7. Broadband Infrastructure Investment Concept

The Port's investment in broadband infrastructure could be utilized as an additional asset that can be brought to the table in a Public-Private-Partnership. This infrastructure, which would be owned by the Port and the greater Walla Walla region would be utilized by the partnering provider as the distribution/access network used to connect commercial buildings and users within the fiber zones identified in this Study. Availability of these assets removes the barrier of entry for providers that would like to enter the market or expand, yet have constraints of capital or difficulty making the business case. In addition, the entire region can make use of the Port's network providing local ownership and decision-making as it relates to telecommunications, and in the support of deploying Smart Community technologies that can drive innovation and efficiency.

In many cases, providers operating in and out of Walla Walla have to justify the cost to build fiber infrastructure to connect potential subscribers. This process involves the development of a business case and a reasonable payback, which for many telecom entities is 18 – 36 months, a generally short timeframe. In areas such as Downtown Walla Walla or College Place, these paybacks can be difficult to obtain especially when underground placement is required if aerial deployment is not an option, and the cost per foot for construction/restoration can be very high. The Port of Walla Walla can strategically build a fiber network to serve these fiber deployment zones and can utilize local funding, long-term financing options and can include the off-balance sheet benefits such as job growth, business retention, and increased quality of life to develop its business case and return on investment.

A Port owned network could also be utilized to expand fiber service to key anchor institutions in the region for intergovernmental collaboration purposes, increased local access for Smart Community initiatives or to access telecommunications providers who may be interconnected to the network. Not only would this fulfill additional connectivity needs, but would likely do so at a reduced cost than can otherwise be obtained in the local market.

The Port's ownership in this long-term asset provides the local region with ownership of the broadband infrastructure that will drive community and economic development for decades to come. The Port and its local government partners will have the ability to make key decisions on how and where this asset is expanded, providing local control and decision making that is otherwise absent from the environment today. This network would allow the Port to aggregate local demand for telecommunications services across a common network, paid for and owned by the communities it serves.

The fiber deployment zones identified below include the major business areas and corridors of the region and include the Airport Park, Downtown Walla Walla, College Place and an industrial/business park just North of Hwy 12. These areas collectively include over 699 commercial buildings. In addition, connectivity between these zones would provide additional fiber connectivity options for those businesses located in these key corridors. From an Economic Development perspective, these identified zones could be classified as "Fiber Ready" areas where direct fiber services are readily

available. The implementation of this concept takes the guess work out of trying to figure out whether or not fiber service is available in a specific area of the region, as well as the aid to construction costs which are normally passed along to the business requesting service. Businesses looking to locate in the Walla Walla region can be directed to these fiber zones with assurance of high-speed scalable broadband connectivity being readily available.

