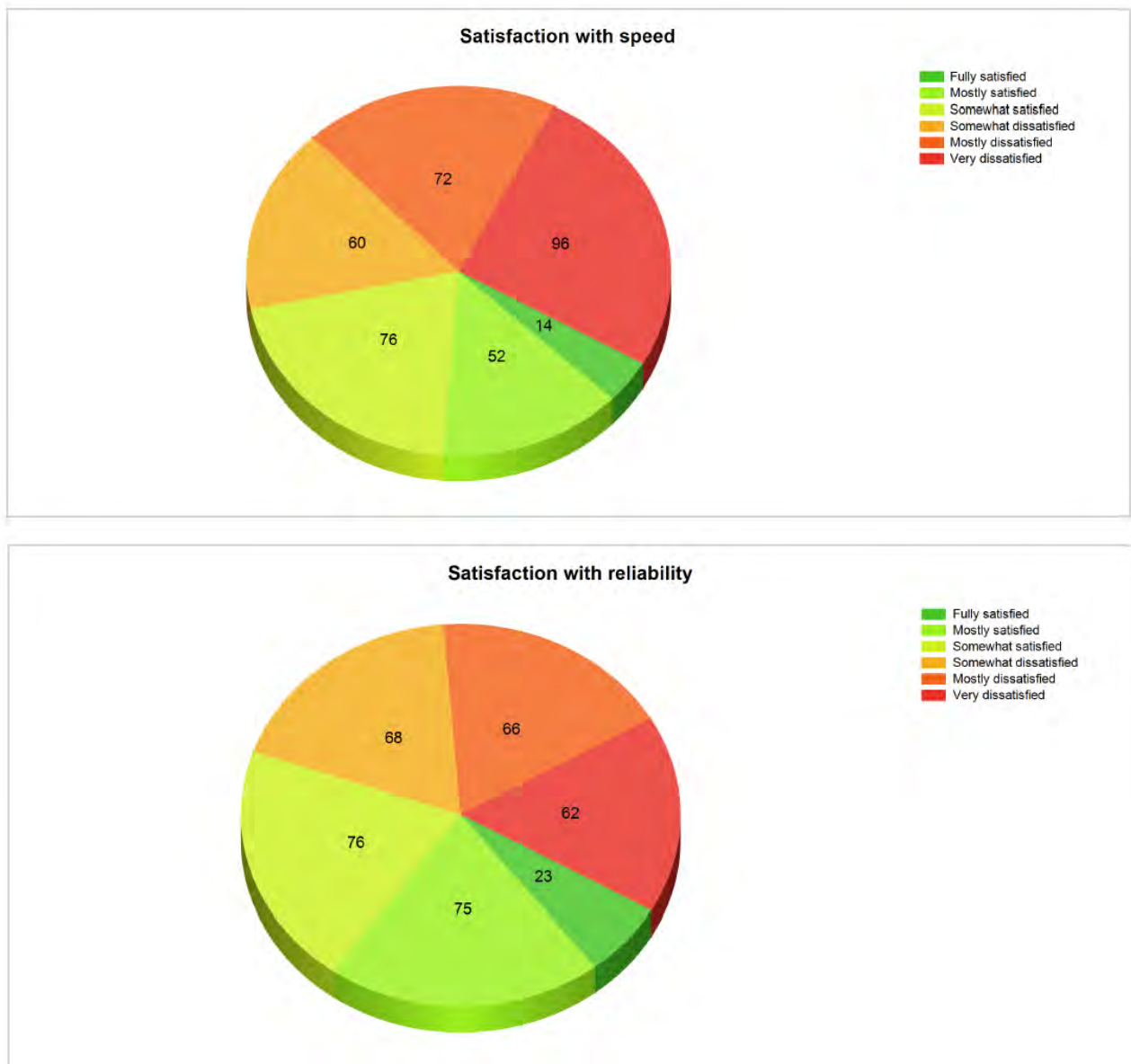
Engagement was solicited through social media posts, community champions, announcements in community bulletins, flyers, a link on the PUD website, and in the local newspaper.

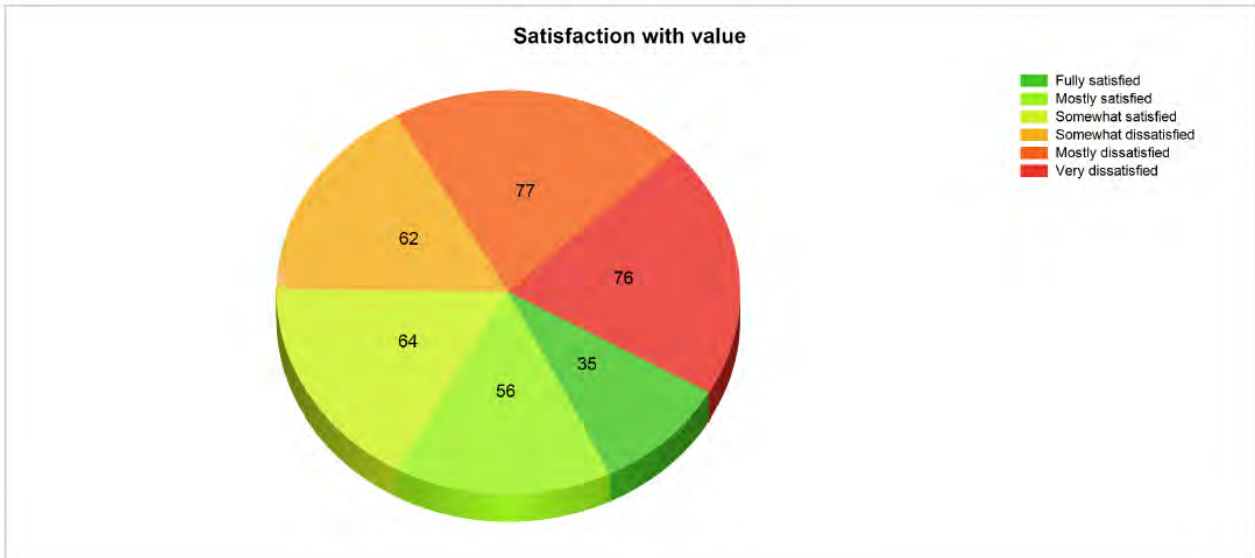


Results Summary

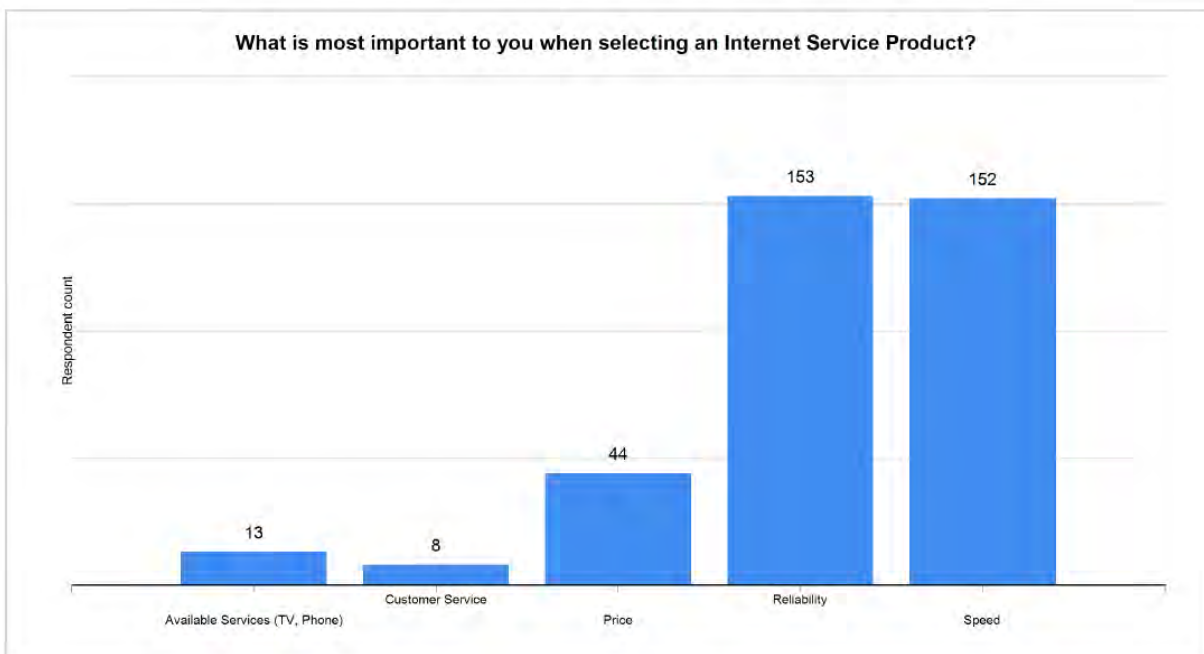
Community survey engagement was swift. In the first 24 hours of the survey publication, 100 surveys were completed which ballooned to 300 by one week. The survey portal was closed in June of 2019. In that time, 434 households and businesses participated in the survey. 397 of the surveys obtained came from single family homes, 24 from commercial locations and 13 were from multi-family residences. A complete index of all survey responses can be found as Appendix H of this document.

The community of Wahkiakum County overwhelmingly expressed a desire and need for higher bandwidth and reliability in Internet access. 61.6% of respondents are dissatisfied with the speed of their services, 53% of respondents rating in the unsatisfied spectrum for reliability and over 58% are unhappy with the price of their services. These are very high percentages of the population to find their Internet service unreliable and slow, suggesting that incumbent provider's infrastructure and service offerings are not serving this market adequately.





The Wahkiakum County broadband consumer is most concerned with the reliability of their services (42%). Their second consideration is adequate speed (42%). These results are indicative of a customer who is utilizing the Internet in their daily life and understands the impact that unreliable or insufficiently fast services have on their day-to-day experience, because they are living it! It is rare to see price of services represent such a low percentage of top concern by consumers (12%) but suggests that the Wahkiakum County consumer is experiencing slow and unreliable services currently and is willing to pay fair market value if their services better meet their needs.



Services Desired

According to the data collected from the Wahkiakum PUD Community Broadband Survey, the residents and businesses of Wahkiakum County are primarily interested in an Internet-only product with over 60% of respondents selecting this as their preferred service option. 23% of respondents were interested in a “triple play” service package that includes bundled Internet, Phone and TV services. The remaining 17% of respondents preferred an Internet and phone services only. If Wahkiakum PUD does move forward with a community broadband network, it will be important to refer to these service preferences to ensure that selected service provider(s) will meet the expressed needs of the community to attract engagement and consumer satisfaction.

Appendix A: Broadband Action Team Members

Name	Title	Organization
Gene Healy	Commissioner	Wahkiakum PUD
Bill Fashing	Executive Director	CWCOG
Tim Hanigan	Attorney	Hannigan Law Office
Dave Trambly	General Manager	Wahkiakum PUD
Steve Carson	Owner-Operator	Skamokawa Internet Svc. (ISP)
David Olson	Council Person	Town of Cathlamet
Lee Tischer	Commissioner	Port District #2
Richard Erickson	Member	Wahkiakum Cham. of Comm.
Mike Backman	Commissioner	Wahkiakum County
Ryan Smith	Council Person	Town of Cathlamet
Brent Freeman	Superintendent	Wahkiakum School District
Scott Anderson	Commissioner	Port District #1
Dean Takko	State Senator	Washington District 19
Carol Larson	Representative	Wahkiakum West Tel
Dianna Zimmerman	Reporter	Wahkiakum County Eagle

Appendix B: Notes, Agendas and Attendees at BAC Meetings

The initial meeting of the Wahkiakum Broadband Action Committee was held June 25, 2018, at 6:00 PM, at the Cathlamet Fire Hall.

Attending were:

Dan Cothren, Commissioner, Wahkiakum County
Bill Fashing, Ex. Director, CWCOCG, Moderator
Tim Hanigan, Attorney
Gene Healy, Commissioner, Wahkiakum PUD
Bob Kizziar, Commissioner, Port District #1
Carol Larson, Wahkiakum West
Ryan Smith, Council Member, Town of Cathlamet
Lee Tischer, Commissioner, Port District #2
Diana Zimmerman, Wahkiakum County Eagle
Guest: Claire Ward, Marketing and Communications Manager, NoaNet

Gene Healy opened the meeting by introducing Bill Fashing who has agreed to moderate our meetings.

Bill led us in brief introductions, and spoke regarding the opportunities and challenges ahead. Bill handed out survey forms for us to state our expectations of this effort. It is intended that we review our expectations regularly to insure that every one has their's met. As we progress, talk to the public, etc., our goals could change. We will discuss this further at our next meeting.

The possible need for a public survey was briefly discussed. The use of "Survey Monkey" or mail outs was mentioned. This subject will also be on our next agenda.

Bill introduced Claire Ward from NoaNet who gave us a presentation on Broadband 101. She explained NoaNet's role in the broadband world. Her PowerPoint contained a map of their infrastructure, meaning of broadband, various technologies, request to dream big at 100 / 100 speeds, the idea that additional speed and bandwidth makes room for innovation, dig once policies, pole attachments, various needs the public has and much more. She explained the various ways NoaNet may be able to assist this group and our efforts. Many thanks to Claire for driving from Poulsbo to help get us started. A link to her PowerPoint presentation was sent to you via e-mail.

A final discussion was had regarding who we would like to see in control of the local fiber network.

Everyone seemed to approve of our 4th Monday schedule, therefore our next meeting will be held Monday, July 23rd, at 6:00 PM, at the Fire Hall.

BROADBAND ACTION COMMITTEE
AGENDA-July 23, 2018

BILL FASHING, CWCOG, MODERATOR

INTRODUCTIONS - STANDING COMMITTEE, GUESTS

SURVEY - EXPECTATIONS: PERSONAL, ORGANIZATIONAL,
COMMUNITY

GUEST SPEAKER - Janea Delk, Program Director and Tribal
Liaison, Community Economic Revitalization Board, Washington
State Dept. of Commerce

PURPOSE - OVERVIEW - GENERAL DISCUSSION
Whats happened since our last meeting, whats on your mind?

NEXT MEETING

DATE - PLACE - TIME

Monday, August 27, Fire Hall, 6:00 PM,

NOTES:

BROAD BAND MTR
MON- 7-23-18

SIGN-IN SHEET

NAME	ORGANIZATION	E-MAIL ADDRESS	PHONE#
GENE HEALY	PUD		
DAVID TRAMBLIE	PUD	dtramblic@wahkiakumpud.org	360-795-3266
Carol Larson	Wahkiakum West	clarson@west.net	360-965-2211
Matt Kuhl	chamber of Commerce	mattkuhlwa@gmail.com	360-953-9212
SCOTT Anderson	Port 1		
Lee Trische	Port 2		
Dan Cothren	Wahkiakum Co.	Cothren.d.co.wahkiakum.us	360-795-8048
Diana Zimmerman	Wahkiakum Eagle	diana@waheagle.com	
Laurel Waller	Town Council	lwaller@townofcathlamet.com	360-795-0100
Tanya Walter	Hotel Cathlamet	hotelcathlamet@gmail.com	(360) 795-0100
Bill Fashing	CWCOC	bfashing@cwcoq.org	360-577-3041
JANEA DELK	WA Commerce	JANEA.DELK@commerce.wa.gov	360-725-3151

BROADBAND ACTION COMMITTEE

The third meeting of this committee was held August 27, 2018 in the DeBriae Meeting Room at the Cathlamet Fire Hall.

Attending were:

Carol Larson, Wahkiakum West
David Trambly, Wahkiakum PUD
Paul Avis, Kitsap PUD
Laurel Waller, Town of Cathlamet
Steve Carson, Skamokawa Internet
Matt Kuhl, Wahkiakum C of C
Dean Takko, State Senator
Tim Hanigan, Attorney

Bill Fashing, CWCOG
Lee Tischer, Port District 2
Scott Anderson, Port District 1
Ryan Smith, Town of Cathlamet
Mike Backman, BOCC
Diana Zimmerman, Wahk. Co. Eagle
Gene Healy, Wahkiakum PUD

Introductions were made and the agenda was approved. Bill Fashing was our moderator.

Our guest speaker, Paul Avis, Superintendent of Telecom at Kitsap PUD gave us a very informative presentation on the technical aspects of broadband deployment.

A motion was made by Lee Tischer, and seconded by Matt Kuhl to appoint Wahkiakum PUD to apply as lead agency for the CERB Funding Planning Grant. The vote was unanimous. This will allow the PUD to proceed with an application for a CERB planning grant. The PUD's Board had previously agreed to accept this responsibility if requested.

Bill Fashing led the group through a self-assessment survey. This survey helps us to determine where we are on our timeline to apply for a planning grant. We scored about 52%, so we have work to do.

Bill also handed out density maps of Wahkiakum County. This map gives everyone a pictorial view of building density throughout the county.

Our next meeting will be held on September 24th, at 6:00 PM at the same place.

Agenda - October 29, 2018

Wahkiakum Broadband Action Committee

Welcome - Bill Fashing, CWCOCG

Introductions

Progress Report - Wahkiakum PUD, Dave Trambly, General Manager

Experiences and Expectations regarding broadband:

Brent Freeman, Superintendent, Wahkiakum School District

Matt Ohrberg, Manager, Ohrberg Construction

Richard Erickson, Partner, The Villa

Steve Carson, Owner, ComputerLink NW

Erin Wilson, Auditor, PUD

Tammy Peterson, Treasurer, Wahkiakum County

Open Discussion

Adjourn

SIGN-UP SHEET

at Door -

10.29-18

GEWE HEALY

✓ Richard Erickson - the villa

✓ DAVID TRAMBLIC

✓ Lee Tighe

✓ Steve Carson

✓ BRENT FREEMAN

✓ ~~MATT OHRBERG~~

✓ Matt Kuhl - Chamber

✓ Erin Wilson PUD

Diana Zimmerman

✓ Ryan Smith

Agenda - October 29, 2018

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Matt Ohrberg, Manager, Ohrberg Construction

Richard Erickson, Partner, The Villa

Steve Carson, Owner, ComputerLink NW

Erin Wilson, Auditor, PUD

Tammy Peterson, Treasurer, Wahkiakum County

Open Discussion

Adjourn

Sign in Sheet -

Distributed at
MTG.

Oct. 29, 2018

Wahkiakum Broadband Action Committee

NAME	ORG.	email
Bill Fashing	cwcoog	bfashing@cwcoog.or
T Hauigan	HLD	law@cui.net
D. Tramblye	FAD	
Steve Carson	CLNW	sc@CLNW.com
David Olson	(c. #200) Cableworks	cableworks.c21@gmail.com
Matt Kuhl	Chamber of Commerce	
MATT OHRBERG	OHRBERG EXCAVATION	
Lee Tischer	Part #2	
Richard Erickson	VICIA Cape Horn	
Erin Wilson	Wahkiakum PUD	ewilson@wahkiakumpud.org
Shane Penninger	Wahkiakum PUD	
Mike BACKMAN	Wahkiakum County	
Ryan Smith	TOC	
Tammy Peterson	Wahki. Co Treas	petersont@co.wahkiakum-wa.us
BRENT FREEMAN	Wahkiakum School District	

Agenda - November 26, 2018

Wahkiakum Broadband Action Committee

Welcome - Bill Fashing, CWCOG

Introductions

Progress Report - Wahkiakum PUD, Dave Trambly, General Manager

Guest - Mary Beth Henry

Would also like to spend some time developing some "what do we want to learn" thoughts which can be given to Dave Trambly for helping to develop an RFQ for our hoped for consultant.

Open Discussion

Adjourn

SIGN-IN SHEET

NAME	ORGANIZATION	E-MAIL ADDRESS	PHONE#
Gene Healy	PUD	ENEALY@LANICAKUM PUD.ORG	431-4158
DAVID TARTIBUE	PUD		
Ryan Smith	TOC	Smith@townofCathlamet	
Lee Tischer	Port #2		
Scott Andersa	Port 1		
Diana Jimmerma	Eagle		
David Olson	Citizen	cableczar1@gmail.com	503 722 7551
Tim Haudgan			
Rick LaGreide	Citizen	lagreider@gmail.com	502 789-8503
Laurel Waller	Citizen	laurelt1@msu.com	206 601-3654
Mike Balkman	Wahkiakum County		360-431-4421
Steve Carson			
Bill Fashing	CWCOG		

SIGN-IN SHEET

BROAD BAND
4-29-19

NAME	ORGANIZATION	E-MAIL ADDRESS	PHONE#
GENE HEALY	PUD	ISLANDUETTE@SCMAIL	360 431 4158
Bill Fashing	CWCOB	btfashing@cwco.org	360-577-3041
D. Tramblic	PUD	dtramblic@wahkiakumpud.org	360-795-3266
CHRIS WALKER	NORNET	CWALKER@NORNET.NET	509.456.3619
Ryan Smith	TOC	smithr@townofcathlamet.com	
Lee Tisch	Part # 2	+	
CLAIREWARD	NoaNet	cward@noanet.net	816 519 2370
T Hayigan	PUD		
S. Pfenniger	PUD	SPfenniger@LAHUKUMMUD.ORG	360 431-7466
Richard Enrickson	the Chamber	virginorp@earthlink.net	360-8849-9570
Steve Carson	Computer Link NW	sc@clnw.com	360-545-3472
Scott Anders	R-CT 1		360 430 2063
Laurel Waller	Town Council/Bos. Owner	laurett7@msn.com	206 601-3654
Diana Zimmerman	Eagle	diana@Wah eagle.com	360-431-8027
Megan Elliott	Wahkiakum Chamber	wchamber@chni.net	360-795-9996
Matt Kuhl	Chamber	mattkuhl@agmail.com	360-953-9212
David Olson	Mike Backman Cableworks	Backmanm@co.wah cableczar1@gmail.com	360-431-4421 503-422-7551

May 21, 2019

The regular meeting of the Board of Commissioners of PUD No. One of Wahkiakum County, Washington was held on the above date with Board President Robert Jungers presiding. Also in attendance were Board Vice President Dennis Reid, Board Secretary Eugene Healy, Manager David Trambly, Auditor Erin Wilson, Attorney Tim Hanigan, Secretaries Katie Thomas and Galina Tsybikova, Town of Cathlamet Councilmember Laurel Waller, and Wahkiakum County Eagle Newspaper Reporter Diana Zimmerman.

The meeting convened at 8:30 a.m.

REVIEW AND APPROVAL OF AGENDA:

Commissioner Reid made a motion to approve the agenda as submitted and Commissioner Healy seconded. The motion passed 3-0.

APPROVAL OF MINUTES:

On a motion from Commissioner Healy and a second from Commissioner Reid, the minutes of the regular board meeting held on May 7, 2019 were approved as submitted. The motion passed 3-0.

APPROVAL OF FINANCES:

With regard to the following electric and water vouchers submitted by Auditor Erin Wilson, Commissioner Reid made a motion to approve the vouchers for electric and water as submitted. Commissioner Healy seconded the motion. The motion passed 3-0.

Electric	\$184,897.24
PIWS	\$ 8,861.96
WWWS	\$ 1,450.74

PUBLIC COMMENT:

There was no public comment at this time.

OPEN DISCUSSION

Commissioner Reid reported that he has been asked by a customer what has been decided regarding the possibility of using grant funds to take the water line from the meter all the way to the customer's house during the Skamokawa Water System Project. Manager Trambly stated that the decision would be made after the size of the project has been determined and what resources are available. Discussion ensued regarding pros, cons and potential liabilities.

Commissioner Healy reported that he attended the Town Council meeting on May 20th where they discussed the possibility of parking in lots owned by other entities. Commissioner Healy asked if there was a policy regarding parking in the PUD lot. Manager Trambly stated there was no policy regarding using the parking lot at this time.

Commissioner Healy asked if the PUD had a reserve account for IT and computer issues. Auditor Wilson confirmed that funds to deal with most computer issues were already worked into the budget. Discussion ensued.

REPORTS:

Manager Trambly:

Manager Trambly reported that the Skamokawa Water System consolidation letters have been sent out. Out of the twelve or thirteen sent, three have come back: two in support of the project and one against. Discussion ensued.

Manager Trambly reported that last Thursday he did a walk-through at the Grays River Substation with five potential bidders. Bids are due back by June 7. Discussion ensued.

Manager Trambly reported that the load-balancing project on the electrical system in Skamokawa was completed last week. The initial testing shows that the project was successful. Discussion ensued.

Manager Trambly reported that approximately 600-feet of HDPE pipe has been installed on the island. Crews will flush the pipe and take samples today. Discussion ensued.

Manager Trambly reported that the broadband study needs at least 400 responses from the survey, and more than 360 responses have been received. Discussion ensued.

Manager Trambly reported that the PUD has entered into an agreement with Elochoman Valley Partners to maintain the grass and manage vegetation outside the substations. Discussion ensued.

Auditor Wilson:

Auditor Wilson reported that there will not be a spill charge from BPA this year. Discussion ensued.

Auditor Wilson reported that the Legislature recently passed a long-term health care bill that will be funded through payroll tax deductions starting in 2022, with benefits starting in 2025. Discussion ensued.

Commissioner Reid:

Commissioner Reid had no report at this time.

Commissioner Healy:

Commissioner Healy lead a discussion regarding an alert system for customers in case of an outage and asked if there was a policy in place that required the lead person on a response team to pass along information to dispatch to report the expected downtime. Manager Trambly stated that there was no policy in place but it was common practice for crew leaders to do that. Discussion ensued.

Commissioner Jungers:

Commissioner Jungers reported that Columbia Generating Station is down for its biennial refueling. Discussion ensued.

DISCUSSION TOPIC:

Broadband Mission/Goal Statement

Auditor Wilson stated that the Broadband Feasibility Study grant tasked the PUD with creating a mission statement. Claire Ward from NoaNet has proposed several options, a copy of which is attached. Discussion ensued. The commissioners unanimously agreed that number two is the best option.

MEETINGS & TRAVEL APPROVAL REQUIRED:

Commissioner Reid made a motion to approve travel for Auditor Erin Wilson to attend the WFOA Annual Conference in Yakima, WA on September 17-20. Commissioner Healy seconded. The motion passed 3-0.

NEW BUSINESS:

Wahkiakum Resource Action Plan (WRAP)

Manager Trambly reported that earlier this month he received a letter from the Wahkiakum Resource Action Plan (WRAP) group that requested the PUD be involved in one of two ways: someone from the PUD act as liaison and share information, or attend monthly meetings as a member. Commissioner Healy volunteered to be liaison to WRAP. Discussion ensued.

ADJOURNMENT:

The regular meeting was adjourned at 9:21 a.m.

Approval of the minutes of the regular meeting of May 21, 2019.

Robert Jungers, President

Dennis Reid, Vice President

Eugene Healy, Secretary

Ongoing Activities:

Several of us attended a Broadband Seminar, hosted by the USDA, in Olympia, recently. Technical strategies as well as funding strategies were discussed.

Dave Trambly, General Manager at the PUD, attended the Oregon Telecommunications Conference in Ashland recently. Again, the purpose was to enhance our understanding of technical and funding possibilities.

Mr. Trambly, myself and others have had and continue to have contacts and conversations with industry experts to further enhance our understanding of the issues associated with this project.

Monica Babine has introduced Mr. Trambly and me to Russ Elliott Director of the State Broadband Office in the Department of Commerce, via e-mail. Russ was recently appointed by Gov. Inslee. We hope to have him visit us at a future committee meeting.

If you would like further information on these subjects, give me a call on (360) 431-4158.

Gene Healy, Commissioner
Wahkiakum County PUD

Wahkiakum County PUD #1 Broadband Mission/Goal Statement

Key Ideas:

Future-proof

Everyone

Economic Development

Affordable

Reliable

Option #1:

Our mission is to ensure all of Wahkiakum County has access to affordable, reliable, high-speed broadband infrastructure to facilitate economic development, public welfare and quality of life for today and the foreseeable future for area residents and businesses.

Option #2

Our mission is to evaluate the feasibility of ensuring every premise in Wahkiakum County has access to high-speed, affordable and reliable high-speed broadband infrastructure to meet current and future economic development needs.

Option #3

Our mission is to develop a community telecommunications network with the sole purpose of bringing low-cost, fast and reliable broadband connectivity to Wahkiakum County homes, neighborhoods and businesses.

Option #4

Our mission is to bring the highest quality broadband and future-proof telecommunications technologies to our friends, family and businesses that are currently unserved in Wahkiakum County.

SIGN-IN SHEET

[illegible]

SIGN-IN SHEET

NAME	ORGANIZATION	E-MAIL ADDRESS	PHONE#
Carol Larson	Wahkiakum West	clarson@wwest.net	360 465 2211
DAVID TRAMBLIE	Wahkiakum PUD	dtrambie@wahkiakumpud.org	360-795-3266
Paul Arif	Wahkiakum PUD	paul@wpuod.org	360-626-7731
Laurel Waller	Town of Cathlamet	lwaller@townofcathlamet.com	206 601.3654
STEVE CARSON	SKAMOKAWA INTERIERS	STEVE@CLNW.COM	360 545 3472
Matt Kuhl	Chamber of Commerce	mattkuhlwa@gmail.com	360-953-9212
Dean Takko	St. Sen 19 th Dist	Dean.Takko@leg.wa.gov	360-7867636
Bill Fashing	CWCOG		
Lee Trisch	Part #2		
Scott Anderson	Part 1		
Ryan Smith	TOC		
Mike Backman	BOCC		
Diana Zimmerman	Wahkiakum Eagle		
GENE HEALY	PUD		

28 October 2019
Cathlamet, WA

Memorandum for: Broadband Action Committee

The purpose of this memo is to update you on the activities of the Wahkiakum County PUD and NoaNet with respect to evaluating the need and practicality of building a broadband network in eastern Wahkiakum County. Wahkiakum West Telephone Company provides broadband services in the west end of the county, therefore this area is not included in these studies.

The Wahkiakum Broadband Action Committee appointed the Wahkiakum County PUD as the lead agency to evaluate the feasibility of building a high speed broadband network in the area. The initial assumption was that this network will be available to every home and business in the service area at an affordable price.

The Wahkiakum County PUD applied for and was granted up to \$50,000.00 to conduct the study. CERB, a part of the Washington State Department of Commerce, provided these funds. Matching funds in the amount of \$16,666.00 was provided by Wahkiakum County.

NoaNet was chosen as the agency to conduct the actual study. Below is a progress report, provided by Claire Ward of NoaNet, outlining their progress.

NoaNet:

Here is a brief update on what we are up to as well as anticipated next steps.

Demand Aggregation

The online survey tool was open for all of Wahkiakum County in May and June of this year. Within 6 weeks it received 434 responses! Data collected revealed that there was a high need and interest for improved broadband services throughout the county.

Outside Plant

In July NoaNet's outside plant team came to town to drive out the area and understand the specific needs for local buildout. They then took this data and created buildout options for review. Nick and Chris came to Wahkiakum County to present these findings to PUD staff in August.

Pole Mapping

Currently, the PUD is undergoing a process to map all of the existing poles in the area into a GIS system. This process is happening outside of the CERB grant both for PUD records as well as to facilitate an accurate network design by NoaNet's staff.

Network Engineering

Once pole mapping has been completed, NoaNet staff will utilize that data, along with the DA information and the landscape data collected by the outside plant team to create a detailed buildout plan for Wahkiakum County. This plan will include associated costs for buildout as well as ongoing network costs such as operations and maintenance for the PUD to consider.

Assessment Completion

NoaNet anticipates closing out the requirements for the CERB-funded study by the end of the year and will present final findings and recommendations to the PUD staff as well as produce and present a feasibility document to help guide future funding and network buildout decisions.



Wahkiakum County Broadband

Cathlamet Fire Hall ~ 255 2nd St, Cathlamet, WA 98612

January 13, 2020 ~ 6:00 PM

AGENDA

- 1. Call to Order & Introduction**
- 2. General Update**
 - A. Public Works Board
 - B. NoaNet
- 3. Re-connect Grant Application Discussion**
<https://www.usda.gov/reconnect>
- 4. Action Items**
 - A. Recommendation on Grant application
- 5. Other Business**
- 6. Adjourn**

Next scheduled meeting: TBD

Sign in

BROADBAND

1-13-20

Cathlamet Fire Hall

Name

ORG.

EMAIL

T Havigan

PUD

—

Laurel Waller

Citizen +
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David Olson

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CLCOG

Steve Appelo

Wahtia Kum West

David Trambie

Wahtia Kum PUD

Appendix C: Questionnaire Responses

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Dave Olson, Councilman, Town of Cathlamet
2. Which providers are currently serving your community?
 - a. Centurylink, Cascade Networks, Charter
3. Which providers attended your meetings?
 - a. None
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Generally tracked
5. Does existing broadband access meet your needs?
 - a. Definitely not
6. If is inadequate, in what ways does it fall short?
 - a. Slow speeds, high cost, lack of availability to many residents and businesses
7. If you have broadband, how do you use it now?
 - a. Multiple devices for personal and business use.

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Gene Healy
2. Which providers are currently serving your community?
 - a. Century Link, Wahkiakum West, CLNW, WAVE, Spectrum, Smokey Waters
3. Which providers attended your meetings?
 - a. Wahkiakum West, Smokey Waters, CLNW
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Have to assume, close
5. Does existing broadband access meet your needs?
 - a. No
6. If is inadequate, in what ways does it fall short?
 - a. Too slow
7. If you have broadband, how do you use it now?
 - a. Email, social media, update devices, face time

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Timothy M. Hanigan, Attorney, Wahkiakum PUD
2. Which providers are currently serving your community?
 - a. Cascade Networks, CenturyLink
3. Which providers attended your meetings?
 - a. Wahkiakum West Telephone Company
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Close to accurate!
5. Does existing broadband access meet your needs?
 - a. It does not. No access to high speed internet at home.
6. If is inadequate, in what ways does it fall short?
 - a. Access. Price. Stability.
7. If you have broadband, how do you use it now?
 - a. Only at work, not available at current home.

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Lee Tischer, Commissioner, Port Dist. 2
2. Which providers are currently serving your community?
 - a. Wave, Centurylink, Smokey Waters
3. Which providers attended your meetings?
 - a. None that I recall so far
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Mapping is accurate
5. Does existing broadband access meet your needs?
 - a. No
6. If is inadequate, in what ways does it fall short?
 - a. Not available outside of town of Cathlamet.
7. If you have broadband, how do you use it now?
 - a. Do not have broadband.

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Richard Erickson, Owner, The Villa at Little Cape Horn
2. Which providers are currently serving your community?
 - a. Too many to name
3. Which providers attended your meetings?
 - a. none
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Excellent
5. Does existing broadband access meet your needs?
 - a. NO
6. If is inadequate, in what ways does it fall short?
 - a. Too slow and limits data
7. If you have broadband, how do you use it now?
 - a. Internet and TV

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Brent Freeman, Superintendent, Wahkiakum School District
2. Which providers are currently serving your community?
 - a. n/a
3. Which providers attended your meetings?
 - a. n/a
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. n/a
5. Does existing broadband access meet your needs?
 - a. The School District has broadband access, however, the vast majority of our students and staff do not have broadband access. In fact, the vast majority have internet access that is routinely in the .5-3.0 mbs range which is grossly insufficient.
6. If is inadequate, in what ways does it fall short?
 - a. MBS is far too limiting, typically in the range of .5-3.0 Mbs
7. If you have broadband, how do you use it now?
 - a. The School District uses broadband daily and it supports everything from security to academics and extra curricular activities. Its great while on campus, but internet access once some leaves the campus is unstable and limited.

Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Steve Carson, Owner, Skamokawa Internet Services
2. Which providers are currently serving your community?
 - a. Skamokawa Internet Services, Century Link, Wave Broadband, Wahkiakum West
3. Which providers attended your meetings?
 - a. Skamokawa Internet Services, Wahkiakum West
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Unsure
5. Does existing broadband access meet your needs?
 - a. I have a wholesale fiber connection via NoaNet so absolutely.
6. If is inadequate, in what ways does it fall short?
 - a. None
7. If you have broadband, how do you use it now?
 - a. As an Internet service provider, streaming television and media, email, taking online surveys, etc.

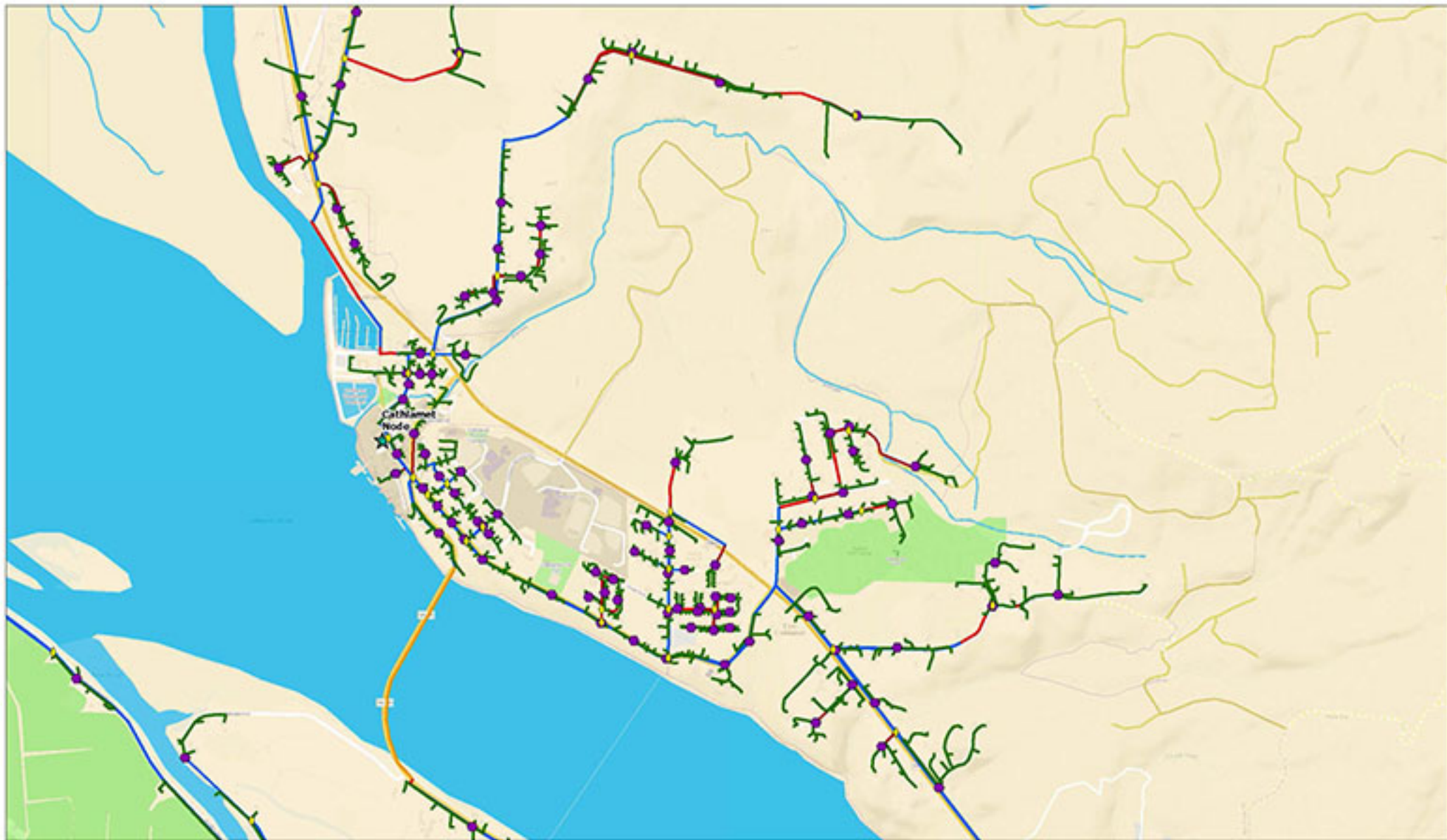
Wahkiakum Broadband Action Committee ISP Survey

Emailed on 12/27/2019

1. Name, Title and Organization
 - a. Scott Anderson, Port 1 Commissioner
2. Which providers are currently serving your community?
 - a. Century Link, Cascade Networks
3. Which providers attended your meetings?
 - a. unsure
4. How do the mapping results compare with member's actual experiences (if there is mapping available)?
 - a. Unsure
5. Does existing broadband access meet your needs?
 - a. Not really
6. If is inadequate, in what ways does it fall short?
 - a. Slow and freezes or goes out
7. If you have broadband, how do you use it now?
 - a. Do not have

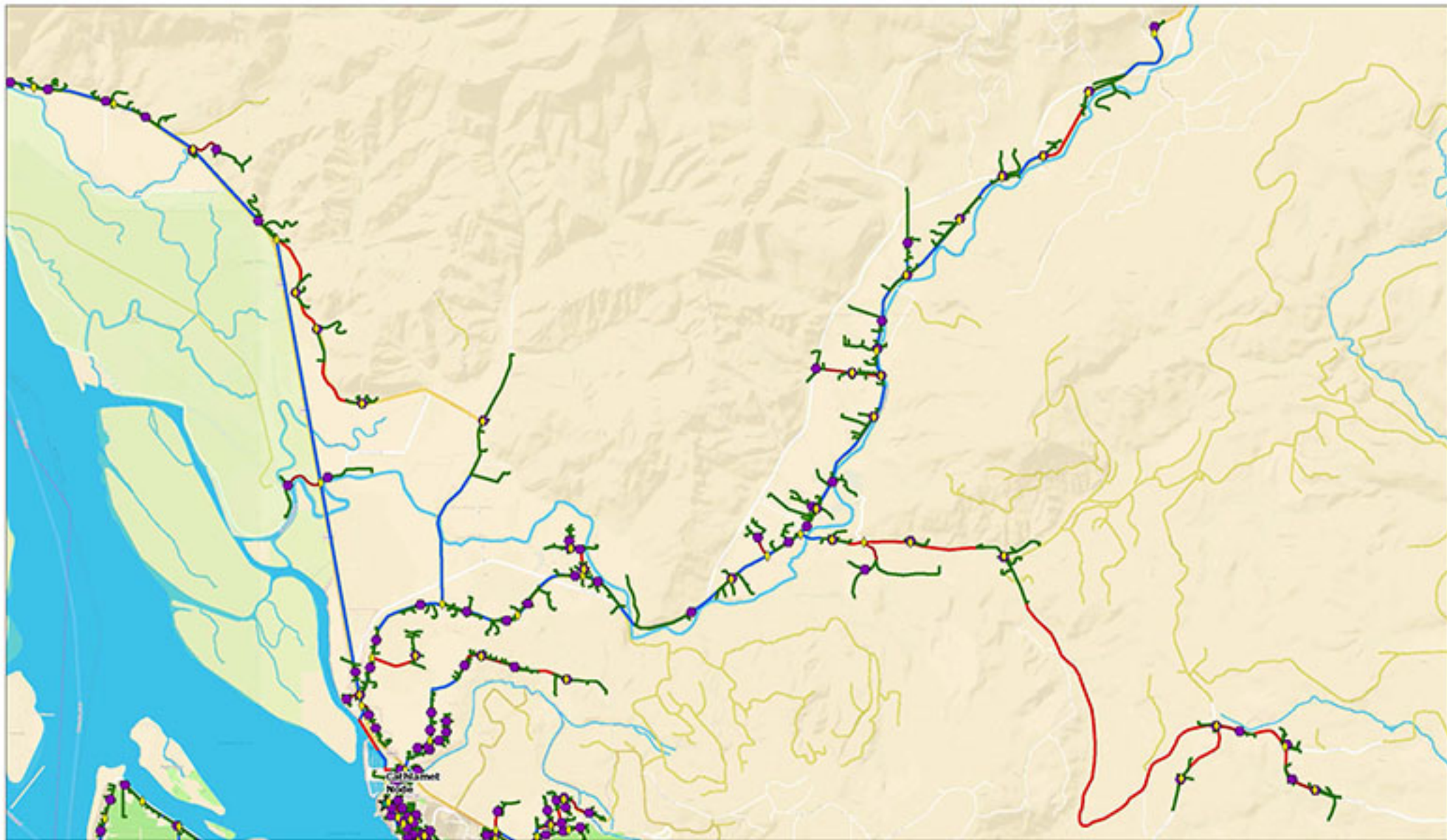
Appendix D: Proposed Network Design Maps