A. Business Corridors

Figure 7-1: Map of Airport Park, Zone 1

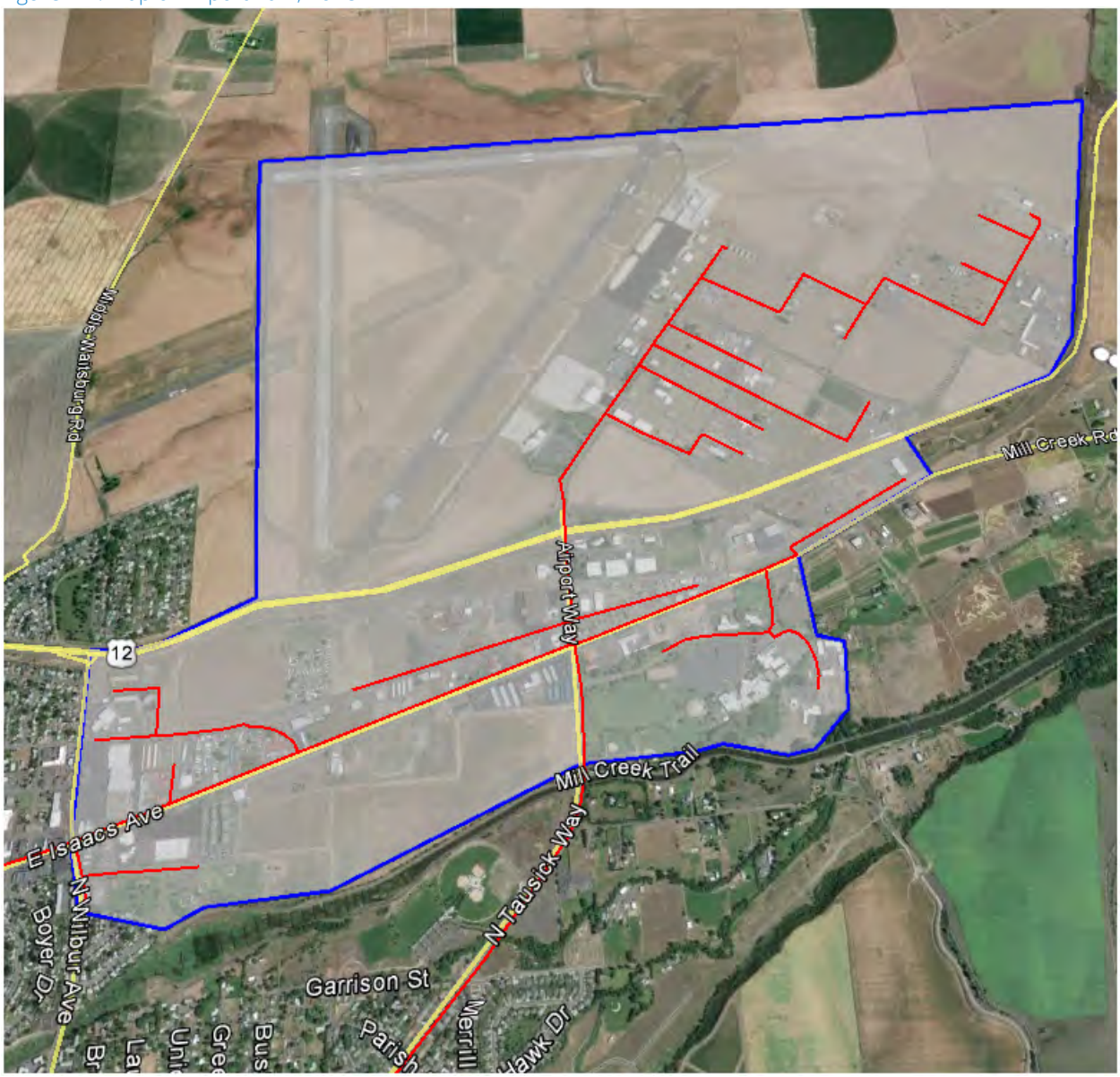


Figure 7-2: Map of Downtown Walla Walla, Zone 2