Appendix E: Budget

Wahkiakum PUD Income and Expense Model

LINE ITEM DESCRIPTION		Yr 0	Yr 1	Yr 2	Yr 3	Yr 4
Revenues						
Residential Recurring		\$ -	\$ 372,792	\$ 419,391	\$ 465,990	\$ 512,589
Residential Installation		\$ -	\$ -	\$ 19,813	\$ 19,813	\$ 19,813
Business Class Recurring		\$ -	\$ 15,059	\$ 17,569	\$ 20,078	\$ 22,588
Business Class Installation		\$ -	\$ 1,255	\$ 209	\$ 209	\$ 209
High Cap Services Recurring		\$ -	\$ 8,400	\$ 12,600	\$ 12,600	\$ 12,600
High Cap Services Installation		\$ -	\$ 5,000	\$ 2,500	\$ -	\$ -
Grant Proceeds, Two Year Roll Out		\$ 3,934,159	\$ 3,934,159	\$ -	\$ -	\$ -
Loan Proceeds		\$ 2,622,772	\$ -	\$ -	\$ -	\$ -
Total Revenues		\$ 6,556,931	\$ 4,336,664	\$ 472,081	\$ 518,690	\$ 567,799
Operating and Maintenance Expenses						
Network Operations Expenses		\$ 58,600	\$ 121,515	\$ 128,053	\$ 135,050	\$ 146,163
Sales and Marketing Expenses		\$ 122,000	\$ 164,800	\$ 159,800	\$ 159,800	\$ 99,800
Business Administration Expenses		\$ 54,500	\$ 178,718	\$ 178,718	\$ 168,718	\$ 168,718
O&M Direct Costs		\$ 235,100	\$ 465,033	\$ 466,571	\$ 463,568	\$ 414,681
Capital Expenditures						
Backbone Infrastructure, First Year Roll Out		\$ 2,954,385	\$ -	\$ -	\$ -	\$ -
Core Electronics (The Service Network)		\$ 119,000	\$ -	\$ -	\$ -	\$ -
Distribution Infrastructure, First Year Roll Out		\$ 818,670	\$ -	\$ -	\$ -	\$ -
Service Drop Infrastructure, Two Year Roll Out		\$ 2,922,909	\$ 2,922,909	\$ -	\$ -	\$ -
Subscriber Connections		\$ -	\$ 753,216	\$ 84,913	\$ 83,885	\$ 83,885
Renewal and Replacement		\$ -	\$ -	\$ 17,037	\$ 18,741	\$ 20,615
Infrastructure Repair		\$ -	\$ -	\$ 34,075	\$ 37,482	\$ 41,231
Total Capital		\$ 6,814,964	\$ 3,676,125	\$ 136,025	\$ 140,108	\$ 145,731
Total O&M and Capital		\$ 7,050,064	\$ 4,141,158	\$ 602,596	\$ 603,676	\$ 560,411
Net Cash To/From Broadband		\$ (493,134)	\$ 195,506	\$ (130,515)	\$ (84,986)	\$ 7,388

5 Year Roll Up

3/13/2020

Wahkiakum PUD Income Model								
LINE ITEM DESCRIPTION			Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Revenues								
Assumptions Residential: 40% market share Yr 1, with 5% growth there after	1585	40%	Net New Residential	634	79	79	79	79
			Install Revenue per subscriber	\$0	\$250	\$250	\$250	\$250
			Recurring Revenue per subscriber	\$49	\$49	\$49	\$49	\$49
Assumptions Commercial: 30% market share Yr 1, with 5% growth there after	47	30%	Net New Business	14	2	2	2	2
			Install Revenue per subscriber	\$0	\$1,000	\$1,000	\$1,000	\$1,000
			Recurring Revenue per subscriber	\$89	\$89	\$89	\$89	\$89
Assumptions High Cap			Net New Business	2	1	0	0	0
			Install Revenue per subscriber	\$2,500	\$2,500	\$2,500	\$2,000	\$2,000
			Recurring Revenue per subscriber	\$350	\$350	\$350	\$350	\$350

Wahkiakum PUD Operations and Expense Model

LINE ITEM DESCRIPTION		Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Operating Expenses							
Network Operating Expense		\$ 58,600.00	\$ 121,514.70	\$ 128,052.90	\$ 135,049.70	\$ 146,162.66	\$ 153,403.40
	Technical Maintenance, Installation and On-Call	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Network Support Systems	\$ 30,000.00	\$ 60,554.70	\$ 64,436.90	\$ 68,272.10	\$ 72,107.30	\$ 75,942.50
	Circuit Expenses, Peering, Upstream Internet	\$ 7,000.00	\$ 14,400.00	\$ 16,000.00	\$ 18,000.00	\$ 20,000.00	\$ 22,000.00
	Facilities and Utilities	\$ 9,600.00	\$ 10,560.00	\$ 11,616.00	\$ 12,777.60	\$ 14,055.36	\$ 15,460.90
	Vehicle Fleet	\$ 12,000.00	\$ 36,000.00	\$ 36,000.00	\$ 36,000.00	\$ 40,000.00	\$ 40,000.00
Sales and Marketing		\$ 122,000.00	\$ 164,800.00	\$ 159,800.00	\$ 159,800.00	\$ 99,800.00	\$ 99,800.00
	Broadband Manager	\$ 80,000.00	\$ 140,000.00	\$ 140,000.00	\$ 140,000.00	\$ 80,000.00	\$ 80,000.00
	Demonstration Center	\$ 12,000.00	\$ 2,800.00	\$ 2,800.00	\$ 2,800.00	\$ 2,800.00	\$ 2,800.00
	Customer Service Zones Portal	\$ -	\$ 12,000.00	\$ 12,000.00	\$ 12,000.00	\$ 12,000.00	\$ 12,000.00
	Marketing, Branding, and Collateral	\$ 30,000.00	\$ 10,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Business Administration		\$ 54,500.00	\$ 178,718.04	\$ 178,718.04	\$ 168,718.04	\$ 168,718.04	\$ 168,718.04
	General Office	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00
	Churn, Billing Disputes, Non-Payment, Low Income Programs	\$ -	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
	Grant Services, Research, Compliance	\$ 50,000.00	\$ 10,000.00	\$ 10,000.00	\$ -	\$ -	\$ -
	Debt Service	\$ -	\$ 159,218.04	\$ 159,218.04	\$ 159,218.04	\$ 159,218.04	\$ 159,218.04

Loan Amount	\$ 2,622,772.34
Interest Rate	2.00%
Months	240
Payments	\$13,268.17

Yearly Payment \$159,218.04

Project Amount \$10,491,089.35
Grant Proceeds \$7,868,317.01

Loan Percentage 0.25

Period	Beginning Balance	Payment	Principal	Interest	Cumulative Principal	Cumulative Interest	Ending Balance
Month 1	\$ 2,622,772.34	\$13,268.17	\$8,896.88	\$ 4,371.29	\$ -	\$ -	\$ 2,613,875.46
Month 2	\$ 2,613,875.46	\$13,268.17	\$8,911.71	\$ 4,356.46	\$8,911.71	\$ 4,356.46	\$ 2,604,963.75
Month 3	\$ 2,604,963.75	\$13,268.17	\$8,926.56	\$ 4,341.61	\$17,838.27	\$ 8,698.07	\$ 2,596,037.19
Month 4	\$ 2,596,037.19	\$13,268.17	\$8,941.44	\$ 4,326.73	\$26,779.71	\$ 13,024.80	\$ 2,587,095.75
Month 5	\$ 2,587,095.75	\$13,268.17	\$8,956.34	\$ 4,311.83	\$35,736.05	\$ 17,336.63	\$ 2,578,139.41
Month 6	\$ 2,578,139.41	\$13,268.17	\$8,971.27	\$ 4,296.90	\$44,707.32	\$ 21,633.53	\$ 2,569,168.14
Month 7	\$ 2,569,168.14	\$13,268.17	\$8,986.22	\$ 4,281.95	\$53,693.54	\$ 25,915.48	\$ 2,560,181.92
Month 8	\$ 2,560,181.92	\$13,268.17	\$9,001.20	\$ 4,266.97	\$62,694.74	\$ 30,182.45	\$ 2,551,180.72
Month 9	\$ 2,551,180.72	\$13,268.17	\$9,016.20	\$ 4,251.97	\$71,710.94	\$ 34,434.42	\$ 2,542,164.52
Month 10	\$ 2,542,164.52	\$13,268.17	\$9,031.23	\$ 4,236.94	\$80,742.17	\$ 38,671.36	\$ 2,533,133.29
Month 11	\$ 2,533,133.29	\$13,268.17	\$9,046.28	\$ 4,221.89	\$89,788.45	\$ 42,893.25	\$ 2,524,087.01
Month 12	\$ 2,524,087.01	\$13,268.17	\$9,061.36	\$ 4,206.81	\$98,849.81	\$ 47,100.06	\$ 2,515,025.65
Month 13	\$ 2,515,025.65	\$13,268.17	\$9,076.46	\$ 4,191.71	\$107,926.27	\$ 51,291.77	\$ 2,505,949.19
Month 14	\$ 2,505,949.19	\$13,268.17	\$9,091.59	\$ 4,176.58	\$117,017.86	\$ 55,468.35	\$ 2,496,857.60
Month 15	\$ 2,496,857.60	\$13,268.17	\$9,106.74	\$ 4,161.43	\$126,124.60	\$ 59,629.78	\$ 2,487,750.86
Month 16	\$ 2,487,750.86	\$13,268.17	\$9,121.92	\$ 4,146.25	\$135,246.52	\$ 63,776.03	\$ 2,478,628.94
Month 17	\$ 2,478,628.94	\$13,268.17	\$9,137.12	\$ 4,131.05	\$144,383.64	\$ 67,907.08	\$ 2,469,491.82
Month 18	\$ 2,469,491.82	\$13,268.17	\$9,152.35	\$ 4,115.82	\$153,535.99	\$ 72,022.90	\$ 2,460,339.47
Month 19	\$ 2,460,339.47	\$13,268.17	\$9,167.60	\$ 4,100.57	\$162,703.59	\$ 76,123.47	\$ 2,451,171.87
Month 20	\$ 2,451,171.87	\$13,268.17	\$9,182.88	\$ 4,085.29	\$171,886.47	\$ 80,208.76	\$ 2,441,988.99
Month 21	\$ 2,441,988.99	\$13,268.17	\$9,198.19	\$ 4,069.98	\$181,084.66	\$ 84,278.74	\$ 2,432,790.80
Month 22	\$ 2,432,790.80	\$13,268.17	\$9,213.52	\$ 4,054.65	\$190,298.18	\$ 88,333.39	\$ 2,423,577.28
Month 23	\$ 2,423,577.28	\$13,268.17	\$9,228.87	\$ 4,039.30	\$199,527.05	\$ 92,372.69	\$ 2,414,348.41
Month 24	\$ 2,414,348.41	\$13,268.17	\$9,244.26	\$ 4,023.91	\$208,771.31	\$ 96,396.60	\$ 2,405,104.15
Month 25	\$ 2,405,104.15	\$13,268.17	\$9,259.66	\$ 4,008.51	\$218,030.97	\$ 100,405.11	\$ 2,395,844.49
Month 26	\$ 2,395,844.49	\$13,268.17	\$9,275.10	\$ 3,993.07	\$227,306.07	\$ 104,398.18	\$ 2,386,569.39
Month 27	\$ 2,386,569.39	\$13,268.17	\$9,290.55	\$ 3,977.62	\$236,596.62	\$ 108,375.80	\$ 2,377,278.84
Month 28	\$ 2,377,278.84	\$13,268.17	\$9,306.04	\$ 3,962.13	\$245,902.66	\$ 112,337.93	\$ 2,367,972.80
Month 29	\$ 2,367,972.80	\$13,268.17	\$9,321.55	\$ 3,946.62	\$255,224.21	\$ 116,284.55	\$ 2,358,651.25
Month 30	\$ 2,358,651.25	\$13,268.17	\$9,337.08	\$ 3,931.09	\$264,561.29	\$ 120,215.64	\$ 2,349,314.17

Month 31	\$	2,349,314.17	\$13,268.17	\$9,352.65	\$	3,915.52	\$273,913.94	\$	124,131.16	\$	2,339,961.52
Month 32	\$	2,339,961.52	\$13,268.17	\$9,368.23	\$	3,899.94	\$283,282.17	\$	128,031.10	\$	2,330,593.29
Month 33	\$	2,330,593.29	\$13,268.17	\$9,383.85	\$	3,884.32	\$292,666.02	\$	131,915.42	\$	2,321,209.44
Month 34	\$	2,321,209.44	\$13,268.17	\$9,399.49	\$	3,868.68	\$302,065.51	\$	135,784.10	\$	2,311,809.95
Month 35	\$	2,311,809.95	\$13,268.17	\$9,415.15	\$	3,853.02	\$311,480.66	\$	139,637.12	\$	2,302,394.80
Month 36	\$	2,302,394.80	\$13,268.17	\$9,430.85	\$	3,837.32	\$320,911.51	\$	143,474.44	\$	2,292,963.95
Month 37	\$	2,292,963.95	\$13,268.17	\$9,446.56	\$	3,821.61	\$330,358.07	\$	147,296.05	\$	2,283,517.39
Month 38	\$	2,283,517.39	\$13,268.17	\$9,462.31	\$	3,805.86	\$339,820.38	\$	151,101.91	\$	2,274,055.08
Month 39	\$	2,274,055.08	\$13,268.17	\$9,478.08	\$	3,790.09	\$349,298.46	\$	154,892.00	\$	2,264,577.00
Month 40	\$	2,264,577.00	\$13,268.17	\$9,493.88	\$	3,774.29	\$358,792.34	\$	158,666.29	\$	2,255,083.12
Month 41	\$	2,255,083.12	\$13,268.17	\$9,509.70	\$	3,758.47	\$368,302.04	\$	162,424.76	\$	2,245,573.42
Month 42	\$	2,245,573.42	\$13,268.17	\$9,525.55	\$	3,742.62	\$377,827.59	\$	166,167.38	\$	2,236,047.87
Month 43	\$	2,236,047.87	\$13,268.17	\$9,541.42	\$	3,726.75	\$387,369.01	\$	169,894.13	\$	2,226,506.45
Month 44	\$	2,226,506.45	\$13,268.17	\$9,557.33	\$	3,710.84	\$396,926.34	\$	173,604.97	\$	2,216,949.12
Month 45	\$	2,216,949.12	\$13,268.17	\$9,573.25	\$	3,694.92	\$406,499.59	\$	177,299.89	\$	2,207,375.87
Month 46	\$	2,207,375.87	\$13,268.17	\$9,589.21	\$	3,678.96	\$416,088.80	\$	180,978.85	\$	2,197,786.66
Month 47	\$	2,197,786.66	\$13,268.17	\$9,605.19	\$	3,662.98	\$425,693.99	\$	184,641.83	\$	2,188,181.47
Month 48	\$	2,188,181.47	\$13,268.17	\$9,621.20	\$	3,646.97	\$435,315.19	\$	188,288.80	\$	2,178,560.27
Month 49	\$	2,178,560.27	\$13,268.17	\$9,637.24	\$	3,630.93	\$444,952.43	\$	191,919.73	\$	2,168,923.03
Month 50	\$	2,168,923.03	\$13,268.17	\$9,653.30	\$	3,614.87	\$454,605.73	\$	195,534.60	\$	2,159,269.73
Month 51	\$	2,159,269.73	\$13,268.17	\$9,669.39	\$	3,598.78	\$464,275.12	\$	199,133.38	\$	2,149,600.34
Month 52	\$	2,149,600.34	\$13,268.17	\$9,685.50	\$	3,582.67	\$473,960.62	\$	202,716.05	\$	2,139,914.84
Month 53	\$	2,139,914.84	\$13,268.17	\$9,701.65	\$	3,566.52	\$483,662.27	\$	206,282.57	\$	2,130,213.19
Month 54	\$	2,130,213.19	\$13,268.17	\$9,717.81	\$	3,550.36	\$493,380.08	\$	209,832.93	\$	2,120,495.38
Month 55	\$	2,120,495.38	\$13,268.17	\$9,734.01	\$	3,534.16	\$503,114.09	\$	213,367.09	\$	2,110,761.37
Month 56	\$	2,110,761.37	\$13,268.17	\$9,750.23	\$	3,517.94	\$512,864.32	\$	216,885.03	\$	2,101,011.14
Month 57	\$	2,101,011.14	\$13,268.17	\$9,766.48	\$	3,501.69	\$522,630.80	\$	220,386.72	\$	2,091,244.66
Month 58	\$	2,091,244.66	\$13,268.17	\$9,782.76	\$	3,485.41	\$532,413.56	\$	223,872.13	\$	2,081,461.90
Month 59	\$	2,081,461.90	\$13,268.17	\$9,799.07	\$	3,469.10	\$542,212.63	\$	227,341.23	\$	2,071,662.83
Month 60	\$	2,071,662.83	\$13,268.17	\$9,815.40	\$	3,452.77	\$552,028.03	\$	230,794.00	\$	2,061,847.43
Month 61	\$	2,061,847.43	\$13,268.17	\$9,831.76	\$	3,436.41	\$561,859.79	\$	234,230.41	\$	2,052,015.67
Month 62	\$	2,052,015.67	\$13,268.17	\$9,848.14	\$	3,420.03	\$571,707.93	\$	237,650.44	\$	2,042,167.53
Month 63	\$	2,042,167.53	\$13,268.17	\$9,864.56	\$	3,403.61	\$581,572.49	\$	241,054.05	\$	2,032,302.97
Month 64	\$	2,032,302.97	\$13,268.17	\$9,881.00	\$	3,387.17	\$591,453.49	\$	244,441.22	\$	2,022,421.97
Month 65	\$	2,022,421.97	\$13,268.17	\$9,897.47	\$	3,370.70	\$601,350.96	\$	247,811.92	\$	2,012,524.50
Month 66	\$	2,012,524.50	\$13,268.17	\$9,913.96	\$	3,354.21	\$611,264.92	\$	251,166.13	\$	2,002,610.54
Month 67	\$	2,002,610.54	\$13,268.17	\$9,930.49	\$	3,337.68	\$621,195.41	\$	254,503.81	\$	1,992,680.05

Month 68	\$	1,992,680.05	\$13,268.17	\$9,947.04	\$	3,321.13	\$631,142.45	\$	257,824.94	\$	1,982,733.01
Month 69	\$	1,982,733.01	\$13,268.17	\$9,963.61	\$	3,304.56	\$641,106.06	\$	261,129.50	\$	1,972,769.40
Month 70	\$	1,972,769.40	\$13,268.17	\$9,980.22	\$	3,287.95	\$651,086.28	\$	264,417.45	\$	1,962,789.18
Month 71	\$	1,962,789.18	\$13,268.17	\$9,996.85	\$	3,271.32	\$661,083.13	\$	267,688.77	\$	1,952,792.33
Month 72	\$	1,952,792.33	\$13,268.17	\$10,013.52	\$	3,254.65	\$671,096.65	\$	270,943.42	\$	1,942,778.81
Month 73	\$	1,942,778.81	\$13,268.17	\$10,030.21	\$	3,237.96	\$681,126.86	\$	274,181.38	\$	1,932,748.60
Month 74	\$	1,932,748.60	\$13,268.17	\$10,046.92	\$	3,221.25	\$691,173.78	\$	277,402.63	\$	1,922,701.68
Month 75	\$	1,922,701.68	\$13,268.17	\$10,063.67	\$	3,204.50	\$701,237.45	\$	280,607.13	\$	1,912,638.01
Month 76	\$	1,912,638.01	\$13,268.17	\$10,080.44	\$	3,187.73	\$711,317.89	\$	283,794.86	\$	1,902,557.57
Month 77	\$	1,902,557.57	\$13,268.17	\$10,097.24	\$	3,170.93	\$721,415.13	\$	286,965.79	\$	1,892,460.33
Month 78	\$	1,892,460.33	\$13,268.17	\$10,114.07	\$	3,154.10	\$731,529.20	\$	290,119.89	\$	1,882,346.26
Month 79	\$	1,882,346.26	\$13,268.17	\$10,130.93	\$	3,137.24	\$741,660.13	\$	293,257.13	\$	1,872,215.33
Month 80	\$	1,872,215.33	\$13,268.17	\$10,147.81	\$	3,120.36	\$751,807.94	\$	296,377.49	\$	1,862,067.52
Month 81	\$	1,862,067.52	\$13,268.17	\$10,164.72	\$	3,103.45	\$761,972.66	\$	299,480.94	\$	1,851,902.80
Month 82	\$	1,851,902.80	\$13,268.17	\$10,181.67	\$	3,086.50	\$772,154.33	\$	302,567.44	\$	1,841,721.13
Month 83	\$	1,841,721.13	\$13,268.17	\$10,198.63	\$	3,069.54	\$782,352.96	\$	305,636.98	\$	1,831,522.50
Month 84	\$	1,831,522.50	\$13,268.17	\$10,215.63	\$	3,052.54	\$792,568.59	\$	308,689.52	\$	1,821,306.87
Month 85	\$	1,821,306.87	\$13,268.17	\$10,232.66	\$	3,035.51	\$802,801.25	\$	311,725.03	\$	1,811,074.21
Month 86	\$	1,811,074.21	\$13,268.17	\$10,249.71	\$	3,018.46	\$813,050.96	\$	314,743.49	\$	1,800,824.50
Month 87	\$	1,800,824.50	\$13,268.17	\$10,266.80	\$	3,001.37	\$823,317.76	\$	317,744.86	\$	1,790,557.70
Month 88	\$	1,790,557.70	\$13,268.17	\$10,283.91	\$	2,984.26	\$833,601.67	\$	320,729.12	\$	1,780,273.79
Month 89	\$	1,780,273.79	\$13,268.17	\$10,301.05	\$	2,967.12	\$843,902.72	\$	323,696.24	\$	1,769,972.74
Month 90	\$	1,769,972.74	\$13,268.17	\$10,318.22	\$	2,949.95	\$854,220.94	\$	326,646.19	\$	1,759,654.52
Month 91	\$	1,759,654.52	\$13,268.17	\$10,335.41	\$	2,932.76	\$864,556.35	\$	329,578.95	\$	1,749,319.11
Month 92	\$	1,749,319.11	\$13,268.17	\$10,352.64	\$	2,915.53	\$874,908.99	\$	332,494.48	\$	1,738,966.47
Month 93	\$	1,738,966.47	\$13,268.17	\$10,369.89	\$	2,898.28	\$885,278.88	\$	335,392.76	\$	1,728,596.58
Month 94	\$	1,728,596.58	\$13,268.17	\$10,387.18	\$	2,880.99	\$895,666.06	\$	338,273.75	\$	1,718,209.40
Month 95	\$	1,718,209.40	\$13,268.17	\$10,404.49	\$	2,863.68	\$906,070.55	\$	341,137.43	\$	1,707,804.91
Month 96	\$	1,707,804.91	\$13,268.17	\$10,421.83	\$	2,846.34	\$916,492.38	\$	343,983.77	\$	1,697,383.08
Month 97	\$	1,697,383.08	\$13,268.17	\$10,439.20	\$	2,828.97	\$926,931.58	\$	346,812.74	\$	1,686,943.88
Month 98	\$	1,686,943.88	\$13,268.17	\$10,456.60	\$	2,811.57	\$937,388.18	\$	349,624.31	\$	1,676,487.28
Month 99	\$	1,676,487.28	\$13,268.17	\$10,474.02	\$	2,794.15	\$947,862.20	\$	352,418.46	\$	1,666,013.26
Month 100	\$	1,666,013.26	\$13,268.17	\$10,491.48	\$	2,776.69	\$958,353.68	\$	355,195.15	\$	1,655,521.78
Month 101	\$	1,655,521.78	\$13,268.17	\$10,508.97	\$	2,759.20	\$968,862.65	\$	357,954.35	\$	1,645,012.81
Month 102	\$	1,645,012.81	\$13,268.17	\$10,526.48	\$	2,741.69	\$979,389.13	\$	360,696.04	\$	1,634,486.33
Month 103	\$	1,634,486.33	\$13,268.17	\$10,544.03	\$	2,724.14	\$989,933.16	\$	363,420.18	\$	1,623,942.30
Month 104	\$	1,623,942.30	\$13,268.17	\$10,561.60	\$	2,706.57	\$1,000,494.76	\$	366,126.75	\$	1,613,380.70

Month 105	\$	1,613,380.70	\$13,268.17	\$10,579.20	\$	2,688.97	\$1,011,073.96	\$	368,815.72	\$	1,602,801.50
Month 106	\$	1,602,801.50	\$13,268.17	\$10,596.83	\$	2,671.34	\$1,021,670.79	\$	371,487.06	\$	1,592,204.67
Month 107	\$	1,592,204.67	\$13,268.17	\$10,614.50	\$	2,653.67	\$1,032,285.29	\$	374,140.73	\$	1,581,590.17
Month 108	\$	1,581,590.17	\$13,268.17	\$10,632.19	\$	2,635.98	\$1,042,917.48	\$	376,776.71	\$	1,570,957.98
Month 109	\$	1,570,957.98	\$13,268.17	\$10,649.91	\$	2,618.26	\$1,053,567.39	\$	379,394.97	\$	1,560,308.07
Month 110	\$	1,560,308.07	\$13,268.17	\$10,667.66	\$	2,600.51	\$1,064,235.05	\$	381,995.48	\$	1,549,640.41
Month 111	\$	1,549,640.41	\$13,268.17	\$10,685.44	\$	2,582.73	\$1,074,920.49	\$	384,578.21	\$	1,538,954.97
Month 112	\$	1,538,954.97	\$13,268.17	\$10,703.25	\$	2,564.92	\$1,085,623.74	\$	387,143.13	\$	1,528,251.72
Month 113	\$	1,528,251.72	\$13,268.17	\$10,721.08	\$	2,547.09	\$1,096,344.82	\$	389,690.22	\$	1,517,530.64
Month 114	\$	1,517,530.64	\$13,268.17	\$10,738.95	\$	2,529.22	\$1,107,083.77	\$	392,219.44	\$	1,506,791.69
Month 115	\$	1,506,791.69	\$13,268.17	\$10,756.85	\$	2,511.32	\$1,117,840.62	\$	394,730.76	\$	1,496,034.84
Month 116	\$	1,496,034.84	\$13,268.17	\$10,774.78	\$	2,493.39	\$1,128,615.40	\$	397,224.15	\$	1,485,260.06
Month 117	\$	1,485,260.06	\$13,268.17	\$10,792.74	\$	2,475.43	\$1,139,408.14	\$	399,699.58	\$	1,474,467.32
Month 118	\$	1,474,467.32	\$13,268.17	\$10,810.72	\$	2,457.45	\$1,150,218.86	\$	402,157.03	\$	1,463,656.60
Month 119	\$	1,463,656.60	\$13,268.17	\$10,828.74	\$	2,439.43	\$1,161,047.60	\$	404,596.46	\$	1,452,827.86
Month 120	\$	1,452,827.86	\$13,268.17	\$10,846.79	\$	2,421.38	\$1,171,894.39	\$	407,017.84	\$	1,441,981.07
Month 121	\$	1,441,981.07	\$13,268.17	\$10,864.87	\$	2,403.30	\$1,182,759.26	\$	409,421.14	\$	1,431,116.20
Month 122	\$	1,431,116.20	\$13,268.17	\$10,882.98	\$	2,385.19	\$1,193,642.24	\$	411,806.33	\$	1,420,233.22
Month 123	\$	1,420,233.22	\$13,268.17	\$10,901.11	\$	2,367.06	\$1,204,543.35	\$	414,173.39	\$	1,409,332.11
Month 124	\$	1,409,332.11	\$13,268.17	\$10,919.28	\$	2,348.89	\$1,215,462.63	\$	416,522.28	\$	1,398,412.83
Month 125	\$	1,398,412.83	\$13,268.17	\$10,937.48	\$	2,330.69	\$1,226,400.11	\$	418,852.97	\$	1,387,475.35
Month 126	\$	1,387,475.35	\$13,268.17	\$10,955.71	\$	2,312.46	\$1,237,355.82	\$	421,165.43	\$	1,376,519.64
Month 127	\$	1,376,519.64	\$13,268.17	\$10,973.97	\$	2,294.20	\$1,248,329.79	\$	423,459.63	\$	1,365,545.67
Month 128	\$	1,365,545.67	\$13,268.17	\$10,992.26	\$	2,275.91	\$1,259,322.05	\$	425,735.54	\$	1,354,553.41
Month 129	\$	1,354,553.41	\$13,268.17	\$11,010.58	\$	2,257.59	\$1,270,332.63	\$	427,993.13	\$	1,343,542.83
Month 130	\$	1,343,542.83	\$13,268.17	\$11,028.93	\$	2,239.24	\$1,281,361.56	\$	430,232.37	\$	1,332,513.90
Month 131	\$	1,332,513.90	\$13,268.17	\$11,047.31	\$	2,220.86	\$1,292,408.87	\$	432,453.23	\$	1,321,466.59
Month 132	\$	1,321,466.59	\$13,268.17	\$11,065.73	\$	2,202.44	\$1,303,474.60	\$	434,655.67	\$	1,310,400.86
Month 133	\$	1,310,400.86	\$13,268.17	\$11,084.17	\$	2,184.00	\$1,314,558.77	\$	436,839.67	\$	1,299,316.69
Month 134	\$	1,299,316.69	\$13,268.17	\$11,102.64	\$	2,165.53	\$1,325,661.41	\$	439,005.20	\$	1,288,214.05
Month 135	\$	1,288,214.05	\$13,268.17	\$11,121.15	\$	2,147.02	\$1,336,782.56	\$	441,152.22	\$	1,277,092.90
Month 136	\$	1,277,092.90	\$13,268.17	\$11,139.68	\$	2,128.49	\$1,347,922.24	\$	443,280.71	\$	1,265,953.22
Month 137	\$	1,265,953.22	\$13,268.17	\$11,158.25	\$	2,109.92	\$1,359,080.49	\$	445,390.63	\$	1,254,794.97
Month 138	\$	1,254,794.97	\$13,268.17	\$11,176.85	\$	2,091.32	\$1,370,257.34	\$	447,481.95	\$	1,243,618.12
Month 139	\$	1,243,618.12	\$13,268.17	\$11,195.47	\$	2,072.70	\$1,381,452.81	\$	449,554.65	\$	1,232,422.65
Month 140	\$	1,232,422.65	\$13,268.17	\$11,214.13	\$	2,054.04	\$1,392,666.94	\$	451,608.69	\$	1,221,208.52
Month 141	\$	1,221,208.52	\$13,268.17	\$11,232.82	\$	2,035.35	\$1,403,899.76	\$	453,644.04	\$	1,209,975.70

Month 142	\$	1,209,975.70	\$13,268.17	\$11,251.54	\$	2,016.63	\$1,415,151.30	\$	455,660.67	\$	1,198,724.16
Month 143	\$	1,198,724.16	\$13,268.17	\$11,270.30	\$	1,997.87	\$1,426,421.60	\$	457,658.54	\$	1,187,453.86
Month 144	\$	1,187,453.86	\$13,268.17	\$11,289.08	\$	1,979.09	\$1,437,710.68	\$	459,637.63	\$	1,176,164.78
Month 145	\$	1,176,164.78	\$13,268.17	\$11,307.90	\$	1,960.27	\$1,449,018.58	\$	461,597.90	\$	1,164,856.88
Month 146	\$	1,164,856.88	\$13,268.17	\$11,326.74	\$	1,941.43	\$1,460,345.32	\$	463,539.33	\$	1,153,530.14
Month 147	\$	1,153,530.14	\$13,268.17	\$11,345.62	\$	1,922.55	\$1,471,690.94	\$	465,461.88	\$	1,142,184.52
Month 148	\$	1,142,184.52	\$13,268.17	\$11,364.53	\$	1,903.64	\$1,483,055.47	\$	467,365.52	\$	1,130,819.99
Month 149	\$	1,130,819.99	\$13,268.17	\$11,383.47	\$	1,884.70	\$1,494,438.94	\$	469,250.22	\$	1,119,436.52
Month 150	\$	1,119,436.52	\$13,268.17	\$11,402.44	\$	1,865.73	\$1,505,841.38	\$	471,115.95	\$	1,108,034.08
Month 151	\$	1,108,034.08	\$13,268.17	\$11,421.45	\$	1,846.72	\$1,517,262.83	\$	472,962.67	\$	1,096,612.63
Month 152	\$	1,096,612.63	\$13,268.17	\$11,440.48	\$	1,827.69	\$1,528,703.31	\$	474,790.36	\$	1,085,172.15
Month 153	\$	1,085,172.15	\$13,268.17	\$11,459.55	\$	1,808.62	\$1,540,162.86	\$	476,598.98	\$	1,073,712.60
Month 154	\$	1,073,712.60	\$13,268.17	\$11,478.65	\$	1,789.52	\$1,551,641.51	\$	478,388.50	\$	1,062,233.95
Month 155	\$	1,062,233.95	\$13,268.17	\$11,497.78	\$	1,770.39	\$1,563,139.29	\$	480,158.89	\$	1,050,736.17
Month 156	\$	1,050,736.17	\$13,268.17	\$11,516.94	\$	1,751.23	\$1,574,656.23	\$	481,910.12	\$	1,039,219.23
Month 157	\$	1,039,219.23	\$13,268.17	\$11,536.14	\$	1,732.03	\$1,586,192.37	\$	483,642.15	\$	1,027,683.09
Month 158	\$	1,027,683.09	\$13,268.17	\$11,555.36	\$	1,712.81	\$1,597,747.73	\$	485,354.96	\$	1,016,127.73
Month 159	\$	1,016,127.73	\$13,268.17	\$11,574.62	\$	1,693.55	\$1,609,322.35	\$	487,048.51	\$	1,004,553.11
Month 160	\$	1,004,553.11	\$13,268.17	\$11,593.91	\$	1,674.26	\$1,620,916.26	\$	488,722.77	\$	992,959.20
Month 161	\$	992,959.20	\$13,268.17	\$11,613.24	\$	1,654.93	\$1,632,529.50	\$	490,377.70	\$	981,345.96
Month 162	\$	981,345.96	\$13,268.17	\$11,632.59	\$	1,635.58	\$1,644,162.09	\$	492,013.28	\$	969,713.37
Month 163	\$	969,713.37	\$13,268.17	\$11,651.98	\$	1,616.19	\$1,655,814.07	\$	493,629.47	\$	958,061.39
Month 164	\$	958,061.39	\$13,268.17	\$11,671.40	\$	1,596.77	\$1,667,485.47	\$	495,226.24	\$	946,389.99
Month 165	\$	946,389.99	\$13,268.17	\$11,690.85	\$	1,577.32	\$1,679,176.32	\$	496,803.56	\$	934,699.14
Month 166	\$	934,699.14	\$13,268.17	\$11,710.34	\$	1,557.83	\$1,690,886.66	\$	498,361.39	\$	922,988.80
Month 167	\$	922,988.80	\$13,268.17	\$11,729.86	\$	1,538.31	\$1,702,616.52	\$	499,899.70	\$	911,258.94
Month 168	\$	911,258.94	\$13,268.17	\$11,749.41	\$	1,518.76	\$1,714,365.93	\$	501,418.46	\$	899,509.53
Month 169	\$	899,509.53	\$13,268.17	\$11,768.99	\$	1,499.18	\$1,726,134.92	\$	502,917.64	\$	887,740.54
Month 170	\$	887,740.54	\$13,268.17	\$11,788.60	\$	1,479.57	\$1,737,923.52	\$	504,397.21	\$	875,951.94
Month 171	\$	875,951.94	\$13,268.17	\$11,808.25	\$	1,459.92	\$1,749,731.77	\$	505,857.13	\$	864,143.69
Month 172	\$	864,143.69	\$13,268.17	\$11,827.93	\$	1,440.24	\$1,761,559.70	\$	507,297.37	\$	852,315.76
Month 173	\$	852,315.76	\$13,268.17	\$11,847.64	\$	1,420.53	\$1,773,407.34	\$	508,717.90	\$	840,468.12
Month 174	\$	840,468.12	\$13,268.17	\$11,867.39	\$	1,400.78	\$1,785,274.73	\$	510,118.68	\$	828,600.73
Month 175	\$	828,600.73	\$13,268.17	\$11,887.17	\$	1,381.00	\$1,797,161.90	\$	511,499.68	\$	816,713.56
Month 176	\$	816,713.56	\$13,268.17	\$11,906.98	\$	1,361.19	\$1,809,068.88	\$	512,860.87	\$	804,806.58
Month 177	\$	804,806.58	\$13,268.17	\$11,926.83	\$	1,341.34	\$1,820,995.71	\$	514,202.21	\$	792,879.75
Month 178	\$	792,879.75	\$13,268.17	\$11,946.70	\$	1,321.47	\$1,832,942.41	\$	515,523.68	\$	780,933.05

Month 179	\$	780,933.05	\$13,268.17	\$11,966.61	\$	1,301.56	\$1,844,909.02	\$	516,825.24	\$	768,966.44
Month 180	\$	768,966.44	\$13,268.17	\$11,986.56	\$	1,281.61	\$1,856,895.58	\$	518,106.85	\$	756,979.88
Month 181	\$	756,979.88	\$13,268.17	\$12,006.54	\$	1,261.63	\$1,868,902.12	\$	519,368.48	\$	744,973.34
Month 182	\$	744,973.34	\$13,268.17	\$12,026.55	\$	1,241.62	\$1,880,928.67	\$	520,610.10	\$	732,946.79
Month 183	\$	732,946.79	\$13,268.17	\$12,046.59	\$	1,221.58	\$1,892,975.26	\$	521,831.68	\$	720,900.20
Month 184	\$	720,900.20	\$13,268.17	\$12,066.67	\$	1,201.50	\$1,905,041.93	\$	523,033.18	\$	708,833.53
Month 185	\$	708,833.53	\$13,268.17	\$12,086.78	\$	1,181.39	\$1,917,128.71	\$	524,214.57	\$	696,746.75
Month 186	\$	696,746.75	\$13,268.17	\$12,106.93	\$	1,161.24	\$1,929,235.64	\$	525,375.81	\$	684,639.82
Month 187	\$	684,639.82	\$13,268.17	\$12,127.10	\$	1,141.07	\$1,941,362.74	\$	526,516.88	\$	672,512.72
Month 188	\$	672,512.72	\$13,268.17	\$12,147.32	\$	1,120.85	\$1,953,510.06	\$	527,637.73	\$	660,365.40
Month 189	\$	660,365.40	\$13,268.17	\$12,167.56	\$	1,100.61	\$1,965,677.62	\$	528,738.34	\$	648,197.84
Month 190	\$	648,197.84	\$13,268.17	\$12,187.84	\$	1,080.33	\$1,977,865.46	\$	529,818.67	\$	636,010.00
Month 191	\$	636,010.00	\$13,268.17	\$12,208.15	\$	1,060.02	\$1,990,073.61	\$	530,878.69	\$	623,801.85
Month 192	\$	623,801.85	\$13,268.17	\$12,228.50	\$	1,039.67	\$2,002,302.11	\$	531,918.36	\$	611,573.35
Month 193	\$	611,573.35	\$13,268.17	\$12,248.88	\$	1,019.29	\$2,014,550.99	\$	532,937.65	\$	599,324.47
Month 194	\$	599,324.47	\$13,268.17	\$12,269.30	\$	998.87	\$2,026,820.29	\$	533,936.52	\$	587,055.17
Month 195	\$	587,055.17	\$13,268.17	\$12,289.74	\$	978.43	\$2,039,110.03	\$	534,914.95	\$	574,765.43
Month 196	\$	574,765.43	\$13,268.17	\$12,310.23	\$	957.94	\$2,051,420.26	\$	535,872.89	\$	562,455.20
Month 197	\$	562,455.20	\$13,268.17	\$12,330.74	\$	937.43	\$2,063,751.00	\$	536,810.32	\$	550,124.46
Month 198	\$	550,124.46	\$13,268.17	\$12,351.30	\$	916.87	\$2,076,102.30	\$	537,727.19	\$	537,773.16
Month 199	\$	537,773.16	\$13,268.17	\$12,371.88	\$	896.29	\$2,088,474.18	\$	538,623.48	\$	525,401.28
Month 200	\$	525,401.28	\$13,268.17	\$12,392.50	\$	875.67	\$2,100,866.68	\$	539,499.15	\$	513,008.78
Month 201	\$	513,008.78	\$13,268.17	\$12,413.16	\$	855.01	\$2,113,279.84	\$	540,354.16	\$	500,595.62
Month 202	\$	500,595.62	\$13,268.17	\$12,433.84	\$	834.33	\$2,125,713.68	\$	541,188.49	\$	488,161.78
Month 203	\$	488,161.78	\$13,268.17	\$12,454.57	\$	813.60	\$2,138,168.25	\$	542,002.09	\$	475,707.21
Month 204	\$	475,707.21	\$13,268.17	\$12,475.32	\$	792.85	\$2,150,643.57	\$	542,794.94	\$	463,231.89
Month 205	\$	463,231.89	\$13,268.17	\$12,496.12	\$	772.05	\$2,163,139.69	\$	543,566.99	\$	450,735.77
Month 206	\$	450,735.77	\$13,268.17	\$12,516.94	\$	751.23	\$2,175,656.63	\$	544,318.22	\$	438,218.83
Month 207	\$	438,218.83	\$13,268.17	\$12,537.81	\$	730.36	\$2,188,194.44	\$	545,048.58	\$	425,681.02
Month 208	\$	425,681.02	\$13,268.17	\$12,558.70	\$	709.47	\$2,200,753.14	\$	545,758.05	\$	413,122.32
Month 209	\$	413,122.32	\$13,268.17	\$12,579.63	\$	688.54	\$2,213,332.77	\$	546,446.59	\$	400,542.69
Month 210	\$	400,542.69	\$13,268.17	\$12,600.60	\$	667.57	\$2,225,933.37	\$	547,114.16	\$	387,942.09
Month 211	\$	387,942.09	\$13,268.17	\$12,621.60	\$	646.57	\$2,238,554.97	\$	547,760.73	\$	375,320.49
Month 212	\$	375,320.49	\$13,268.17	\$12,642.64	\$	625.53	\$2,251,197.61	\$	548,386.26	\$	362,677.85
Month 213	\$	362,677.85	\$13,268.17	\$12,663.71	\$	604.46	\$2,263,861.32	\$	548,990.72	\$	350,014.14
Month 214	\$	350,014.14	\$13,268.17	\$12,684.81	\$	583.36	\$2,276,546.13	\$	549,574.08	\$	337,329.33
Month 215	\$	337,329.33	\$13,268.17	\$12,705.95	\$	562.22	\$2,289,252.08	\$	550,136.30	\$	324,623.38