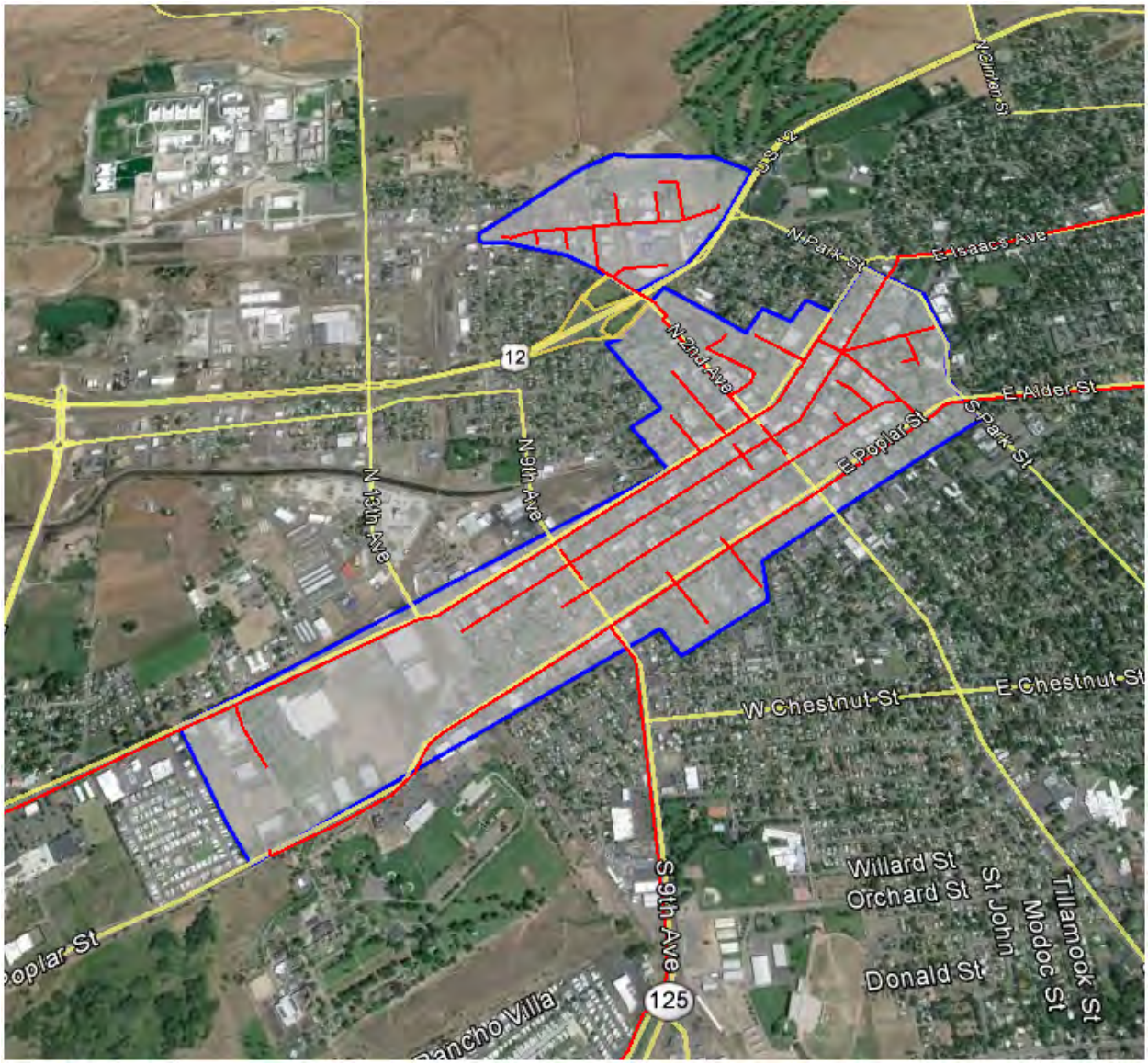


Figure 7-3: Map of College Place, Zone 3

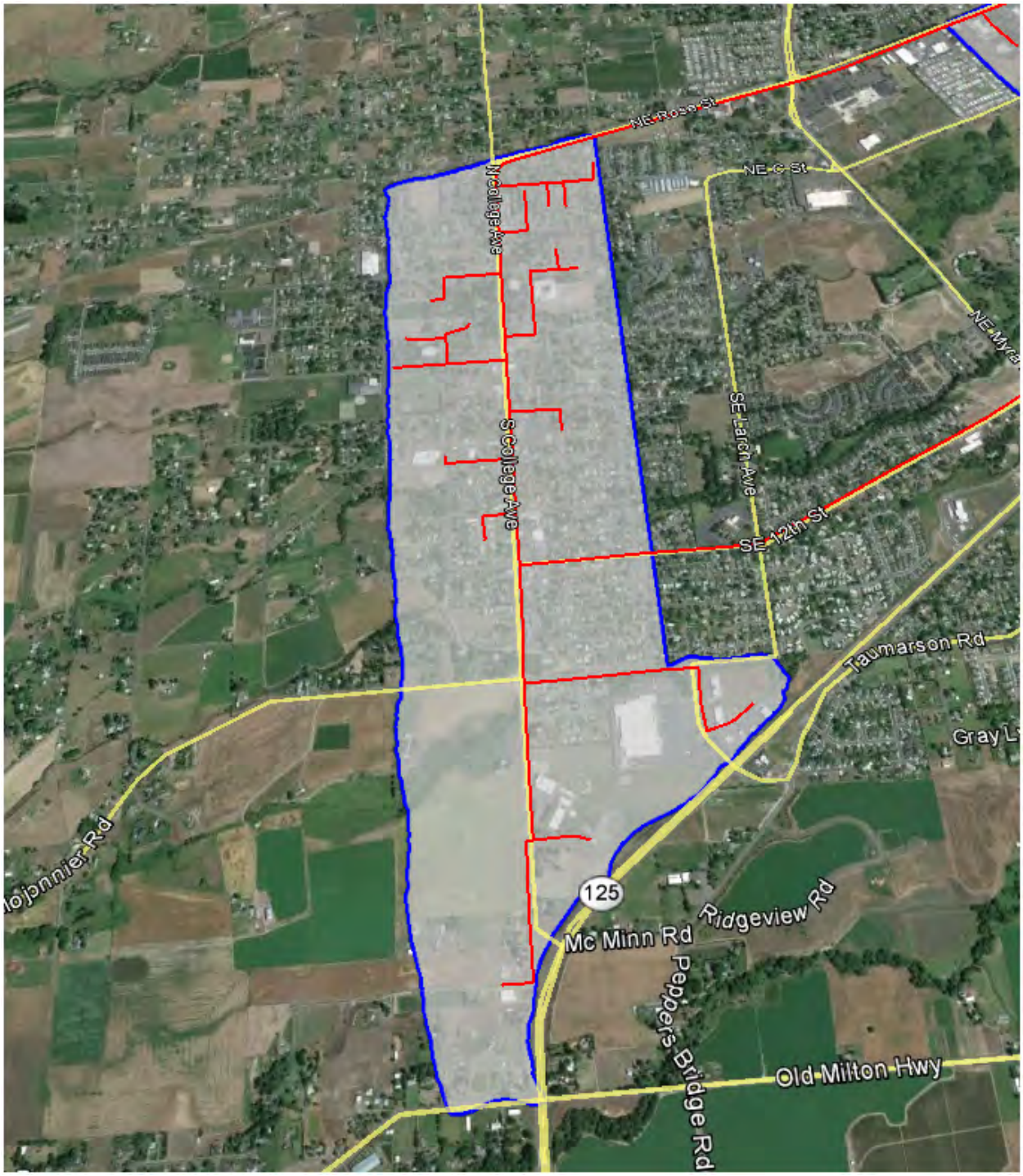
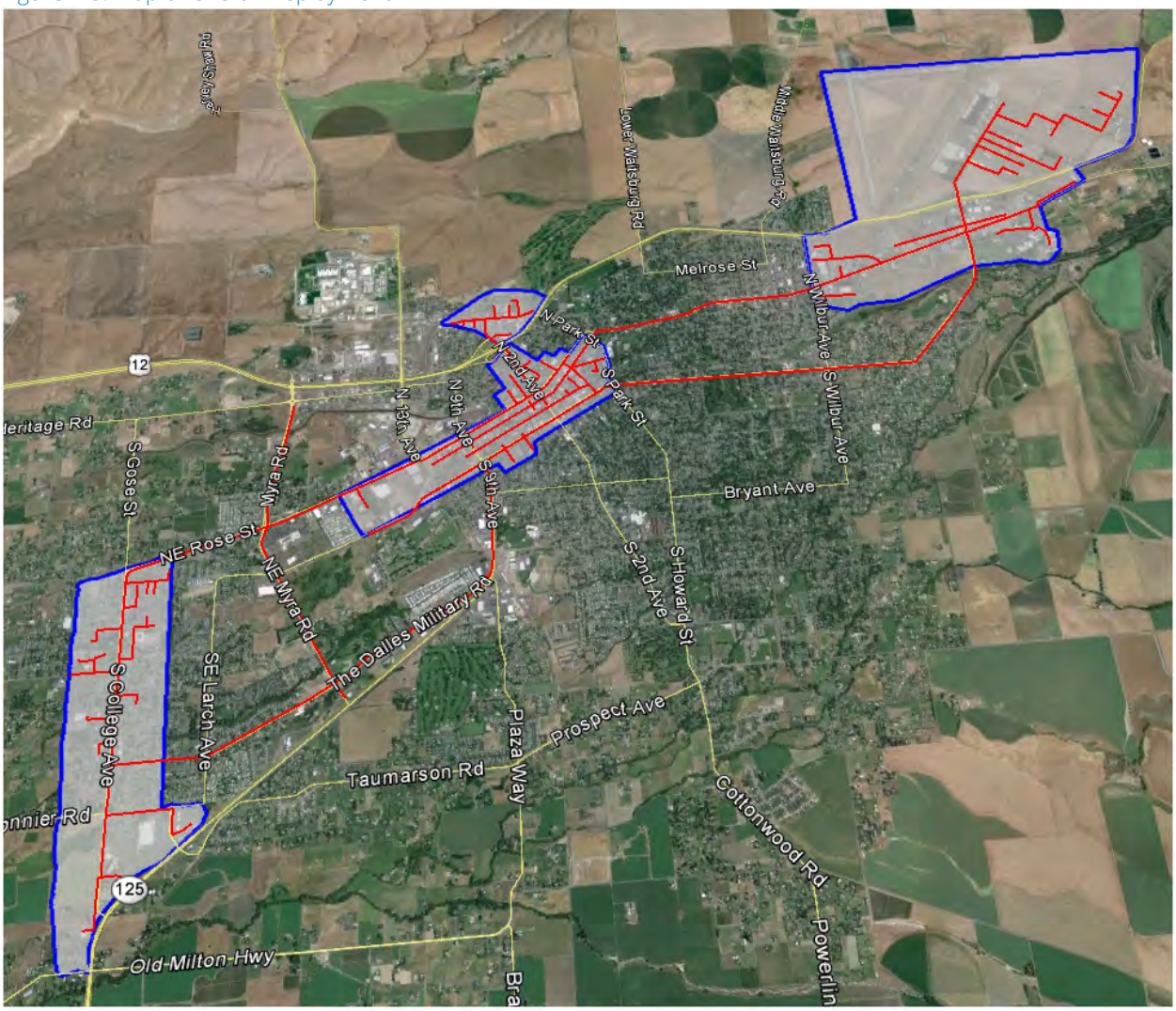