Month 216	\$	324,623.38	\$13,268.17	\$12,727.13	\$	541.04	\$2,301,979.21	\$	550,677.34	\$	311,896.25
Month 217	\$	311,896.25	\$13,268.17	\$12,748.34	\$	519.83	\$2,314,727.55	\$	551,197.17	\$	299,147.91
Month 218	\$	299,147.91	\$13,268.17	\$12,769.59	\$	498.58	\$2,327,497.14	\$	551,695.75	\$	286,378.32
Month 219	\$	286,378.32	\$13,268.17	\$12,790.87	\$	477.30	\$2,340,288.01	\$	552,173.05	\$	273,587.45
Month 220	\$	273,587.45	\$13,268.17	\$12,812.19	\$	455.98	\$2,353,100.20	\$	552,629.03	\$	260,775.26
Month 221	\$	260,775.26	\$13,268.17	\$12,833.54	\$	434.63	\$2,365,933.74	\$	553,063.66	\$	247,941.72
Month 222	\$	247,941.72	\$13,268.17	\$12,854.93	\$	413.24	\$2,378,788.67	\$	553,476.90	\$	235,086.79
Month 223	\$	235,086.79	\$13,268.17	\$12,876.36	\$	391.81	\$2,391,665.03	\$	553,868.71	\$	222,210.43
Month 224	\$	222,210.43	\$13,268.17	\$12,897.82	\$	370.35	\$2,404,562.85	\$	554,239.06	\$	209,312.61
Month 225	\$	209,312.61	\$13,268.17	\$12,919.32	\$	348.85	\$2,417,482.17	\$	554,587.91	\$	196,393.29
Month 226	\$	196,393.29	\$13,268.17	\$12,940.85	\$	327.32	\$2,430,423.02	\$	554,915.23	\$	183,452.44
Month 227	\$	183,452.44	\$13,268.17	\$12,962.42	\$	305.75	\$2,443,385.44	\$	555,220.98	\$	170,490.02
Month 228	\$	170,490.02	\$13,268.17	\$12,984.02	\$	284.15	\$2,456,369.46	\$	555,505.13	\$	157,506.00
Month 229	\$	157,506.00	\$13,268.17	\$13,005.66	\$	262.51	\$2,469,375.12	\$	555,767.64	\$	144,500.34
Month 230	\$	144,500.34	\$13,268.17	\$13,027.34	\$	240.83	\$2,482,402.46	\$	556,008.47	\$	131,473.00
Month 231	\$	131,473.00	\$13,268.17	\$13,049.05	\$	219.12	\$2,495,451.51	\$	556,227.59	\$	118,423.95
Month 232	\$	118,423.95	\$13,268.17	\$13,070.80	\$	197.37	\$2,508,522.31	\$	556,424.96	\$	105,353.15
Month 233	\$	105,353.15	\$13,268.17	\$13,092.58	\$	175.59	\$2,521,614.89	\$	556,600.55	\$	92,260.57
Month 234	\$	92,260.57	\$13,268.17	\$13,114.40	\$	153.77	\$2,534,729.29	\$	556,754.32	\$	79,146.17
Month 235	\$	79,146.17	\$13,268.17	\$13,136.26	\$	131.91	\$2,547,865.55	\$	556,886.23	\$	66,009.91
Month 236	\$	66,009.91	\$13,268.17	\$13,158.15	\$	110.02	\$2,561,023.70	\$	556,996.25	\$	52,851.76
Month 237	\$	52,851.76	\$13,268.17	\$13,180.08	\$	88.09	\$2,574,203.78	\$	557,084.34	\$	39,671.68
Month 238	\$	39,671.68	\$13,268.17	\$13,202.05	\$	66.12	\$2,587,405.83	\$	557,150.46	\$	26,469.63
Month 239	\$	26,469.63	\$13,268.17	\$13,224.05	\$	44.12	\$2,600,629.88	\$	557,194.58	\$	13,245.58
Month 240	\$	13,245.58	\$13,268.17	\$13,246.09	\$	22.08	\$2,613,875.97	\$	557,216.66	\$	(0.51)

Calculation Information

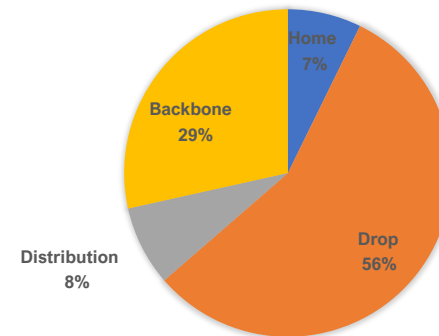
Area Name	Wahkiakum
Design Rules	FTTX
Number of Homes Activated	1632
Number of Homes Passed	1632
Number of Aggregate Points	0
Overall Adoption Rate Activated #	100%
PON Customers	733

Results

Total Cost of Project	US\$10,372,089.35
Total Cost of Deployment	US\$3,773,055.00
Total cost of Activation	US\$6,599,034.35
Deployment Cost per Home Passed	US\$2,311.92
Deployment Cost per Home Activated	US\$4,043.53
Activation Cost per Home	US\$461.53
Total Cost per Home Activated	US\$6,816.98
Total Expected Revenue (12m)	US\$0.00
PON Monthly Revenue	US\$0.00

Cost Breakdown

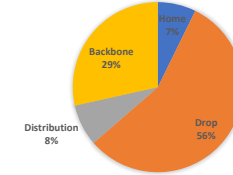
	Homes Passed (HP) Cost	Homes Activated (HA) Cost	Total	% of Project
Home	\$0.00	\$753,215.60	\$753,215.60	7.26%
Drop	\$0.00	\$5,845,818.75	\$5,845,818.75	56.36%
Distribution	\$818,670.00	\$0.00	\$818,670.00	7.89%
Backbone	\$2,954,385.00	\$0.00	\$2,954,385.00	28.48%
Project Total	\$3,773,055.00	\$6,599,034.35	\$10,372,089.35	100.00%



Calculated Cost Values

	Homes Passed (HP) Cost	Homes Activated (HA) Cost	Total	% of Project
Home	\$0.00	\$753,215.60	\$753,215.60	7.26%
Drop	\$0.00	\$5,845,818.75	\$5,845,818.75	56.36%
Distribution	\$818,670.00	\$0.00	\$818,670.00	7.89%
Backbone	\$2,954,385.00	\$0.00	\$2,954,385.00	28.48%
Project Total	\$3,773,055.00	\$6,599,034.35	\$10,372,089.35	100.00%

Cost per Subscriber \$1,028.00



		Unit Costs				Calculated Cost		HP/HA
		Material Cost	Labor Cost	Engineering Cost	Total	Volume	Total Cost	
Home	Network Installation Per Home	\$0.00	\$450.00	\$150.00	\$600.00	733	\$439,620.00	HA
Home	PON Equipment	\$198.00	\$125.00	\$25.00	\$348.00	733	\$254,979.60	HA
Home	Core Drill	\$0.00	\$80.00		\$80.00	733	\$58,616.00	HA
Drop	Cable 1F	\$0.27	\$0.00		\$0.27	745,000	\$201,150.00	HA
Drop	Aerial Lash	\$0.00	\$1.25		\$1.25	2,775	\$3,468.75	HA
Drop	Overlash	\$0.00	\$1.05		\$1.05	250,000	\$262,500.00	HA
Drop	Conduit	\$1.00	\$0.00		\$1.00	265,000	\$265,000.00	HA
Drop	Pull Fiber Thru Duct	\$0.00	\$1.00		\$1.00	400,000	\$400,000.00	HA
Drop	AE Drop - Pole to House (ADSS)	\$0.00	\$1.50	\$1.50	\$3.00	95,000	\$285,000.00	HA
Drop	UG Drop - Pole to House (Trench)	\$0.00	\$15.00	\$1.50	\$16.50	250,000	\$4,125,000.00	HA
Drop	Trench	\$0.00	\$15.00	\$1.50	\$16.50	11,000	\$181,500.00	HA
Drop	Bore	\$0.00	\$22.00	\$1.50	\$23.50	5,200	\$122,200.00	HA
Distribution	MST4 w/ Splitter	\$225.00	\$357.00	\$25.00	\$607.00	92	\$55,844.00	HP
Distribution	MST8 w/ Splitter	\$300.00	\$357.00	\$25.00	\$682.00	205	\$139,810.00	HP
Distribution	Conduit	\$1.00	\$0.00		\$1.00	23,500	\$23,500.00	HP
Distribution	Vault	\$410.00	\$450.00		\$860.00	98	\$84,280.00	HP
Distribution	Overlash	\$0.00	\$1.05		\$1.05	71,000	\$74,550.00	HP
Distribution	Aerial Strand and Lash	\$0.00	\$2.30	\$0.70	\$3.00	14,000	\$42,000.00	HP
Distribution	Aerial Hardware	\$0.75	\$0.00		\$0.75	85,000	\$63,750.00	HP
Distribution	Riser	\$25.00	\$227.00		\$252.00	18	\$4,536.00	HP
Distribution	Trench	\$0.00	\$11.00	\$0.40	\$11.40	21,000	\$239,400.00	HP
Distribution	Bore	\$0.00	\$22.00	\$0.40	\$22.40	2,500	\$56,000.00	HP
Distribution	Pull Fiber Thru Duct	\$0.00	\$1.00		\$1.00	35,000	\$35,000.00	HP
Backbone	Cabinet Install	\$12,000.00	\$13,200.00	\$1,200.00	\$26,400.00	1	\$26,400.00	HP
Backbone	Cable 144F	\$1.00	\$0.00		\$1.00	140,000	\$140,000.00	HP
Backbone	Cable 48F	\$0.40	\$0.00		\$0.40	240,000	\$96,000.00	HP
Backbone	Aerial Hardware	\$0.75	\$0.00		\$0.75	280,000	\$210,000.00	HP
Backbone	Conduit	\$1.00	\$0.00		\$1.00	100,000	\$100,000.00	HP
Backbone	Vault	\$410.00	\$450.00		\$860.00	25	\$21,500.00	HP
Backbone	Splice Cases	\$380.00	\$420.00		\$800.00	160	\$128,000.00	HP
Backbone	Splices	\$0.00	\$41.65	\$25.00	\$66.65	500	\$33,325.00	HP
Backbone	Aerial Strand and Lash	\$0.00	\$2.30	\$0.70	\$3.00	280,000	\$840,000.00	HP
Backbone	Trench	\$0.00	\$11.00	\$0.40	\$11.40	95,000	\$1,083,000.00	HP
Backbone	Bore	\$0.00	\$22.00	\$0.40	\$22.40	1,500	\$33,600.00	HP
Backbone	Pull Fiber Thru Duct	\$0.00	\$1.00		\$1.00	100,000	\$100,000.00	HP
Backbone	Riser	\$25.00	\$227.00		\$252.00	30	\$7,560.00	HP
Backbone	Maintenance and Testing	\$135,000.00	\$0.00		\$135,000.00	1.00	\$135,000.00	HP

Equipment: Nokia 7360 ISAM Equipment

Equipment Summary

Cabinets					
Part Number	MNEM	Description	Item Price	QTY	Extended Price
Standard FX-4 Cabinet Kit					
3MV00538TBD	Kit	ALP-117, 7360 FX-8, Cust Fiber, Eltek, TAN	\$18,000.00	1	\$18,000.00
		Base Cabinet 17RU-30Wx25D-1B		1	
		3FE64936BB 7360 FX-8 Shelf including GFC and BFAN-E Intelligent Fan Tray		1	
		3FE62904DAA - FX Alarm Cable 8 FT/FX Alarm Cable 8 FT		1	
		3FE61087EB - ANSI FX-8 Fiber Routing		1	
		Eltek Flatpack S 1U Power Shelf with LVD FPSJ60I-ANL-VC		1	
		Eltek Smartpack S Controller W/A01 Profile SPS-FPS100-A01-VV		1	
		Eltek Flatpack S 48V/1600W HE Rectifier 241122.125		2	
		Fuse Panel, Breakers and Fuses		1	
		3MV00687AB - 60A Gen Conn Kit		1	
		Fiber panel		1	
		Fiber Management		1	
		Front Door w/1450W HX, 1/4 Latch (Hex/Pin)-LH		1	
		Env Control Unit (ECU), 6 Fans, -40C to 65C, 46C Amb		1	
		Rear Door, 1/4 Latch (Hex/Pin)-RH		1	
		Solar Shield		1	
		AC Load Center, 8 PSN		1	
		Battery Chamber Base		1	
Additional Cabinet items					
3MV00568AC		Pad Template, ALP-FLEX, 30x25	\$300.00	1	\$300.00
3MV00570AA		Batt Heater, ALP-FLEX, 25-17	\$525.00		\$0.00
3MV00679AB		Battery Riser, 30x35	\$825.00		\$0.00
Sub Total Cabinets					\$18,300.00
OLT Equipment					
Part Number	MNEM	Description	Item Price	QTY	Extended Price
7360 Getting Started kits for Cabinets					
3HG01437AA	Kit	Red 7360 10G Starter Kit w/FANTG & 16P GPON. Each kit includes:	\$12,500.00	1	\$12,500.00
3FE71256BA	FANT-G	(2) FANT-G ANSI w/ clock w/o SFP			
3FE62600AA	SFP+	(2) 10G SFP+ 10km (i-temp), 1310nm, SM			
3FE65651BA	ACC	(8) FX 25mm Cover Plate without pre-cabling			
3FE68954AB	FGLT-B	(1) ISAM FX 16port GPON Line board			
3FE53441AC	SFP B+	(1)ISAM FDX/FX GPON SFP OLT (i-temp) Class B+			
7360 Getting Started kits NO Cabinets					
3HG01392AA	Starter Kit	Redundant FX-8/FANT-G Starter Kit w/ 16-PON Card. Each kit includes:	\$18,000.00		\$0.00
3FE4936BB		(1) 7360 ISAM FX-8 shelf (ANSI variant), 48V only, incl. BFAN unit			
3FE67300BA		(1) ISAM FX-8 Vertical mounting kit for 19" or 23" rack			
3FE61087EB		(1) 7360 ISAM FX-8 Fiber Routing Kit			
3FE71256BA		Qty (2) 7360 ISAM FX 1280Gbps NT with network clock synchronization capabilities, without SFPs (ANSI variant), without support for Packet Capture			
3FE65651BA		(8) Filler Panel for NTIO and LT, no pre-cabling			
3FE68954AB		(1) ISAM FDX/FX 16port GPON Line board			
3FE53441AC		(1) GPON SFP B+ (i-temp) OLT			
Line Cards and PON Optics					
3FE68954AB	FGLT-B	ISAM FX 16port GPON Line board.	\$9,900.00	4	\$39,600.00
3FE53441AC	SFP B+	ISAM FDX/FX GPON SFP OLT (i-temp) Class B+	\$150.00	64	\$9,600.00
Sub Total OLT Equipment					\$61,700.00
ONTs					
Part Number	MNEM	Description	Item Price	QTY	Extended Price
RG ONT					
3FE47358AA	G-240W-E	WiFi GPON Residential Gateway, 2xPOTS, 4xGE, 3x3 11n+4x4 11ac US plug	\$150.00	0	\$0.00
Data Only ONT					
3FE56089AA	G-010G-A	Indoor 1GE ONT (includes Wall wart power supply, REQUIRES RELEASE HDR5601 OR HIGHER)	\$79.00	0	\$0.00
Indoor ONT					
3FE55868AA	G-240G-A	Hardened 2 POTS, 4GE, fits universal Enclosure, with AC/DC power converter	\$119.00	0	\$0.00
Outdoor ONT					
3FE55691AA	G-240G-A	Hardened 2 POTS, 4GE, fits universal Enclosure	\$109.00	0	\$0.00
3FE54221AD	Enclosure	Outdoor Enclosure for I-24xG and G-x40G ONTs	\$45.00	0	\$0.00
3EM23134AB	UPS	DUPS-1232A non-grnd UPS	\$38.00	0	\$0.00
1AF17581ACAA	Battery	Battery, 12V, 7.8Ah	\$25.00	0	\$0.00
1AB83340010	Cable	8' power cable (IEC 320-C5 to NEMA 5-15 (Type B)) for NA applications	\$4.00	0	\$0.00
Wi-Fi Mesh Beacons					
3FE47357AA	HA-030W-B	Nokia WiFi Beacon 3 HA-030W-B, 3GE UNI, 3x3 11n+4x4 11ac US plug - Package of 1	\$119.00	0	\$0.00
3FE47855AA	HA-020W-B	Dual band Nokia WiFi Beacon, AC1200, 2xGE UNI, US plug	\$69.00	0	\$0.00
Sub Total ONTs					\$0.00
Element Management Software					
Part Number	MNEM	Description	Item Price	QTY	Extended Price
SSP Kit with 3 Year Contract					
3AP38518AA	Kit	5520/5529 AMS SSP Starter Kit Bundle includes: 5520 Core Platform Five Operator Position Licenses ISAM and GPON Mgmt Modules Cold Standby 5529 APC GUI and XML NBI 5529 IDW GUI 5529 OAD and XML NBI Documentation 5520 AMS Starter system supports cold standby redundancy only.	\$9,000.00	1	\$9,000.00
Software Subscription Plan					
301049607	SSP	SSP - AMS/7330/7342/7360 per line RTU (annual charge, requires 3 year contract, see Pricing Notes)	\$5.00	0	\$0.00
	COS	COS Services System Management Platform	\$30,000.00	1	\$30,000.00
Sub Total EMS					\$39,000.00
Nokia SW Care Portal					
Part Number	MNEM	Description	Item Price	QTY	Extended Price
Portal + NSW-License	SaaS + License	Annual Hosted Software as a service - Nokia WHW portal management. Price is \$5 per home per year, w/ a minimum of 2k gateways	\$5.00		\$0.00
Sub Total Nokia SW Care Portal					\$0.00
Nokia Home Care - Optional					
Part Number	MNEM	Description	Item Price	QTY	Extended Price
HC5AAAS	SaaS + License	Annual Hosted Software as a service - Nokia CDP gateway management. Price is \$5 per Gateway per year, w/ a minimum of 2k gateways	\$5.00	0	\$0.00
Sub Total Nokia Home Care - Optional					\$0.00
Grand Total					\$119,000.00

Appendix F: Letter of Commitment for Community Funding



Commissioners

Eugene L. Healy

Dennis R. Reid

Robert L. Jungers

WAHKIAKUM COUNTY PUD LETTER OF COMMITMENT FOR COMMUNITY FUNDING

David R. Trambly, Manager

Erin M. Wilson, Auditor

March 12, 2020

To Whom It May Concern at CERB:

Wahkiakum County PUD recognizes that due to the challenges of population density and geographic terrain, private telecommunications companies are unlikely to invest in the needed infrastructure for robust broadband in Wahkiakum County. The PUD is charged with serving the businesses and residents of our area and see broadband access as critical infrastructure to participate in today's digital economy. We also believe our community needs to have access to the educational and healthcare services that broadband facilitates.

For the above reasons, Wahkiakum County PUD is committed to looking for a feasible solution to bridge the infrastructure gap that is preventing our residents and businesses from seeing the benefits of ubiquitous broadband access. Wahkiakum County PUD will be evaluating business case thresholds, network costs and area demand as part of our CERB broadband planning study. If a feasible solution is found, the PUD will be seeking funding to make an investment in a community-owned broadband network as a solution to inadequate Internet infrastructure in our area.

Wahkiakum County PUD thanks the CERB board for the opportunity to investigate the feasibility of helping to procure this lifeline infrastructure for our community.

Sincerely,

A handwritten signature in dark ink, appearing to read "David R. Trambly".

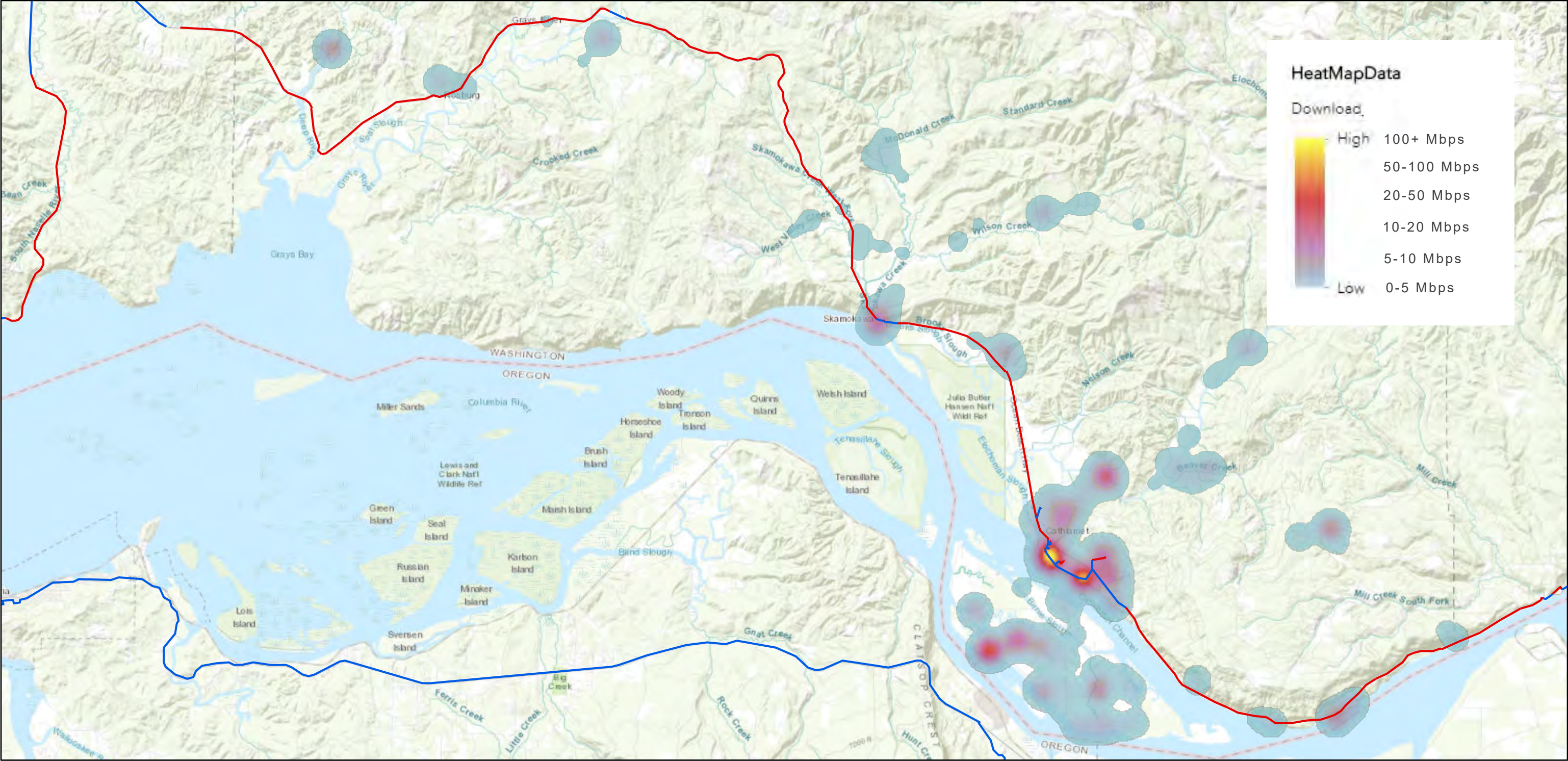
David R. Trambly
General Manager

Wahkiakum PUD
Po Box 248/45 River Street Street
Cathlamet, WA 98612
dtrambly@wahkiakumpud.org