Figure 7-4: Map of Industrial, Zone 4

Figure 7-5: Map of Overall Deployment



Final Costs will depend on the area to be served. To determine the geographic scope of the network, the Port would identify key business corridors and areas that were "prime" for broadband deployment as indicated above. Most municipal networks are built into commercial areas first because this is where the need for fiber based broadband services is highest and tend to have the greatest impact. These networks also generate positive economic development benefits in a short amount of time by enabling local businesses to access next-generation broadband at affordable rates. Magellan would suggest using a phased approach that first brings fiber-optic broadband to Walla Walla's business corridors.

Figure 7-6: Network Phasing Plan

Walla Walla Network Deployment Phasing Plan

The preliminary designs of the business fiber zones identified include 100% new construction in all areas with 80% aerial/20% underground placement. The outlined costs are conservative worst-case scenario and do not include the use of any existing fiber routes or conduit. The Port should be able to reduce these overall costs by partnering with the Cities and other regional stakeholders on aligning conduit and fiber deployment with planned underground capital projects. In addition, current IPZ, Airport Park or City of Walla Walla fiber has not been included in the overall design, but could provide additional cost-savings if incorporated.

Walla Walla Business Corridor Build Out Costs

Zone	1	2	3	4	Total
Area	Airport Park	Downtown Walla Walla	College Place Diverse Routes Myra Road	North of Hwy 12 Industrial	Overall Deployment
# of Commercial Properties	111	360	203	25	699
Fiber-Optic Network Costs	$835,306	$764,952	$1,460,789	$148,698	$3,209,745

While the costs above provide the necessary basis to build a distribution/access network throughout these identified areas, these costs do not include the fiber drops to each building. A fiber drop is the last-mile connection that connects the premise to be served to the greater fiber network and is essential to completing the fiber path to the subscriber. Typical drop costs range from $1,500 to $5,000 per premise or building and are highly attributed to underground vs. aerial placement and the overall distance of the drop. The Port should plan to include funding to build and own the drop as this gives long-term stability to the network and underlying ownership of the assets. Drop costs are one-time capital cost, however are not realized until a subscriber or property owner is ready to take service.

B. Existing Government Owned Networks

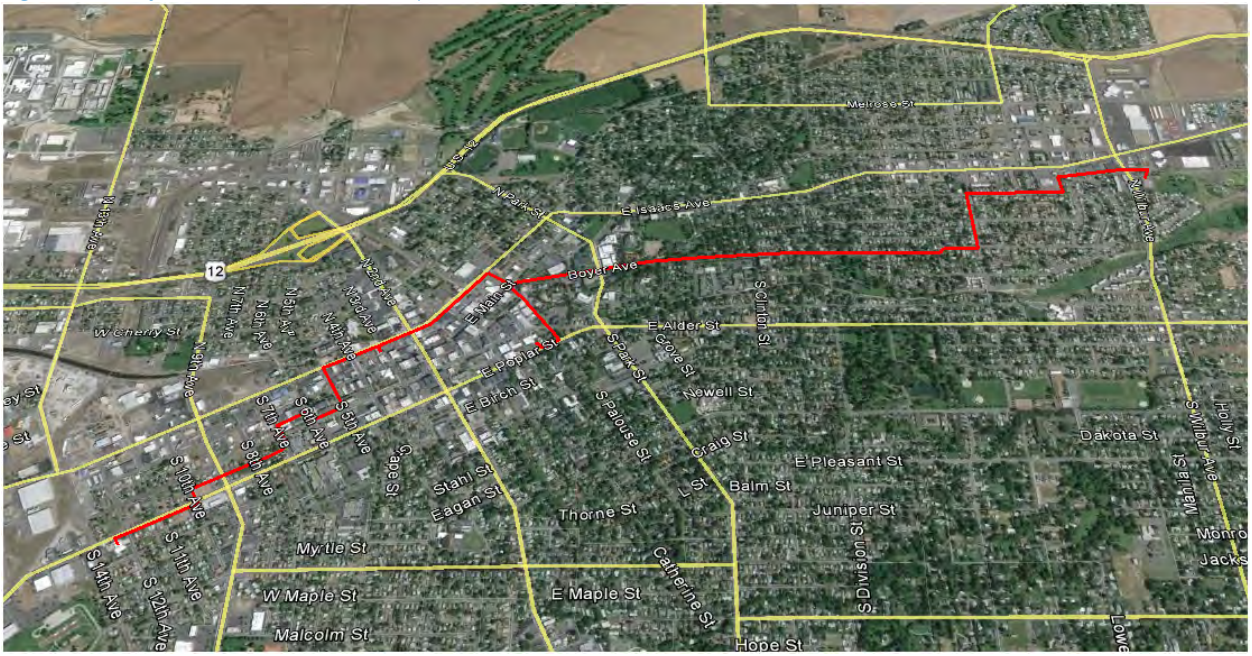
If the Port decides on making key investments in broadband infrastructure and takes on the management and operational responsibility for this network, it would make sense to aggregate any locally government owned networks in the region under the Port of Walla Walla's oversight. This would allow the Port to make use of existing fiber, conduit and other assets without having to overbuild exiting infrastructure. In addition, it could allow the Port to manage and market these assets. Economies of scale could be leveraged for the operations and maintenance of the assets, while continuing to provide the Cities and County with access just as is available today.

Currently the City of Walla Walla maintains two different fiber networks, the IPZ fiber and the City's own fiber to support internal City operations. In each of these cases, the Port could manage and operate these networks while allocating the necessary fiber strands to support the City's operations currently making use of these networks. In addition, the Port would include these routes into a Fiber Management System for asset tracking and mapping purposes. The IPZ grant was paid for through an Innovation Grant by the State of Washington. Further investigation is necessary to determine whether there are restrictions that would prevent this fiber from being utilized in a wholesale or commercial application.