Appendix G: Letters of Commitment from Area ISPs

Appendix H: County-wide Survey Data

Wahkiakum Download Speeds Heat Map

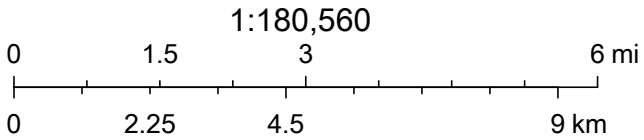


6/19/2019, 11:42:13 AM

NoaNet Cable

Underground

Aerial



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Survey ID	City	Building Type	Customer Type	Interested in service	Download speed	Satisfied current speed	Satisfied current reliability	Satisfied current service value	Current service price	Would you buy?	Internet Service	Internet Service
Q0000126	Cathlamet	Commercial	Non profit organisation	WPUD Gov Internet	20-50 Mbps	Mostly satisfied	Mostly satisfied	Mostly satisfied	\$60-80	Yes definitely	Basic	Customer Service
Q0000127	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$60-80	I would consider it	Average	Price
Q0000128	Cathlamet	Single family home	Residential	WPUD Home Internet						Likely yes		
Q0000129	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Speed
Q0000130	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Somewhat satisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000131	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat satisfied	\$60-80	Yes definitely	Advanced	Reliability
Q0000132	Skamokawa	Single family home	Residential	WPUD Home Internet	100 Mbps or more	Mostly satisfied	Fully satisfied	Somewhat satisfied	More than \$100	Likely yes	Expert	Reliability
Q0000133	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$20-40	Likely yes	Average	Speed
Q0000134	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Very dissatisfied	Mostly satisfied	Mostly dissatisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000135	Skamokawa	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$40-60	Yes definitely	Average	Reliability
Q0000136	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied	\$80-100	I would consider it	Basic	Reliability
Q0000137	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat satisfied	\$60-80	Likely yes	Basic	Reliability
Q0000138	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat satisfied	\$60-80	Yes definitely	Average	Reliability
Q0000139	Cathlamet	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Somewhat dissatisfied	Mostly satisfied	Mostly satisfied	\$40-60	Likely yes	Average	Speed
Q0000140	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		
Q0000141	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly satisfied	Mostly satisfied	Mostly satisfied	\$0-20	Definitely not	Novice	Price
Q0000142	Cathlamet	Single family home	Residential	WPUD Home Internet						Likely yes		
Q0000143	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Speed
Q0000144	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Very dissatisfied	\$60-80	Yes definitely	Advanced	Speed
Q0000145	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Somewhat satisfied	Mostly satisfied	Mostly satisfied	\$20-40	I would consider it	Average	Speed
Q0000146	Skamokawa	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Average	Speed
Q0000147	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$40-60	Yes definitely	Average	Speed
Q0000148	Rosburg	Single family home	Residential	WPUD Home Triple Play	20-50 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$60-80	Likely yes	Average	Reliability
Q0000149	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Very dissatisfied	Very dissatisfied	Very dissatisfied	More than \$100	Yes definitely	Average	Speed
Q0000150	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Price
Q0000151	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Somewhat dissatisfied	Somewhat satisfied	Somewhat dissatisfied	More than \$100	Yes definitely	Average	Speed
Q0000152	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		
Q0000153	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$40-60	Yes definitely	Average	Speed
Q0000154	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Somewhat satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000155	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$60-80	Likely yes	Average	Speed
Q0000157	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Mostly dissatisfied	Mostly satisfied	Mostly dissatisfied	\$60-80	I would consider it	Average	Reliability
Q0000158	Skamokawa	Single family home	Residential	WPUD Home Triple Play						Likely yes		
Q0000159	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$60-80	I would consider it	Basic	Speed
Q0000160	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000161	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$60-80	Yes definitely	Average	Speed
Q0000162	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000163	Cathlamet	Single family home	Residential	WPUD Home Internet	100 Mbps or more	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$40-60	I would consider it	Average	Speed
Q0000164	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat satisfied	\$80-100	Likely yes	Average	Reliability
Q0000165	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly satisfied	Mostly satisfied	Mostly satisfied	\$40-60	I would consider it	Average	Reliability
Q0000166	Cathlamet	Single family home	Residential	WPUD Home Triple Play	10-20 Mbps	Mostly dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$20-40	I would consider it	Average	Reliability
Q0000167	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Mostly satisfied	\$40-60	Likely yes	Average	Speed
Q0000168	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$40-60	Probably not	Average	Reliability
Q0000169	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$60-80	Likely yes	Average	Reliability
Q0000170	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly satisfied	Mostly satisfied	Somewhat dissatisfied	\$60-80	I would consider it	Advanced	Speed
Q0000171	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$40-60	I would consider it	Average	Reliability
Q0000172	Cathlamet	Single family home	Residential	WPUD Home Triple Play						Likely yes		
Q0000173	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Fully satisfied	\$40-60	I would consider it	Average	Speed
Q0000174	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	5-10 Mbps	Somewhat dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$80-100	I would consider it	Advanced	Reliability
Q0000175	Skamokawa	Multi Family Residence	Residential	WPUD MDU internet + Phone	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	More than \$100	I would consider it	Average	Available Services (TV, Phone)
Q0000177	Skamokawa	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$40-60	Likely yes	Average	Speed
Q0000178	Skamokawa	Commercial	Non profit organisation	WPUD Gov Internet + Phone	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Advanced	Speed
Q0000180	Skamokawa	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Expert	Speed
Q0000181	Cathlamet	Single family home	Residential	WPUD Home Internet						Likely yes		
Q0000182	Skamokawa	Single family home	Residential	WPUD Home Internet + Phone	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	I would consider it	Average	Price
Q0000183	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Mostly satisfied	Somewhat satisfied	Mostly dissatisfied	\$40-60	I would consider it	Average	Available Services (TV, Phone)
Q0000184	Cathlamet	Single family home	Residential	WPUD Home Triple Play	100 Mbps or more	Mostly satisfied	Mostly satisfied	Mostly dissatisfied	\$80-100	I would consider it	Average	Reliability
Q0000185	Cathlamet	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Somewhat satisfied	Somewhat dissatisfied	Mostly dissatisfied	More than \$100	Probably not	Basic	Speed
Q0000186	Rosburg	Single family home	Residential	WPUD Home Triple Play						Yes definitely		
Q0000187	Cathlamet	Single family home	Residential	WPUD Home Internet						I would consider it		
Q0000188	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Mostly dissatisfied	Mostly dissatisfied	Very dissatisfied	\$60-80	Likely yes	Advanced	Speed
Q0000189	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly dissatisfied	Very dissatisfied	Mostly dissatisfied	I don't know	Likely yes	Average	Reliability
Q0000190	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$80-100	Yes definitely	Basic	Reliability
Q0000191	Cathlamet	Single family home	Residential	WPUD Home Triple Play	10-20 Mbps	Mostly dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$60-80	Yes definitely	Average	Reliability
Q0000192	Skamokawa	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Speed
Q0000193	Rosburg	Single family home	Residential	WPUD Home Internet + Phone						Likely yes		
Q0000194	Skamokawa	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$80-100	Likely yes	Average	Reliability
Q0000195	Naselle	Single family home	Residential	WPUD Home Internet	20-50 Mbps	Fully satisfied	Fully satisfied	Fully satisfied	\$20-40	Probably not	Average	Price
Q0000197	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$80-100	Likely yes	Average	Reliability
Q0000198	Longview	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Mostly dissatisfied	Mostly satisfied	Very dissatisfied	More than \$100	Yes definitely	Average	Speed
Q0000199	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Somewhat satisfied	Somewhat satisfied	Mostly dissatisfied	\$40-60	Likely yes	Average	Speed
Q0000200	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Somewhat satisfied	Mostly dissatisfied	Mostly dissatisfied	\$80-100	Yes definitely	Basic	Reliability
Q0000201	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$40-60	Likely yes	Novice	Reliability
Q0000202	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		

Q0000203	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		
Q0000204	Cathlamet	Commercial	Company	WPUD Bus Internet	10-20 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$80-100	Yes definitely	Average	Reliability
Q0000205	Cathlamet	Single family home	Residential	WPUD Home Internet	50-100 Mbps	Mostly satisfied	Mostly satisfied	Mostly satisfied	\$60-80	I would consider it	Average	Reliability
Q0000206	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly dissatisfied	Mostly dissatisfied	Mostly satisfied	\$20-40	Likely yes	Average	Speed
Q0000207	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly satisfied	Mostly satisfied	Fully satisfied	\$40-60	Likely yes	Basic	Reliability
Q0000208	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Very dissatisfied	Somewhat dissatisfied	Mostly satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000209	Cathlamet	Single family home	Residential	WPUD Home Internet						Likely yes		
Q0000210	Skamokawa	Single family home	Residential	WPUD Home Internet + Phone	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Very dissatisfied	More than \$100	Yes definitely	Advanced	Reliability
Q0000211	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Somewhat satisfied	Somewhat dissatisfied	Mostly satisfied	\$40-60	Yes definitely	Average	Speed
Q0000212	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		
Q0000213	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly satisfied	Mostly satisfied	Somewhat dissatisfied	\$20-40	Likely yes	Advanced	Speed
Q0000214	Grays River	Single family home	Residential	WPUD Home Triple Play	I don't know	Mostly satisfied	Mostly satisfied	Mostly dissatisfied	More than \$100	I would consider it	Advanced	Price
Q0000215	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$80-100	Yes definitely	Average	Speed
Q0000216	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone						Yes definitely		
Q0000217	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat satisfied	Mostly satisfied	Mostly satisfied	I don't know	I would consider it	Average	Reliability
Q0000218	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	More than \$100	Yes definitely	Advanced	Speed
Q0000219	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Likely yes	Average	Speed
Q0000220	Skamokawa	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$40-60	Likely yes	Average	Reliability
Q0000221	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	0-5 Mbps	Mostly dissatisfied	Somewhat satisfied	Fully satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000222	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$40-60	Likely yes	Average	Price
Q0000223	Skamokawa	Multi Family Residence	Residential	WPUD MDU Internet	0-5 Mbps	Somewhat satisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$60-80	Yes definitely	Advanced	Reliability
Q0000224	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Somewhat dissatisfied	Mostly satisfied	Somewhat dissatisfied	\$40-60	Likely yes	Advanced	Speed
Q0000225	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly satisfied	Fully satisfied	Fully satisfied	\$20-40	Likely yes	Average	Reliability
Q0000226	Rosburg	Single family home	Residential	WPUD Home Internet + Phone	10-20 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$60-80	I would consider it	Advanced	Speed
Q0000227	Cathlamet	Single family home	Residential	WPUD Home Triple Play	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Somewhat satisfied	\$40-60	Likely yes	Advanced	Reliability
Q0000228	Cathlamet	Multi Family Residence	Residential	WPUD MDU Internet	I don't know	Somewhat satisfied	Somewhat dissatisfied	Somewhat dissatisfied	I don't know	I would consider it	Average	Price
Q0000229	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Mostly dissatisfied	Mostly satisfied	Very dissatisfied	\$40-60	Yes definitely	Average	Price
Q0000230	Rosburg	Single family home	Residential	WPUD Home Triple Play	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$60-80	Likely yes	Basic	Reliability
Q0000231	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$60-80	Yes definitely	Average	Speed
Q0000232	Cathlamet	Single family home	Residential	WPUD Home Triple Play						Likely yes		
Q0000233	Cathlamet	Commercial	Company	WPUD Bus Internet + Phone	50-100 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$40-60	I would consider it	Average	Customer Service
Q0000234	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$80-100	I would consider it	Basic	Available Services (TV, Phone)
Q0000235	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$80-100	Likely yes	Average	Available Services (TV, Phone)
Q0000236	Cathlamet	Commercial	Non profit organisation	WPUD Gov Internet + Phone	10-20 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	I would consider it	Average	Price
Q0000237	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$60-80	I would consider it	Average	Reliability
Q0000238	Cathlamet	Single family home	Non profit organisation	WPUD Home Internet	5-10 Mbps	Mostly dissatisfied	Mostly dissatisfied	Fully satisfied	\$0-20	I would consider it	Average	Price
Q0000239	Cathlamet	Multi Family Residence	Residential	WPUD MDU Internet	0-5 Mbps	Mostly dissatisfied	Very dissatisfied	Mostly dissatisfied	\$60-80	Yes definitely	Advanced	Speed
Q0000240	Cathlamet	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Expert	Reliability
Q0000241	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Very dissatisfied	Very dissatisfied	Very dissatisfied	More than \$100	Yes definitely	Average	Reliability
Q0000242	Skamokawa	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	More than \$100	Likely yes	Advanced	Reliability
Q0000243	Cathlamet	Commercial	Company	WPUD Bus Internet						Yes definitely		
Q0000244	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Mostly dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$60-80	Yes definitely	Basic	Reliability
Q0000245	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat dissatisfied	Somewhat satisfied	Fully satisfied	\$40-60	Likely yes	Average	Price
Q0000246	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	0-5 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Very dissatisfied	I don't know	Yes definitely	Average	Speed
Q0000247	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Speed
Q0000248	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$60-80	I would consider it	Basic	Reliability
Q0000249	Cathlamet	Commercial	Company	WPUD Bus Triple Play	5-10 Mbps	Mostly dissatisfied	Mostly dissatisfied	Very dissatisfied	\$60-80	Yes definitely	Average	Speed
Q0000250	Skamokawa	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Very dissatisfied	Somewhat satisfied	Somewhat dissatisfied	\$60-80	Likely yes	Basic	Speed
Q0000251	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$40-60	Yes definitely	Average	Speed
Q0000252	Skamokawa	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$60-80	I would consider it	Average	Speed
Q0000253	Skamokawa	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Advanced	Speed
Q0000254	Cathlamet	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Very dissatisfied	Mostly dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Average	Available Services (TV, Phone)
Q0000255	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly dissatisfied	Mostly dissatisfied	Very dissatisfied	I don't know	Likely yes	Average	Speed
Q0000256	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Very dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$80-100	Likely yes	Basic	Customer Service
Q0000257	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Mostly dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$80-100	Yes definitely	Advanced	Reliability
Q0000258	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		
Q0000259	Skamokawa	Single family home	Residential	WPUD Home Internet + Phone	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$40-60	I would consider it	Average	Price
Q0000260	Skamokawa	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Mostly dissatisfied	Mostly dissatisfied	Mostly satisfied	\$20-40	Yes definitely	Average	Customer Service
Q0000261	Cathlamet	Single family home	Residential	WPUD Home Internet						I would consider it		
Q0000262	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Very dissatisfied	Very dissatisfied	Somewhat satisfied	\$40-60	Yes definitely	Advanced	Available Services (TV, Phone)
Q0000263	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly satisfied	Somewhat satisfied	\$20-40	I would consider it	Average	Reliability
Q0000264	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat satisfied	\$40-60	Likely yes	Advanced	Speed
Q0000265	Cathlamet	Commercial	Company	WPUD Bus Internet						Yes definitely		
Q0000266	Skamokawa	Single family home	Residential	WPUD Home Triple Play	5-10 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000267	Cathlamet	Single family home	Residential	WPUD Home Internet						Yes definitely		
Q0000268	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat satisfied	\$20-40	Likely yes	Advanced	Speed
Q0000269	Cathlamet	Single family home	Residential	WPUD Home Triple Play	10-20 Mbps	Somewhat satisfied	Somewhat satisfied	Mostly dissatisfied	\$80-100	I would consider it	Average	Price
Q0000270	Cathlamet	Single family home	Residential	WPUD Home Internet	10-20 Mbps	Mostly satisfied	Mostly satisfied	Mostly satisfied	\$40-60	Likely yes	Average	Reliability
Q0000271	Cathlamet	Single family home	Residential	WPUD Home Triple Play	I don't know	Very dissatisfied	Mostly dissatisfied	Somewhat satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000272	Cathlamet	Single family home	Residential	WPUD Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Mostly dissatisfied	More than \$100	Yes definitely	Advanced	Price
Q0000273	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	0-5 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000274	Cathlamet	Single family home	Residential	WPUD Home Internet	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$40-60	I would consider it	Average	Customer Service
Q0000275	Cathlamet	Single family home	Residential	WPUD Home Internet	0-5 Mbps	Somewhat dissatisfied	Fully satisfied	Mostly satisfied	\$40-60	Likely yes	Advanced	Reliability
Q0000276	Cathlamet	Single family home	Residential	WPUD Home Internet + Phone	I don't know	Somewhat satisfied	Somewhat satisfied	Mostly satisfied	\$80-100	Yes definitely	Average	Speed

Q0000435	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Very dissatisfied	Very dissatisfied	Very dissatisfied	More than \$100	Likely yes	Average	Reliability
Q0000436	Grays River	Single family home	Residential	WPUd Home Internet	I don't know	Fully satisfied	Fully satisfied	Mostly satisfied	\$40-60	Definitely not	Average	Speed
Q0000437	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$60-80	Likely yes	Average	Price
Q0000438	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	20-50 Mbps	Fully satisfied	Fully satisfied	Mostly satisfied	\$60-80	Yes definitely	Advanced	Reliability
Q0000439	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Fully satisfied	Fully satisfied	Fully satisfied	\$40-60	I would consider it	Average	Reliability
Q0000440	Rosburg	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$60-80	I would consider it	Average	Speed
Q0000441	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$40-60	Yes definitely	Average	Speed
Q0000442	Cathlamet	Single family home	Residential	WPUd Home Internet	20-50 Mbps	Mostly satisfied	Mostly satisfied	Mostly satisfied	I don't know	I would consider it	Average	Speed
Q0000443	Skamokawa	Single family home	Residential	WPUd Home Triple Play	I don't know	Somewhat dissatisfied	Mostly dissatisfied	Somewhat satisfied	\$40-60	I would consider it	Average	Speed
Q0000444	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Somewhat satisfied	Fully satisfied	Fully satisfied	\$20-40	Yes definitely	Advanced	Speed
Q0000446	Skamokawa	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Mostly dissatisfied	\$60-80	Likely yes	Average	Price
Q0000447	Skamokawa	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Likely yes	Basic	Speed
Q0000448	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$40-60	I would consider it	Average	Speed
Q0000449	Skamokawa	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly satisfied	Somewhat satisfied	Fully satisfied	\$40-60	I would consider it	Average	Reliability
Q0000450	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$40-60	Likely yes	Average	Reliability
Q0000451	Skamokawa	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Fully satisfied	Fully satisfied	\$40-60	I would consider it	Average	Reliability
Q0000452	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$40-60	I would consider it	Average	Reliability
Q0000453	Skamokawa	Single family home	Residential	WPUd Home Triple Play	I don't know	Very dissatisfied	Very dissatisfied	Mostly satisfied	\$20-40	Likely yes	Basic	Speed
Q0000454	Cathlamet	Single family home	Residential	WPUd Home Internet	10-20 Mbps	Somewhat dissatisfied	Mostly dissatisfied	Somewhat satisfied	\$40-60	Yes definitely	Advanced	Reliability
Q0000455	Rosburg	Single family home	Residential	WPUd Home Triple Play	I don't know	Very dissatisfied	Somewhat satisfied	Mostly dissatisfied	I don't know	Likely yes	Novice	Available Services (TV, Phone)
Q0000456	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Mostly satisfied	Somewhat satisfied	Very dissatisfied	I don't know	I would consider it	Average	Price
Q0000457	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Mostly satisfied	Fully satisfied	\$20-40	I would consider it	Basic	Price
Q0000458	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Mostly satisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000459	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$40-60	I would consider it	Advanced	Speed
Q0000460	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Very dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$40-60	Likely yes	Average	Speed
Q0000461	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$40-60	Likely yes	Average	Reliability
Q0000462	Cathlamet	Single family home	Residential	WPUd Home Internet	10-20 Mbps	Fully satisfied	Mostly satisfied	Mostly satisfied	\$40-60	I would consider it	Advanced	Reliability
Q0000463	Grays River	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Very dissatisfied	\$60-80	I would consider it	Average	Price
Q0000464	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	0-5 Mbps	Mostly dissatisfied	Somewhat satisfied	Somewhat satisfied	\$20-40	Yes definitely	Average	Speed
Q0000465	Skamokawa	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Mostly satisfied	Somewhat satisfied	Mostly dissatisfied	\$80-100	Likely yes	Basic	Price
Q0000466	Skamokawa	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$80-100	I would consider it	Average	Reliability
Q0000467	Skamokawa	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$60-80	Yes definitely	Average	Reliability
Q0000468	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Mostly satisfied	Fully satisfied	Fully satisfied	\$20-40	Probably not	Average	Price
Q0000469	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Somewhat dissatisfied	\$40-60	Yes definitely	Expert	Reliability
Q0000470	Cathlamet	Single family home	Residential	WPUd Home Triple Play						Likely yes		
Q0000471	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Mostly dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$80-100	Yes definitely	Basic	Reliability
Q0000472	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat dissatisfied	Mostly dissatisfied	Mostly satisfied	\$40-60	Likely yes	Average	Price
Q0000473	Cathlamet	Multi Family Residence	Residential	WPUd MDU Internet						Yes definitely		
Q0000474	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	5-10 Mbps	Very dissatisfied	Very dissatisfied	Somewhat dissatisfied	\$60-80	Yes definitely	Average	Speed
Q0000475	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$40-60	Yes definitely	Novice	Reliability
Q0000476	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$80-100	Likely yes	Basic	Speed
Q0000477	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Mostly satisfied	Mostly satisfied	Mostly satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000478	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Very dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	\$40-60	I would consider it	Expert	Reliability
Q0000479	Skamokawa	Single family home	Residential	WPUd Home Internet + Phone	5-10 Mbps	Somewhat satisfied	Somewhat dissatisfied	Mostly dissatisfied	\$80-100	Likely yes	Average	Price
Q0000480	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Very dissatisfied	\$40-60	Yes definitely	Average	Speed
Q0000481	Cathlamet	Commercial	Company	WPUd Bus Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Fully satisfied	I don't know	Yes definitely	Average	Reliability
Q0000482	Cathlamet	Commercial	Company	WPUd Bus Internet	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Fully satisfied	I don't know	Yes definitely	Average	Speed
Q0000483	Cathlamet	Single family home	Residential	WPUd Home Internet						Likely yes		
Q0000484	Cathlamet	Commercial	Non profit organisation	WPUd Gov Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Fully satisfied	I don't know	Likely yes	Average	Reliability
Q0000485	Cathlamet	Commercial	Non profit organisation	WPUd Gov Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Fully satisfied	I don't know	Likely yes	Average	Reliability
Q0000486	Cathlamet	Commercial	Non profit organisation	WPUd Gov Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Fully satisfied	I don't know	Likely yes	Average	Speed
Q0000487	Cathlamet	Single family home	Residential	WPUd Home Triple Play	50-100 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	More than \$100	Yes definitely	Advanced	Speed
Q0000488	Cathlamet	Single family home	Residential	WPUd Home Triple Play						Likely yes		
Q0000489	Cathlamet	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000490	Skamokawa	Single family home	Residential	WPUd Home Triple Play	10-20 Mbps	Mostly satisfied	Mostly satisfied	Somewhat dissatisfied	\$60-80	I would consider it	Average	Speed
Q0000491	Cathlamet	Single family home	Residential	WPUd Home Triple Play	20-50 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat dissatisfied	\$40-60	Likely yes	Advanced	Available Services (TV, Phone)
Q0000493	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat satisfied	\$20-40	Likely yes	Advanced	Reliability
Q0000494	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Mostly satisfied	\$20-40	Likely yes	Average	Reliability
Q0000495	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Somewhat satisfied	Mostly satisfied	Mostly satisfied	\$20-40	Likely yes	Average	Reliability
Q0000496	Cathlamet	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000497	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone						Likely yes		
Q0000498	Cathlamet	Single family home	Residential	WPUd Home Internet						Definitely not		
Q0000499	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly dissatisfied	Mostly satisfied	Mostly satisfied	\$40-60	Yes definitely	Advanced	Price
Q0000500	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$40-60	I would consider it	Average	Price
Q0000502	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Mostly satisfied	\$60-80	Likely yes	Average	Speed
Q0000503	Skamokawa	Single family home	Residential	WPUd Home Triple Play	I don't know	Mostly dissatisfied	Somewhat dissatisfied	Somewhat satisfied	\$20-40	I would consider it	Basic	Available Services (TV, Phone)
Q0000505	Cathlamet	Single family home	Residential	WPUd Home Internet						Likely yes		
Q0000506	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Somewhat dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$0-20	Yes definitely	Novice	Reliability
Q0000507	Skamokawa	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Mostly satisfied	\$40-60	Likely yes	Average	Speed
Q0000508	Cathlamet	Multi Family Residence	Residential	WPUd MDU Internet	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$60-80	Likely yes	Advanced	Speed
Q0000509	Cathlamet	Multi Family Residence	Residential	WPUd MDU Internet	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Very dissatisfied	\$60-80	Yes definitely	Advanced	Speed
Q0000510	Naselle	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000511	Cathlamet	Single family home	Residential	WPUd Home Internet	20-50 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Mostly satisfied	\$40-60	Likely yes	Average	Speed
Q0000512	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Mostly satisfied	Somewhat dissatisfied	Mostly dissatisfied	I don't know	Likely yes	Average	Reliability