The Port would be responsible for determining the O&M costs for management of all fiber throughout the region, and allocating back a pro rata share to the Cities and County for O&M charges, which primarily would be paid to third-party firms. O&M is operations and maintenance, and includes repairs, restoration, documentation and preventative maintenance of the infrastructure. The Port could possibly include a provision during the PPP negotiations, passing this requirement onto the partner.

Figure 7-7: IPZ Fiber Map

Figure 7-8: City of Walla Walla Fiber Map



C. How Will the Port Receive a Return on Its Investment?

The Port would have various opportunities to realize a return on its investment in funding and constructing a fiber network throughout the Walla Walla region. These opportunities include a potential revenue share through the successful negotiation of a public-private-partnership, lease of dark fiber and the off balance sheet returns to the community such as business growth and retention, business recruitment and an increase in the quality of life for its constituents. While several of these stated opportunities offer direct financial contributions to the Port's return on investment, it is difficult to quantify the off balance sheet returns. In addition, it's important to remember that this investment is being made into a long-term asset, which will continue to drive efficiency and innovation throughout the region for many years to come. These assets will remain on the Port's books, as ownership will be retained by the Port of Walla Walla.

A successful negotiation of a public-private-partnership would include a revenue share to the Port of the gross revenue generated from the Port's broadband assets. A revenue share of 5% - 10% of gross revenue could be expected and would generate a consistent annual revenue stream to the Port. This revenue share would be paid by the private partner through subscriber fees collected for the provision of broadband services. Negotiation of the revenue share is a balancing act as this is typically a pass-through of fees collected from local subscribers. Therefor the higher the revenue share, the higher the fees passed onto the subscribers through service fees. The lower the revenue share, the lower the fees. It will be important for the Port to understand the level and timeframe of payback it's willing to consider and should adjust the revenue share accordingly.

The Port could also utilize the broadband infrastructure to lease dark fiber to community anchors or other providers that may require capacity in the region. The Port would establish dark fiber lease rates and would make these available to users that would require this type of service. In addition, the Port could develop IRU rates that provide discounted lease rates for long-term prepaid lease agreements.

Finally, the Port of Walla Walla acts as the regional economic development organization in the Walla Walla region and therefore is charged with leading economic growth throughout the area. Investments in broadband infrastructure will allow the Port to make strategic decisions in how the area is served and offers yet another tool in the Port's toolbox for growing the business environment. While it is often difficult to quantify the financial impact to economic development activities, there is a clear correlation between bringing new companies and jobs to the region and the overall financial viability of the area.

Estimates place the build out of a feeder/distribution fiber network in all areas identified at approximately $3.2 million. This network could be built in whole or in a phased approach depending on funding availability. This network would provide fiber access to any premise or subscriber requesting service within the service areas defined. The Port would incur additional construction costs above the initial $3.2 million to connect the various buildings to the network. To determine the Port's return on its investment, its necessary to outline the parameters that are included in developing the business case. The parameters that directly impact ROI include the capital investment amount, average revenue per user (ARPU), revenue share, required rate of return, payback/depreciation term

(10, 15, 20 and 30 year), and the cost of administration and overhead. The sensitivity of the return is directly impacted by the revenue share, required rate of return and payback/depreciation term.

Through analysis of the full deployment throughout the region, we're able to identify the number of subscribers that would have to take service from the network to provide a return. These numbers will have to be vetted through the negotiation process and the potential partner will need to understand the assumptions the Port has made. As you begin to break down the various areas that have been identified as broadband deployment zones and run individual financial analysis of each zone, its becomes clear that some zones could be more likely to perform as capital costs may be lower than others, and may have greater business density.

Figure 7-9: Financial Analysis of Region Wide Deployment (10% Revenue Share, 3% Rate of Return)

Assumptions	Timeframe	10 Year	15 Year	20 Year	30 Year
ARPU: $150 per month	Annual Revenue to Port	$466,000	$359,333	$306,000	$252,667
Revenue Share: 10%	Ave. Revenue per Sub	$180	$180	$180	$180
Capital Investment: $3.2M	Average Annual Customers	2,589	1,996	1,700	1,404
Rate of Return: 3%					
Annual OPEX: $50,000	Total Return	$4.66M	$5.39M	$6.12M	$7.58M

Figure 7-10: Financial Analysis of Region Wide Deployment (10% Revenue Share, 0% Rate of Return)

Assumptions	Timeframe	10 Year	15 Year	20 Year	30 Year
ARPU: $150 per month	Annual Revenue to Port	$370,000	$263,333	$210,000	$156,667
Revenue Share: 10%	Ave. Revenue per Sub	$180	$180	$180	$180
Capital Investment: $3.2M	Average Annual Customers	2,056	1,463	1,167	870
Rate of Return: 0%					
Annual OPEX: $50,000	Total Return	$3.7M	$3.95M	$4.2M	$4.7M

The analysis provided in Figures 7-9 and 7-10 show an IRR of 3% and 0% respectively. The overall annual customer requirements and total return numbers greatly differ between both projections. The Port should use these guidelines as a basis for negotiating a final agreement with a private partner, but should also realize that there are a number of additional ways to monetize the network through the leasing of dark fiber, IRUs and through other off-balance sheet returns dealing with economic growth, which are both difficult to quantify at this point.

D. What are the Risks?

The risks of investing in the proposed fiber optic network by the Port are minimal and tempered due to the fact that the Port will retain long-term ownership of the asset. While it is recommended that the Port continue to make key strategic investments in underground infrastructure when possible, it does not recommend full build out as the plan indicates until a successful public-private-partnership agreement has been reached. In many ways, this is not a "build it and they will come" approach, but leans heavily on the private partner to know and understand the local market and their ability to execute their side of the partnership. With this being said, the Port should ensure it conducts the proper amount of due diligence on all responding providers to ensure it adequately vets its potential partners.

It is always possible for the local incumbents to drop their current prices and to make an attempt at locking their current customers into long-term contracts. The fact is that their current service offerings will still be delivered over legacy copper infrastructure and service levels will not compete with the new fiber based offerings. It is very unlikely that current incumbents will overbuild their current infrastructure and therefor will be unable to compete over the long-term.

8. Regulatory Analysis

Policy Environment for the Port's Provision of Telecommunications Services[13]

The Revised Code of Washington found in 2000 that "Public utility districts and rural port districts may be well positioned to construct and operate telecommunications facilities."[14] A rural port district in existence on June 8, 2000 is specifically allowed and empowered to "construct, purchase, acquire, develop, finance, lease, license, handle, provide, add to, contract for, interconnect, alter, improve, repair, operate, and maintain any telecommunications facilities within or without the district's limits" for two purposes: its own use; and for provision of wholesale telecommunications services to other providers.[15] This is a very broad grant of authority to provide telecommunications services for the port district's use and for provision at wholesale to other users or retail providers – but only for those purposes. It is explicit that these facilities cannot be used by the port district to provide retail services to retail customers.

The statutes contain provisions that use definitions, distinctions and requirements or prohibitions that are commonly used in public utility regulation. The statute incorporates by reference a common definition of "telecommunications".[16] Also, the definition of "wholesale telecommunications services" comports with the common understanding of that term in other states' statutory frameworks.[17]

The statute also embeds the concept that rates, terms and conditions for such wholesale telecommunications services cannot be unduly or unreasonably discriminatory or preferential. What is "discriminatory" or "preferential" is defined as offering rates terms and conditions to an entity for wholesale telecommunications services, and not offering those same rates, terms and conditions for similar services to others.[18] Furthermore, pricing for telecommunications services provided internally to the port district must be at full or fair value, and must not be preferential or discriminatory as compared to the port district's charges for wholesale telecommunications services.[19]

A person or entity that has requested wholesale telecommunications services from a port district may petition the Washington Utilities and Transportation Commission for review, if it believes the district's rates, terms and conditions are unduly or unreasonably discriminatory or preferential. The person or entity is required to give the district 30 days notice of intent to file such a petition, to provide the

[13] The following discussion does not constitute a legal opinion and should not be construed as such.
[14] Note (3) at RCW 53.08.005.
[15] RCW 53.08.370 (1).
[16] RCW 80.04.010 (27) "Telecommunications" is the transmission of information by wire, radio, optical cable, electromagnetic, or other similar means. As used in this definition, "information" means knowledge or intelligence represented by any form of writing, signs, signals, pictures, sounds, or any other symbols.
[17] RCW 53.08.005 (5) defines "wholesale telecommunications services" as meaning "the provision of telecommunications services or facilities for resale by an entity authorized to provide telecommunications services to the general public and internet service providers." The former term is a reference to certification requirements at the Washington Utilities and Transportation Commission, while the latter term – internet service providers – references entities whose entry is not regulated.
[18] RCW 53.08.370 (2).
[19] RCW 53.08.370 (4).

district an opportunity to address the claim. If the petition proceeds to the Commission, the Commission shall enter a final order in the matter, which can be enforced in court.[20]

Cost accounting and cost separation is required by the statute. Revenues and expenditures related to provision of wholesale telecommunications facilities and services must be accounted for separately from revenues and expenditures related to internal telecommunications operations. Furthermore, any revenues received from wholesale telecommunications services must be dedicated to the utility function until bond or financing instruments for the facilities are retired.[21]

The Port district of Walla Walla is clearly permitted to invest in modern broadband networking for purposes of meeting its own internal needs and providing wholesale telecommunications services to other service providers and ISPs. Provision of such wholesale telecommunications services is subject to reasonable requirements that the district use revenues from such services to pay off related bond or financing instruments, that the district charge reasonable and non-discriminatory rates under reasonable and non-discriminatory terms and conditions, and that the district properly account for revenues and expenditures associated with the services.

[20] RCW 53.08.380.
[21] RCW 53.08.370 (3).

9. Recommendations and Next Steps

The Port of Walla Walla and regional leaders recognize broadband infrastructure as an important part of the region's economic development strategy in retaining existing businesses and attracting new companies to the area. The market is currently served by legacy copper networks with the exception of minimal fiber GPON and dedicated fiber connections in some cases. Current dedicated fiber connections are available but very expensive, many times due to the aid to construction charges. This alone does not allow the Port or other economic development organizations in the region to respond to prospective businesses or site locators with absolute fiber offerings or costs, which can lead to the area being disqualified early in the site investigation process.

The Port has an opportunity to be a leader in the Walla Walla region by making key investments in broadband infrastructure that can be utilized by other public agencies and by private providers to serve the market. This Study had identified the main business areas and corridors in the region and has identified over 550 commercial properties that could be served by fiber optics through the Port's initiative. These areas and the commercial properties could be considered on net, allowing direct, immediate access to fiber based telecommunications services, which is otherwise absent in the region today.

The next steps for the Port of Walla Walla to consider include the following:

1. Investigate/finalize potential funding opportunities including the 9/10th sales tax.
2. Develop an RFI outlining the Port and Region's vision and goals for bringing high-speed broadband infrastructure to the Walla Walla region and defining the terms and conditions of the partnership
3. Release RFI for a 30-60 day period in a public procurement process.
4. Evaluate, short-list, interview and select a partner to begin negotiations.
5. Begin to negotiate and work toward development of an MOU and a final definitive agreement to formalize the partnership.
6. Develop a business plan for the Port of Walla Walla to become an infrastructure provider of fiber-optic infrastructure in the Walla Walla region.