Q0000513	Grays River	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly dissatisfied	Fully satisfied	Somewhat dissatisfied	\$20-40	I would consider it	Average	Speed
Q0000514	Cathlamet	Commercial	Company	WPUd Bus Internet + Phone	50-100 Mbps	Very dissatisfied	Somewhat dissatisfied	Very dissatisfied	More than \$100	Yes definitely	Advanced	Speed
Q0000516	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	20-50 Mbps	Somewhat dissatisfied	Somewhat satisfied	Somewhat satisfied	\$20-40	Yes definitely	Average	Reliability
Q0000517	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	More than \$100	Likely yes	Average	Reliability
Q0000520	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$60-80	I would consider it	Average	Reliability
Q0000521	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Mostly dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$20-40	I would consider it	Average	Reliability
Q0000522	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	100 Mbps or more	Fully satisfied	Fully satisfied	Mostly satisfied	\$40-60	I would consider it	Basic	Reliability
Q0000523	Cathlamet	Single family home	Residential	WPUd Home Triple Play						Likely yes		
Q0000524	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone						Yes definitely		
Q0000525	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat dissatisfied	Mostly satisfied	Somewhat dissatisfied	I don't know	Probably not	Novice	Reliability
Q0000526	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Very dissatisfied	Mostly dissatisfied	Mostly dissatisfied	\$40-60	Likely yes	Advanced	Speed
Q0000527	Skamokawa	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Mostly satisfied	Somewhat satisfied	Mostly satisfied	\$40-60	Likely yes	Average	Speed
Q0000528	Cathlamet	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000529	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Somewhat satisfied	Mostly dissatisfied	Fully satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000530	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	0-5 Mbps	Very dissatisfied	Mostly satisfied	Somewhat satisfied	\$20-40	Likely yes	Average	Reliability
Q0000531	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Mostly satisfied	Mostly satisfied	\$40-60	I would consider it	Advanced	Customer Service
Q0000532	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Very dissatisfied	Very dissatisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Reliability
Q0000533	Cathlamet	Multi Family Residence	Residential	WPUd MDU Internet	0-5 Mbps	Very dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$60-80	I would consider it	Advanced	Price
Q0000534	Cathlamet	Multi Family Residence	Residential	WPUd MDU Internet						Likely yes		
Q0000535	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Very dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$60-80	Likely yes	Average	Speed
Q0000536	Cathlamet	Commercial	Company	WPUd Bus Triple Play	I don't know	Mostly dissatisfied	Mostly dissatisfied	Mostly dissatisfied	More than \$100	Yes definitely	Basic	Speed
Q0000537	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	0-5 Mbps	Very dissatisfied	Very dissatisfied	Mostly dissatisfied	\$80-100	Likely yes	Average	Reliability
Q0000538	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	0-5 Mbps	Somewhat dissatisfied	Somewhat dissatisfied	Fully satisfied	\$0-20	I would consider it	Advanced	Speed
Q0000539	Cathlamet	Single family home	Residential	WPUd Home Internet						I would consider it		
Q0000540	Skamokawa	Single family home	Residential	WPUd Home Internet	I don't know	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$60-80	I would consider it	Basic	Price
Q0000541	Cathlamet	Single family home	Residential	WPUd Home Internet	10-20 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$60-80	Yes definitely	Average	Speed
Q0000542	Cathlamet	Single family home	Residential	WPUd Home Internet	20-50 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	Yes definitely	Average	Reliability
Q0000543	Cathlamet	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000544	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$80-100	I would consider it	Average	Speed
Q0000545	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Somewhat dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$60-80	Yes definitely	Average	Speed
Q0000546	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Mostly dissatisfied	Somewhat satisfied	Mostly dissatisfied	\$40-60	Likely yes	Basic	Speed
Q0000547	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly dissatisfied	Somewhat satisfied	Somewhat satisfied	\$40-60	Likely yes	Average	Speed
Q0000548	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Mostly satisfied	Mostly satisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000549	Cathlamet	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000550	Cathlamet	Single family home	Residential	WPUd Home Internet						I would consider it		
Q0000551	Cathlamet	Single family home	Residential	WPUd Home Internet						I would consider it		
Q0000552	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Somewhat satisfied	Mostly dissatisfied	\$80-100	Likely yes	Average	Speed
Q0000553	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Mostly dissatisfied	Mostly satisfied	Somewhat satisfied	\$40-60	Likely yes	Advanced	Reliability
Q0000554	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Somewhat dissatisfied	Somewhat satisfied	Somewhat dissatisfied	\$40-60	Yes definitely	Average	Price
Q0000555	Cathlamet	Single family home	Residential	WPUd Home Internet	0-5 Mbps	Mostly dissatisfied	Somewhat dissatisfied	Somewhat dissatisfied	\$20-40	Likely yes	Average	Speed
Q0000556	Cathlamet	Multi Family Residence	Residential	WPUd MDU internet + Phone						Yes definitely		
Q0000557	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$40-60	I would consider it	Average	Reliability
Q0000558	Cathlamet	Single family home	Residential	WPUd Home Internet						Likely yes		
Q0000559	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Mostly dissatisfied	Somewhat dissatisfied	Very dissatisfied	\$80-100	Likely yes	Basic	Speed
Q0000560	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	I would consider it	Average	Price
Q0000561	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$80-100	I would consider it	Basic	Speed
Q0000562	Cathlamet	Single family home	Residential	WPUd Home Triple Play	0-5 Mbps	Mostly dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$40-60	Yes definitely	Average	Reliability
Q0000563	Cathlamet	Single family home	Residential	WPUd Home Internet	10-20 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$40-60	I would consider it	Average	Price
Q0000564	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$60-80	I would consider it	Average	Price
Q0000565	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Mostly satisfied	Somewhat satisfied	I don't know	I would consider it	Advanced	Reliability
Q0000566	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Somewhat satisfied	Somewhat satisfied	Fully satisfied	\$40-60	I would consider it	Average	Customer Service
Q0000567	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Somewhat satisfied	Somewhat satisfied	Somewhat dissatisfied	\$20-40	Likely yes	Basic	Speed
Q0000568	Cathlamet	Single family home	Residential	WPUd Home Triple Play	20-50 Mbps	Fully satisfied	Fully satisfied	Fully satisfied	\$0-20	Probably not	Average	Reliability
Q0000569	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Fully satisfied	Fully satisfied	Fully satisfied	\$40-60	I would consider it	Advanced	Reliability
Q0000570	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Somewhat satisfied	Mostly satisfied	Somewhat dissatisfied	\$40-60	I would consider it	Average	Speed
Q0000571	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	I don't know	Mostly dissatisfied	Mostly dissatisfied	Somewhat dissatisfied	\$60-80	Yes definitely	Basic	Speed
Q0000572	Cathlamet	Single family home	Residential	WPUd Home Internet	I don't know	Very dissatisfied	Very dissatisfied	Somewhat satisfied	I don't know	Likely yes	Average	Speed
Q0000573	Skamokawa	Single family home	Residential	WPUd Home Internet + Phone	5-10 Mbps	Somewhat dissatisfied	Somewhat satisfied	Fully satisfied	\$40-60	Yes definitely	Advanced	Speed
Q0000574	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Mostly satisfied	Mostly satisfied	Mostly dissatisfied	\$80-100	Likely yes	Advanced	Reliability
Q0000575	Cathlamet	Single family home	Residential	WPUd Home Internet						Yes definitely		
Q0000576	Cathlamet	Single family home	Residential	WPUd Home Internet + Phone	10-20 Mbps	Mostly satisfied	Mostly satisfied	Somewhat satisfied	\$60-80	I would consider it	Average	Reliability
Q0000577	Cathlamet	Single family home	Residential	WPUd Home Triple Play	I don't know	Somewhat dissatisfied	Mostly dissatisfied	Mostly satisfied	\$40-60	Likely yes	Average	Reliability
Q0000578	Cathlamet	Single family home	Residential	WPUd Home Internet	20-50 Mbps	Somewhat satisfied	Somewhat satisfied	Somewhat satisfied	\$40-60	Yes definitely	Average	Speed
Q0000579	Cathlamet	Commercial	Company	WPUd Bus Internet + Phone	0-5 Mbps	Very dissatisfied	Very dissatisfied	Very dissatisfied	\$60-80	Likely yes	Advanced	Reliability
Q0000580	Cathlamet	Single family home	Residential	WPUd Home Internet	5-10 Mbps	Mostly satisfied	Fully satisfied	Mostly satisfied	\$40-60	I would consider it	Average	Reliability

Factor speeds than what I have now would allow me to use internet TV services, and that would greatly improve my TV and internet utilization, utilization and flow.

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Attachment A: The Cowlitz-Wahkiakum Council of Governments Economic Development Plan

Comprehensive Economic Development Strategy 2019 Update



Comprehensive Economic Development Strategy Update

This document was prepared to meet the requirements of 13 CFR § 303.6(b)(3)(i) and the terms of award

ED18SEA 3020007 from the Economic Development Administration, US Department of Commerce

The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Economic Development Administration or the US Department of Commerce.

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Introduction

What is a CEDS?

The US Department of Commerce, Economic Development Administration (EDA)¹ recently designated the Cowlitz-Wahkiakum Council of Governments (CWCOG) as an Economic Development District to include Cowlitz and Wahkiakum counties. The CWCOG developed a Comprehensive Economic Development Strategy (CEDS) designed to identify regional priorities for economic and community development. This Update reflects some of the changes and activities impacting the region over the last 12 months.

This document includes the following updates: economic conditions, progress towards CEDS implementation, projects listed in the 2018-2022 CEDS, and performance measures.

Economic Conditions Update

For the most part, economic conditions have remained stable over the last few years as the country has moved beyond the recession. The region saw a gain in average employment over the last 24 months, matching the gains at the national level in employment and improved in comparison, but still trailing behind national numbers.

Despite the region's struggles with overall income rate, health factors, and other related indicators, both counties are seeing strong economic activity in certain sectors. Cowlitz County is experiencing some significant development opportunities that could result in as much as \$4 billion in investments from several projects in the coming years. Wahkiakum County faces continuing challenges based on its limited existing economic base; however, the recent sale of the 38 Mile Brewery, among other activities, has bolstered confidence in the Wahkiakum market to some degree.

Housing continues to be a significant priority in the area. In addition to the traditional concerns of affordability and accessibility for entry- through executive-level workers, housing market pressures from the Vancouver area have provided new opportunities and contributed to an increased cost of housing. The limited supply of housing in both counties continue to challenge the economic vitality and is perceived to be slowing growth opportunities. Housing stats are up significantly over recent years with indications that this trend will continue.

The following table shows the new permit activity in the region according to the State of the Cities Data Systems site.

	2018	2017	2016	2015
Single Family Permits	221	197	167	124
Multi Family Permits	0	8	0	0

Table 1: Recent Permit Activity
Source: sodcs.hususer.gov/permits

¹ 13 CFR Part 304 (2016)



Fig 1: Planning Area
Source: CWCOC

Planning Area

The EDD encompasses Cowlitz and Wahkiakum Counties, spanning 14,303 square miles located in Southwest Washington. The 2-county region contains 6 incorporated jurisdictions, five in Cowlitz County (Castle Rock, Kalama, Kelso, Longview, and Woodland) and one in Wahkiakum County (Cathlamet).

Emerging Issues

As the region approaches the 40th anniversary of the Mount St. Helens Eruption, Spirit Lake and sediment in the Toutle-Cowlitz river system remain topics of discussion. The CWCOC has joined with federal and other partners to address and inform long-term management decisions regarding the changes caused by the 1980 eruption of Mount St. Helens. The result will address the ongoing risk of moderate and potentially catastrophic flooding due to the buildup of sediment in the system.

The eruption of Mount St. Helens caused ecological disruptions far away from the volcano. Chief among these was the choking of the Toutle, Cowlitz, Green, and Columbia rivers with sediment deposited by the lahars. Some 140 million tons of sediment entered the Cowlitz and Columbia rivers in the first four months after the eruption. Today, the sediment load of the Cowlitz and Columbia is estimated at 10 to 40 million tons per year. This poses problems for navigation and flooding as the channels continuously fill with sand, ash, and silt².

The largest river in the area, the Columbia, runs from southeast to northwest forming much of Cowlitz County's western/southwestern boundary. The Columbia River is a major commercial waterway enabling international commerce. Cowlitz County's three largest port areas are on the Columbia River near the cities of Woodland, Kalama, and Longview. Both Longview and Kalama currently serve international markets. The Port of Woodland has begun the long process to establish deep water draft facilities on the Columbia River. This will bolster the international traffic through the District.

²Cowlitz County Comprehensive Plan, 2017 update



Figure 2: Economic Development District
Source: CWCOG

Regional Priorities and Goals

The following list is in no order and is made up of the regional priorities of partners and stakeholders. These partners and stakeholders will move initiatives forward based on their capacity and needs. The CWCOCG will assist where possible and focus on its yearly action plan.

1. Continue efforts to support operations of area ports and the management of the Columbia River Channel for trade.

Area partners continue to work to attract new investment and expand opportunities for area residents through a variety of projects in the region. The ports have been working to build the infrastructure to support existing employers' expansion needs and attract new employers to the area.

The Port of Woodland received a \$628,500 grant from the Community Economic Revitalization Board (CERB) for the Howard Way extension that will support Guild 1 and Guild 2 industrial park endeavors. The combined projects will add about 14 industrial sites to the community inventory.

The Port of Kalama is developing the 70-acre Spencer Creek Business Park, located north of Kalama River Road right off of Interstate 5. Facilities will be built over many years, and construction and operational activities are projected to support more than 1,000 jobs and millions of dollars in new local economic activity. The facility will support a mix of light industrial, office, commercial, and retail uses. Initial road construction has begun.



Figure 3: Port of Kalama – Spencer Creek Development starts construction in 2019
Source: Port of Kalama

The Port of Longview signed a new lease on the Bridgeview terminal with International Raw Materials that will support more than 30 jobs at the Port. The Port will begin engineering work on the \$100 million Industrial Rail Corridor Expansion Project in 2019. The Project was placed on the Regional Transportation Improvement Program (RTIP) in early 2019.



Figure 4: The Port of Longview is engaging in rail corridor improvements to support Port operations
Source: Port of Longview

The CWCOC participated in efforts to update the Southwest Washington Airport Master Plan and its Strategic Plan. Renewed public investment in the Airport has provided a direct path toward a renewal of private investment on potential job creation at the airport.

2. Enhance the attractiveness of the Economic Development District by promoting tourism and tourism investment throughout the region.

Area agencies have held a variety of events in the region geared at bringing new tourism dollars to the area that provide business opportunities for area residents.



Figure 5: Wahkiakum Chamber of Commerce Events
Source: Wahkiakum Chamber of Commerce

The Wahkiakum Chamber of Commerce is promoting a wide variety of programs and activities to encourage business and tourism activity. Nan Devlin, Executive Director of Tillamook Coast Tourism, visited Wahkiakum to help jump start tourism efforts.

3. Encourage and promote programs intended to enhance new business start-ups, entrepreneurial development, and small business growth.

A Revolving Loan Fund Task Force was established and meetings will continue during the remainder of 2019 to plan for the enhancement of the existing revolving loan fund resources available within the region.



Wahkiakum Chamber Of Commerce

TRUNK sale

At the Wahkiakum Winery & Brewery

April 6th- 2 pm to 4 pm
April 7th -12 pm to 4 pm

Load up Your Truck or Trunk With Items You
Want to Sell, or Come See What is For Sale!

Join River Mile 18 Brewery for National Beer day!
Come Drink like a Fish!

Enjoy a Local Beer, Your Games, Music, Food
From Maria's Taco Truck, Ace Tacos and the
Vizza Mill.

Sign Up Now or Register the Day of for
\$10 a Day -360-795-3501





2019 CASTLE ROCK FARMERS MARKET

Wednesday, February 27th, 6th - 10th
 Washington, Pennsylvania, Penn State Harrisburg
 2019 Castle Rock Farm to Fork Farmers Market
www.crrfm.org





Apple on Apple, Spinach & Lemons at Castle Rock
 Farmers Market. Sunday, April 14th
 10am - 2pm, 10000 Market

Castle Rock Farmers Market is excited to be part
 of the effort to start a farmers market in 2019.
 Stay tuned for location details, a vendor list,
 and special event information. In the meantime,
 please contact us if interested in finding about
 vendor fees and the process.





@CRRFM
 #CRRFM

FOLLOW ON FACEBOOK
[fb.me/crrfm](https://www.facebook.com/crrfm)

Wahkiakum County continues to build its small farm niche to help create jobs and take advantage of the local food sourcing trends. The Wahkiakum Food and Farm Network continues to grow and attract interest within the community.



Figure 8: USDA Presentation in Cathlamet
Source: CWCOG

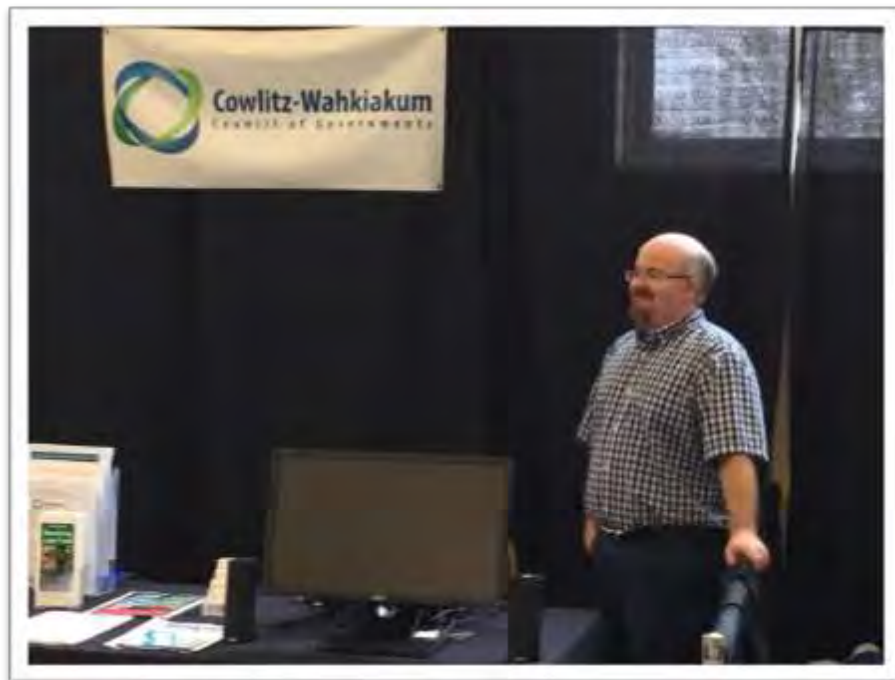


Figure 9: CWCOG at the Tourism and Business Expo
Source: CWCOG

The CWCOG has promoted a variety of programs including the Longview Revolving Loan Program at public events such as the Tourism and Business Expo as well as public speaking engagements.