10. Appendix A – Glossary

3G – Third Generation	The third generation of mobile broadband technology, used by smart phones, tablets, and other mobile devices to access the web.
4G – Fourth Generation	The fourth generation of mobile broadband technology, used by smart phones, tablets, and other mobile devices to access the web.
ADSL – Asymmetric Digital Subscriber Line	DSL service with a larger portion of the capacity devoted to downstream communications, less to upstream. Typically thought of as a residential service.
ADSS – All-Dieletric Self-Supporting	A type of optical fiber cable that contains no conductive metal elements.
AMR/AMI – Automatic Meter Reading/Advanced Metering Infrastructure	Electrical meters that measure more than simple consumption and an associated communication network to report the measurements.
ATM – Asynchronous Transfer Mode	A data service offering that can be used for interconnection of customer's LAN. ATM provides service from 1 Mbps to 145 Mbps utilizing Cell Relay Packets.
Bandwidth	The amount of data transmitted in a given amount of time; usually measured in bits per second, kilobits per second (kbps), and Megabits per second (Mbps).
Bit	A single unit of data, either a one or a zero. In the world of broadband, bits are used to refer to the amount of transmitted data. A kilobit (Kb) is approximately 1,000 bits. A Megabit (Mb) is approximately 1,000,000 bits. There are 8 bits in a byte (which is the unit used to measure storage space), therefore a 1 Mbps connection takes about 8 seconds to transfer 1 megabyte of data (about the size of a typical digital camera photo).
BPL – Broadband over Powerline	A technology that provides broadband service over existing electrical power lines.
BPON – Broadband Passive Optical Network	BPON is a point-to-multipoint fiber-lean architecture network system which uses passive splitters to deliver signals to multiple users. Instead of running a separate strand of fiber from the CO to every customer, BPON uses a single strand of fiber to serve up to 32 subscribers.
Broadband	A descriptive term for evolving digital technologies that provide consumers with integrated access to voice, high-speed data service, video-demand services, and interactive delivery services (e.g. DSL, Cable Internet).
CAD – Computer Aided Design	The use of computer systems to assist in the creation, modification, analysis, or optimization of a design.
CAI – Community Anchor Institutions	The National Telecommunications and Information Administration defined CAIs in its SBDD program as "Schools, libraries, medical and healthcare providers, public safety entities, community colleges and

	other institutions of higher education, and other community support organizations and entities". Universities, colleges, community colleges, K-12 schools, libraries, health care facilities, social service providers, public safety entities, government and municipal offices are all community anchor institutions.
CAP – Competitive Access Provider	(or "Bypass Carrier") A Company that provides network links between the customer and the Inter-Exchange Carrier or even directly to the Internet Service Provider. CAPs operate private networks independent of Local Exchange Carriers.
Cellular	A mobile communications system that uses a combination of radio transmission and conventional telephone switching to permit telephone communications to and from mobile users within a specified area.
CLEC – Competitive Local Exchange Carrier	Wireline service provider that is authorized under state and Federal rules to compete with ILECs to provide local telephone service. CLECs provide telephone services in one of three ways or a combination thereof: 1) by building or rebuilding telecommunications facilities of their own, 2) by leasing capacity from another local telephone company (typically an ILEC) and reselling it, and 3) by leasing discrete parts of the ILEC network referred to as UNEs.
CO – Central Office	A circuit switch where the phone lines in a geographical area come together, usually housed in a small building.
Coaxial Cable	A type of cable that can carry large amounts of bandwidth over long distances. Cable TV and cable modem service both utilize this technology.
CPE – Customer Premise Equipment	Any terminal and associated equipment located at a subscriber's premises and connected with a carrier's telecommunication channel at the demarcation point ("demarc").
CWDM – Coarse Wavelength Division Multiplexing	A technology similar to DWDM only utilizing less wavelengths in a more customer-facing application whereby less bandwidth is required per fiber.
Demarcation Point ("demarc")	The point at which the public switched telephone network ends and connects with the customer's on-premises wiring.
Dial-Up	A technology that provides customers with access to the Internet over an existing telephone line.
DLEC – Data Local Exchange Carrier	DLECs deliver high-speed access to the Internet, not voice. Examples of DLECs include Covad, Northpoint and Rhythms.
Downstream	Data flowing from the Internet to a computer (Surfing the net, getting E-mail, downloading a file).
DSL – Digital Subscriber Line	The use of a copper telephone line to deliver "always on" broadband Internet service.

DSLAM – Digital Subscriber Line Access Multiplier	A piece of technology installed at a telephone company's Central Office (CO) and connects the carrier to the subscriber loop (and ultimately the customer's PC).
DWDM – Dense Wavelength Division Multiplexing	An optical technology used to increase bandwidth over existing fiber-optic networks. DWDM works by combining and transmitting multiple signals simultaneously at different wavelengths on the same fiber. In effect, one fiber is transformed into multiple virtual fibers.
E-Rate	A Federal program that provides subsidy for voice and data circuits as well as internal network connections to qualified schools and libraries. The subsidy is based on a percentage designated by the FCC.
EON – Ethernet Optical Network	The use of Ethernet LAN packets running over a fiber network.
EvDO – Evolution Data Only	EvDO is a wireless technology that provides data connections that are 10 times as fast as a traditional modem. This has been overtaken by 4G LTE.
FCC – Federal Communications Commission	A Federal regulatory agency that is responsible for regulating interstate and international communications by radio, television, wire, satellite and cable in all 50 states, the District of Rock Falls, and U.S. territories.
FDH – Fiber Distribution Hub	A connection and distribution point for optical fiber cables.
FTTN – Fiber to the Neighborhood	A hybrid network architecture involving optical fiber from the carrier network, terminating in a neighborhood cabinet with converts the signal from optical to electrical.
FTTP – Fiber to the premise (or FTTB – Fiber to the building)	A fiber-optic system that connects directly from the carrier network to the user premises.
GIS – Geographic Information Systems	A system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data.
GPON- Gigabit-Capable Passive Optical Network	Similar to BPON, GPON allows for greater bandwidth through the use of a faster approach (up to 2.5 Gbps in current products) than BPON.
GPS – Global Positioning System	a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.
GSM – Global System for Mobile Communications	This is the current radio/telephone standard developed in Europe and implemented globally except in Japan and South Korea.
HD – High Definition (Video)	Video of substantially higher resolution than standard definition.
HFC – Hybrid Fiber Coaxial	An outside plant distribution cabling concept employing both fiber-optic and coaxial cable.
ICT – Information and	Often used as an extended synonym for information technology (IT),