Through a new partnership with Western Governors University (WGU), Lower Columbia College (LCC) has added eight new options for students looking to continue their higher education at home. WGU joins three other universities in the Lower Columbia Regional University Center, an on-campus program that provides “local opportunities for four-year degrees and beyond,” said LCC President Chris Bailey. Chris Bailey and WGU Washington Chancellor Tonya Drake, a Cowlitz County native and LCC graduate, made the announcement in April 2019.



Figure 10: WGU Community Announcement
Source: CWCOG

4. Maintain and enhance the district's quality of life and quality of place efforts by supporting and coordinating cooperative efforts throughout the district.

A wide variety of events and activities have been held throughout the region to build quality of life and place for area residents.

Efforts to increase opportunities for youth sports and activities, regional trails, local parks, and outdoor recreation received a great deal of attention in the past 12 months.

Woodland, Longview, and Kelso are currently working on developing regional parks to support our youth and promote tourism. The City of Longview is considering a master plan for a regional athletic facility intending to move forward with construction in the coming years. The City of Woodland has acquired 40 acres of land on the top of Scott Hill that has been designated for use as a sports complex. The City and the Woodland Rotary are working on fundraising and development ideas. Kelso's Tam O'Shanter Park will see a significant investment in parking and other amenities in 2019 and the Port of Longview's Willow Grove park will see an influx of over \$800,000 in maintenance and development work.



Figure 11: Scott Hill Park logo
Source: City of Woodland



Figure 12: Community meeting seeking input on the Six Rivers Trail project
Source: CWCOG



Figure 13: Idea Sharing at the Wahkiakum County Regional Information Forum
Source: CWCOCG

Significant progress was made during the year on the Six Rivers Trail project. The project team completed the initial visionary plan and received funding to conduct a follow-up study to identify initial cost estimates and for the first small project to be completed. An interactive Six Rivers Bike Trail map was created for the public to view and is available on the CWCOCG website or on mobile devices using Explorer for ArcGIS.

The CWCOG is producing a quarterly newsletter to assist partners with funding options. This resource is received by over 200 people each quarter.



Figure 14: CWCOG's Spring 2019 Newsletter
Source: CWCOG

After earning a first place for cities under 3,000 in the America in Bloom Competition for the third straight year, volunteer Nancy Chennault commented that Castle Rock Blooms is a way to continue improving livability and prosperity within the community. Cathlamet has created a bloom team following in Castle Rock's footsteps. Other communities in the region are exploring variations of the positive improvements that Castle Rock continues to make toward enhancing livability and economic development.



Figure 15: Castle Rock in Bloom Volunteers
Source: Castle Rock in Bloom



Figure 16: Becky McCray at the Woodland Chamber of Commerce Meeting
Source: CWCOG

Becky McCray, a national consultant, spent four days working with local community members and leadership. Following her visit, several volunteers have acted on ideas generated in discussions throughout the region. McCray has mentioned our region in her blog twice since her visit. An article in a recent Cowlitz Economic Development Council newsletter detailed the positive impacts following McCray's visit. A local business person hosted the first Downtown Kelso meeting and there was an eagerness in proceeding with a more formalized approach.

5. Maintain and expand the base infrastructure, with an emphasis on freight mobility and broadband, in efforts to support the development of business/industry throughout the region.

Wahkiakum County is currently conducting a study to identify broadband opportunities to serve the county. They received a Community Economic Revitalization Board (CERB) grant to lead the work. The Port of Woodland recently completed a Dark Fiber Analysis for the Cougar, WA area.



Figure 17: Broadband is a crucial element of the regional economy
Source: NoaNet



Figure 18: Coordinated efforts to improve major freight corridors like the Industrial Way/Oregon Way interchange are high priorities.
Source: Cowlitz County

The economy is dependent on trade and moving goods through the region, thus the support for investment in freight mobility. Coordinating transportation and economic development planning continues to develop. The CWCOG approved the Regional Transportation Plan (RTP) in late 2018 that included discussion on the economic development needs of the region. The CWCOG participates in the Lower Columbia Transportation Association and continues to support a regional freight advisory committee.

6. Provide information and forums for discussion of resilience issues within the region and promote interdisciplinary planning efforts.

A proposed business continuity outreach calendar for 2019 was presented and a Resilience Task Force was established. Tasks Force meetings will be scheduled in 2019 to discuss how to promote business resilience. The Kelso-Longview Chamber held an event focusing on business continuity resulting in the distribution of planning tools to over 100 area businesses.

The Economic Development Program Board and Comprehensive Economic Development Strategy Committee held a joint meeting on December 10 featuring a Resilience Training. The seventeen attendees heard from Phil Jurmu of Cowlitz 911 and Lorraine Churchill of the Department of Emergency Management. Several handouts were provided explaining disaster preparedness for businesses and homes.

7. Facilitate the development of an educated and skilled workforce with an emphasis on pre-apprentice pathways for high school graduates that will prepare them for apprenticeship programs.



Figure 19: Skills Center Feasibility Study
Source: CWCOG

The community collaborated to complete the Skills Center Feasibility Study, which was then submitted to the Washington Superintendent of Public Instruction. The CWCOG provided key demographics for the study. The CWCOG Board of Directors approved a letter of commitment for the Skills Center that was included in the final Feasibility Study. Work is continuing to establish a regional facility to assist in preparing high school students with career-focused educational opportunities.



Figure 20: The Kelso Mural Project—bolstering area youth and improving quality of place
Source: Workforce Southwest Washington

Workforce Southwest Washington developed a Construction Workforce Development Plan to assist in training the 15,000 new construction workers expected in their service area.



Figure 21: National Association of Development Organizations Conference
Source: CWCOG

8. Provide support for enhancing the quality and quantity of housing units throughout the region to include workforce housing through executive housing.

The CWCOG participated in a number of meetings and discussions on the regional housing needs and challenges. Staff prepared an overview of the housing market and presented it to local service groups during the time since the CEDS was finalized. The CWCOG also assisted Housing Opportunities of Southwest Washington in the mapping of existing public housing projects and other housing data.

CWCOG staff attended the National Association of Regional Councils 2018 National Conference and participated in training sessions on housing and other topics of relevance to the economic development program. Conversations regarding possible housing solutions continue at CEDS meetings and with other partners.

Goal	Primary Partner	Supporting Partners
Continue efforts to diversify the regional economic base.	CEDC, Wahkiakum Chamber	CWCOG, Cities, Counties, Ports
Continue efforts to support operations of area ports and the management of the Columbia River Channel for trade (combined with the goal above in the report).	Ports	CEDC, Wahkiakum Chamber, CWCOG, Chambers
Enhance the attractiveness of the area for economic development by promoting tourism and tourism investment throughout the region.	Wahkiakum Chamber, Cowlitz Tourism, Cities	Cities, Chambers
Encourage and promote programs intended to enhance new business start-ups, entrepreneurial development, and small business growth.	CWCOG, CEDC, Wahkiakum Chamber, SBDC	Cities, Counties, Chambers, LCC
Maintain and enhance the district's quality of life and quality of place efforts by supporting and coordinating cooperative efforts throughout the district.	All	Cities and Counties
Maintain and expand the base infrastructure, with an emphasis on freight mobility and broadband, in effort to support the development of business/industry throughout the region.	CWCOG	Cities, Counties
Provide information and forums for discussion of resilience issues within the region and promote interdisciplinary planning efforts.	CWCOG	Cities, Counties, WSDOT
Facilitate the development of an educated and skilled workforce	Workforce SW WA, LCC, K-12 Schools	CWCOG, CEDC, Wahkiakum Chamber
Provide support for enhancing the quality and quantity of housing units throughout the region to include workforce housing through executive housing.	Cities, Counties	CWCOG

Table 2: Regional Goals and Priorities
Source: CEDS Committee

Although a primary partner or partners are listed, these priorities go beyond any individual organization and will rely on the overall community to support and work to move all of these priorities forward as resources and circumstances allow.

Evaluation Framework

The CWCOG has set several initial performance metrics to work toward under this Comprehensive Economic Development Strategy. These metrics will be monitored over the life of the CEDS and will be included in annual reports. In addition, the CEDS Committee will study and consider additional metrics each year as partner organizations share their individual metrics and the group clarifies the most relevant metrics for consideration and tracking.

The Metrics will work to track progress on the overall implementation of the CEDS as required by the EDA. Yearly updates will be shared with partners and stakeholders as well as the general community in an effort to understand how we are doing and what we can do better.

Performance Metrics

Metric	Region	US	Threshold	Target
Stats USA Distress Criteria - 24-Month Avg. Unemployment Rate (4-2018)	7.57%	5.00%	2.57	Decrease by 0.5
As of 3-2019	5.9%	4.9%	1.89	Improved (Decreased) by 0.68
Per-Capita Money Income (5-Year ACS)	\$24,868	\$29,829	83.36%	Increase to 86%
As of 3-2019	\$25,919	\$31,777	83.14%	Dropped by 0.22%
High Tech Employment	1.30%	12%	10.7	Increase to 2%
Updated data not available	1.30%	12%	10.7	Unchanged
Young Adults (25 to 44) 2016	22.8 % of population	26.4 % of pop.	3.6	Increase to 24%
Young Adults (25 to 44) 2017	22.9%	26.4%	3.5	0.1 Point Improvement
Educational Attainment AA or Higher 2016	26.0%	38.50%	12.5	Increase to 30%
Educational Attainment AA or Higher 2017	26.6	39.2	12.6	Dropped 0.1 point

Table 3: Performance Metrics
Source: CEDS Committee

As part of the CEDS updates, the CWCOG will monitor and track the number and types of investments undertaken in the region to promote job development and to support quality of life or quality of place initiatives. Over time, these measures will assist in determining which investments may have spurred the desired changes to the metrics that are included here and may be added in the future.

APPENDIX

Demography

Basic demographics for each county are included below. Numbers are rounded. At more than halfway through the decennial census period, the 2010 census results are considered a bit stale. For raw population, the 2016 April 1 estimate from the US Census, Community Facts is used.

County Overviews

Cowlitz County is 1,140.13 square miles in size, with a density of about 90 people per square mile.³ Slightly more than 39 percent of the population is considered to be in the work force. Manufacturing is the backbone of jobs in Cowlitz County, although three Washington counties rank higher in terms of the percentage of manufacturing jobs. Jobs in healthcare are on the rise. At the same time, though, the median household income is increasing but has moved from a ranking of 23 to 28 in the state.

People & Income Overview, 2017 (By Place of Residence)	Value	Rank in State	Industry Overview, 2017 (By Place of Work)	Value	Rank in State
Population	106,910	12	Covered Employment	38,748	14
Growth (%) since 2010 Census	4.4%	25	Average Wage per Job	\$47,624	10
Households	42,491	12	Manufacturing – % All Jobs in County	15.9%	4
Labor Force (persons)	42,010	12	Average Wage per Job	\$69,217	6
Unemployment Rate	6.1	15	Transportation & Warehousing - % All Jobs in County	4.5%	4
Per Capita Personal Income	\$42,888	22	Average Wage per Job	\$70,525	1
Median Household Income	\$50,617	28	Health Care, Social Assist. – % All Jobs in County	16.3%	6
Poverty Rate	16.8%	7	Average Wage per Job	\$49,247	10
High School Diploma or More - % of Adults 25+	88.6%	26	Finance and Insurance – % All Jobs in County	2.0%	14
Bachelor's Degree or More - % of Adults 25+	16.1%	35	Average Wage per Job	\$55,459	15

Table A1: Cowlitz County Overview
Source: StatsAmerica July 1, 2017

³ Census QuickFacts (2010)

Wahkiakum County has 263.38 square miles in land area and a density of slightly more than 16 people per square mile.⁴ It ranks as the county having the second lowest number of “covered employment”⁵ jobs in the state. At the same time, its median household income is higher than Cowlitz County.

People & Income Overview, 2017 (By Place of Residence)	Value	Rank in State	Industry Overview, 2017 (By Place of Work)	Value	Rank in State
Population	4,264	37	Covered Employment	712	38
Growth (%) since 2010 Census	7.2%	15	Average Wage per Job	\$35,759	36
Households	1,823	37	Manufacturing - % All Jobs in County	5.8%	25
Labor Force (persons)	1,307	38	Average Wage per Job	\$30,401	36
Unemployment Rate	7.1	4	Transportation & Warehousing - % All Jobs in County	1.1%	29
Per Capita Personal Income	\$41,270	27	Average Wage per Job	\$41,188	33
Median Household Income	\$53,694	21	Health Care, Social Assist. – % All Jobs in County	0.0%	33
Poverty Rate	12.3%	28	Average Wage per Job	N/A	
High School Diploma or More - % of Adults 25+	91.5%	14	Finance and Insurance – % All Jobs in County	0.0%	39
Bachelor's Degree or More - % of Adults 25+	17.1%	14	Average Wage per Job	N/A	39

Table A2: Wahkiakum County Overview
Source: [StatsAmerica](#) July 1, 2017

⁴ Census QuickFacts (4-2017)

⁵ <http://www.bls.gov/opub/hom/pdf/homch5.pdf>

Who Lives Here?

Race

The EDD region lacks racial and ethnic diversity, both in individual counties and the region as a whole. The counties within the region are predominantly white and are fairly homogenous in terms of their respective racial composition. Altogether, the area is about 15 percent higher in white-only population than the state as a whole. This could be an enduring reflection of settlement patterns and Euro-centric workers who came west to work in the timber industry, combined with lack of immediate proximity to an immigration port. Even given Native Americans' historic presence in the region, the current-day tribal population is below that of other races, just about two percent of the white population. Less than ten percent of the region's population identifies as Hispanic, close to three percent under the statewide segment.

Race and Hispanic Origin						
	Wahkiakum County		Cowlitz County		Washington State	
Population	4,234		106,910		7,405,743	
White alone	3,904	92.20%	97,608	91.30%	5,887,565	79.50%
Black or African American alone	21	0.50%	1,069	1.00%	311,041	4.20%
American Indian and Alaska Native	72	1.70%	2,138	2.00%	140,709	1.90%
Asian alone	67	1.60%	1,710	1.60%	659,111	8.90%
Native Hawaiian and Other Pacific Islander alone	8	0.20%	427	0.40%	59,245	0.80%
Two or More Races	160	3.80%	3,848	3.60%	348,069	4.70%
Hispanic or Latino	211	5.00%	9,621	9.00%	940,529	12.70%
White alone, not Hispanic or Latino	3,245	88.20%	89,483	83.70%	5,087,745	68.70%

Table A3: Race

Source: US Census Quick Facts 2017 US Census Bureau, American Community Survey, 5-Year Estimates

Age

More than half the population throughout the region is between the ages of 45 and 64 – approaching retirement age or at least the latter part of their working lives. The population of young adults (age 25-44) coming up behind them trails by about 4,000 people. There is a considerable disparity between the population of children (preschool/school age) and college-age adults, and between young adults and college-age adults. This suggests that people in this age group are leaving the region in significant numbers, whether to attend school or for other reasons.

Age Group						
	Cowlitz County		Wahkiakum County		Region	
Preschool (0-4)	6,169	6%	138	3.3%	6,330	5.9%
School Age (5-17)	17,637	17%	511	12.4%	18,178	16.9%
College Age (18-24)	8,182	7.9%	284	6.9%	8,466	7.9%
Young Adult (25-44)	24,009	23.4%	636	15.4%	24,645	22.9%
Older Adult (45-64)	28,772	27.8%	973	23.7%	29,949	27.8%
Senior (65+)	18,821	18.2%	1,306	31.8%	20,127	18.7%

Table A4: Age

Sources: US Census Bureau, American Community Survey, 5-Year Estimates; median age calculated by the IBRC

Living Arrangements

The largest segment of the population is non-family households, which is closely followed by those in a marital relationship but with no children. These two areas account for almost 68% of the population.

Living Arrangements						
	Cowlitz		Wahkiakum		Region	
Total Households	40,668		1,823		42,491	
Family Households	26,811	65.9%	1,284	70.4%	28,095	66.1%
Married with children	6,937	17.1%	220	12.1%	7,157	16.8%
Married without children	13,183	49.5%	956	52.4%	14,139	33.2%
Single parents	6,691	16.5%	328	18.0%	6,653	10.1%
Non-Family Households	13,857	34.1%	539	29.6%	14,396	33.9%
Living alone	11,157	27.4%	430	23.6%	11,587	27.3%

Table A5: Living Arrangements

Source: US Census Bureau 2017

Educational Preparedness

About two thirds of the region's population age 25 or older has attained either high school graduation/GED or has attended some college, but with no degree. This exceeds the statewide average, closer to a quarter of the working-age population. Only about 15 percent has a bachelor's degree or higher, less than half of the statewide average of just over 33 percent. This suggests that without additional education, many working-age people are poorly positioned to qualify for jobs requiring degrees. At the same time, census data does not capture non-collegiate technical or certification programs, on-the-job training programs, and the like; some working-age people may have augmented their work skills through such efforts.

Educational Attainment						
	Cowlitz County		Wahkiakum County		Washington State	
Population 25 years and over	71,602		3,119		4,896,055	
Less than 9th grade	2,418	3.40%	72	2.30%	188,200	3.80%
9th to 12th grade, no diploma	5,790	8.10%	192	6.2%	260,358	5.30%
High school graduate (includes equivalency)	22,062	30.8%	1,039	33.30%	1,101,904	22.50%
Some college, no degree	22,631	31.60%	917	29.4%	1,174,696	24.00%
Associate's degree	7,194	10.00%	365	11.10%	483,549	9.90%
Bachelor's degree	6,908	9.60%	283	9.10%	1,064,440	21.70%
Graduate or professional degree	4,599	6.4	251	8.00%	622,908	12.70%
Percent high school graduate or higher	88.50%		91.50%		90.80%	
Percent bachelor's degree or higher	16.10%		17.10%		34.50%	

Table A6: Education

Source: US Census, American Community Survey 2013-2017

Where Do People Live?

Population and Households

The following data sets create a snapshot of demographic patterns found within the region in 2013 based on 2010 Federal Census and 2008-2012 American Community Survey data. Information conveying characteristics of population, housing, and personal income trends and forecasts are organized by county. Key issues pertaining to the demographic trends include the growth in the aging population as well as slower population growth overall, due to slower natural increase and lower in-migration to the region.

Housing						
	Cowlitz		Wahkiakum		Region	
Units	44,216		2,108		46,324	
Occupied housing units	40,668	92.0%	1,823	86.5%	42,491	91.7%
Owner-occupied	26,975	61.0%	1,477	70.0%	28,452	61.4%
Renter-occupied	13,693	31.0%	346	16.4%	14,039	30.3%
Vacant housing units	3,548	8.0%	285	13.5%	3,833	8.3%

Table A7: Housing

Source: American Community Survey 5-Year Estimates, 2017

Coming and Going

Historically, population growth in the region has been fueled largely by in-migration rather than natural increase. Population growth has plateaued and has even decreased in some age brackets. The Washington State Office of Financial Management has revised its population growth forecast for the State of Washington to reflect a slowing in-migration following the Great Recession, as well as lower rates of household formation and significantly lower rates of natural increase, due to the continued aging of the Baby Boomer generation. This forecast affects the regional economic image as a declining and aging population. It is imperative that the region begin to focus on increasing job opportunities geared toward increasing in-migration.

Components of Population Change 2010-2018			
	Cowlitz	Wahkiakum	Region
Births	9,818	204	10,022
Deaths	8,824	904	9,728
Natural Increase	994	(700)	294
Net Migration	3,906	822	4,728

Table A8: Population Change

Source: Washington State Office of Financial Management 2018 Population Trends

Income and Poverty

The per capita personal income of the counties is substantially lower than Washington State's per capita personal income of \$53,493 for 2016⁶. In addition, Woodland, as a bedroom community to the Vancouver-Portland metro region, disproportionately increases the median for Cowlitz County. Overall, the area is seeing an increase in poverty rates, which has profoundly affected the school districts, as evidenced by increasing numbers of children receiving free and reduced-cost meals. One in four children in Kelso are in poverty and close to one in five seniors in Woodland are in poverty. Every community in the region, except Woodland, is below the US median household income level. Also, every community is below the national per capita income.

In comparison to a household with the median household income, one consisting of two working adults and a child, with an income below the median, would not meet self-sufficiency standards. This results in more "working poor" within the region with relatively more limited opportunities.

Overall, almost every household under the median household income fails to meet the sufficiency standards of a typical family household. Since the last CEDS in 2009, the poverty rate has increased for children and the elderly, and median household incomes have become stagnant. Without significant economic opportunities, these statistics will become more dire. The EDD and partner organizations will continue to focus on wealth creation and moving more residents toward self-sufficiency.

⁶ Washington Office of Financial Management

Per Capita Income			
	Cowlitz	Wahkiakum	State
2017	\$25,878	\$26,964	\$34,869
2016	\$24,756	\$27,619	\$32,999
2015	\$24,260	\$24,483	\$31,762
2014	\$24,042	\$23,215	\$31,233
2013	\$23,557	\$22,334	\$30,742
2012	\$23,572	\$25,060	\$30,661
2011	\$23,575	\$21,455	\$30,481
2010	\$22,948	\$23,115	\$29,733
% change 2010-17	12.7%	16.6%	17.2%

Table A9: Income
Source: US Census, American Fact Finder

The Bureau of Economic Analysis published Gross Domestic Product data at the county level for the first time in early 2019. The most current data is included below.

County	Industry Name	Real Gross domestic product (GDP) by county growth (percent change from preceding period)		
		2013	2014	2015
Cowlitz	All Industries	2.0	4.1	-0.8
	Private goods-producing industries	2.5	0.0	1.9
	Private services-providing industries	2.5	7.3	-2.7
	Government and government enterprises	-1.8	3.8	-1.2
Wahkiakum	All Industries	-0.8	-6.6	4.3
	Private goods-producing industries	(D)	(D)	(D)
	Private services-providing industries	(D)	(D)	(D)
	Government and government enterprises	-1.8	1.6	-2.5

Table A10: Gross Domestic Product Data
Source: Bureau of Economic Analysis (BEA)

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