Communications Technology	but it is more specific term that stresses the role of unified communications and the integration of telecommunications, computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.
IEEE – Institute of Electrical Engineers	A professional association headquartered in New York City that is dedicated to advancing technological innovation and excellence.
ILEC – Incumbent Local Exchange Carrier	The traditional wireline telephone service providers within defined geographic areas. Prior to 1996, ILECs operated as monopolies having exclusive right and responsibility for providing local and local toll telephone service within LATAs.
IP-VPN – Internet Protocol-Virtual Private Network	A software-defined network offering the appearance, functionality, and usefulness of a dedicated private network.
ISDN – Integrated Services Digital Network	An alternative method to simultaneously carry voice, data, and other traffic, using the switched telephone network.
ISP – Internet Service Provider	A company providing Internet access to consumers and businesses, acting as a bridge between customer (end-user) and infrastructure owners for dial-up, cable modem and DSL services.
ITS – Intelligent Traffic System	Advanced applications which, without embodying intelligence as such, aim to provide innovative services relating to different modes of transport and traffic management and enable various users to be better informed and make safer, more coordinated, and 'smarter' use of transport networks.
Kbps – Kilobits per second	1,000 bits per second. A measure of how fast data can be transmitted.
LAN – Local Area Network	A geographically localized network consisting of both hardware and software. The network can link workstations within a building or multiple computers with a single wireless Internet connection.
LATA – Local Access and Transport Areas	A geographic area within a divested Regional Bell Operating Company is permitted to offer exchange telecommunications and exchange access service. Calls between LATAs are often thought of as long distance service. Calls within a LATA (IntraLATA) typically include local and local toll services.
Local Loop	A generic term for the connection between the customer's premises (home, office, etc.) and the provider's serving central office. Historically, this has been a copper wire connection; but in many areas it has transitioned to fiber optic. Also, wireless options are increasingly available for local loop capacity.
MAN – Metropolitan Area Network	A high-speed intra-city network that links multiple locations with a campus, city or LATA. A MAN typically extends as far as 30 miles.
Mbps – Megabits per second	1,000,000 bits per second. A measure of how fast data can be transmitted.
MPLS – Multiprotocol Label	A mechanism in high-performance telecommunications networks

Switching	that directs data from one network node to the next based on short path labels rather than long network addresses, avoiding complex lookups in a routing table.
ONT – Optical Network Terminal	Used to terminate the fiber-optic line, demultiplex the signal into its component parts (voice telephone, television, and Internet), and provide power to customer telephones.
Overbuilding	The practice of building excess capacity. In this context, it involves investment in additional infrastructure projects to provide competition.
OVS – Open Video Systems	OVS is a new option for those looking to offer cable television service outside the current framework of traditional regulation. It would allow more flexibility in providing service by reducing the build out requirements of new carriers.
PON – Passive Optical Network	A Passive Optical Network consists of an optical line terminator located at the Central Office and a set of associated optical network terminals located at the customer's premise. Between them lies the optical distribution network comprised of fibers and passive splitters or couplers. In a PON network, a single piece of fiber can be run from the serving exchange out to a subdivision or office park, and then individual fiber strands to each building or serving equipment can be split from the main fiber using passive splitters / couplers. This allows for an expensive piece of fiber cable from the exchange to the customer to be shared amongst many customers, thereby dramatically lowering the overall costs of deployment for fiber to the business (FTTB) or fiber to the home (FTTH) applications.
PPP – Public-Private Partnership	A Public–Private Partnership (PPP) is a government service or private business venture that is funded and operated through a collaborative partnership between a government and one or more private sector organizations. In addition to being referred to as a PPP, they are sometimes called a P3, or P^3.
QOS – Quality of Service	QoS (Quality of Service) refers to a broad collection of networking technologies and techniques. The goal of QoS is to provide guarantees on the ability of a network to deliver predictable results, which are reflected in Service Level Agreements or SLAs. Elements of network performance within the scope of QoS often include availability (uptime), bandwidth (throughput), latency (delay), and error rate. QoS involves prioritization of network traffic.
RF – Radio Frequency	a rate of oscillation in the range of about 3 kHz to 300 GHz, which corresponds to the frequency of radio waves, and the alternating currents which carry radio signals.
Right-of-Way	A legal right of passage over land owned by another. Carriers and service providers must obtain right-of-way to dig trenches or plant poles for cable systems, and to place wireless antennae.

RMS – Resource Management System	A system used to track telecommunications assets.
RPR – Resilient Packet Ring	Also known as IEEE 802.17, is a protocol standard designed for the optimized transport of data traffic over optical fiber ring networks.
RUS – Rural Utility Service	A division of the United States Department of Agriculture, it promotes universal service in unserved and underserved areas of the country with grants, loans, and financing. Formerly known as "REA" or the Rural Electrification Administration.
SCADA – Supervisory Control and Data Acquisition	A type of industrial control system (ICS). Industrial control systems are computer controlled systems that monitor and control industrial processes that exist in the physical world.
SNMP – Simple Network Management Protocol	An Internet-standard protocol for managing devices on IP networks.
SONET – Synchronous Optical Network	A family of fiber-optic transmission rates.
Steaming	Streamed data is any information/data that is delivered from a server to a host where the data represents information that must be delivered in real time. This could be video, audio, graphics, slide shows, web tours, combinations of these, or any other real time application.
Subscribership	Subscribership is how many customers have subscribed for a particular telecommunications service.
Switched Network	A domestic telecommunications network usually accessed by telephone, key telephone systems, private branch exchange trunks, and data arrangements.
T-1 – Trunk Level 1	A digital transmission link with a total signaling speed of 1.544 Mbps. It is a standard for digital transmission in North America.
T-3 – Trunk Level 3	28 T1 lines or 44.736 Mbps.
UNE – Unbundled Network Element	Leased portions of a carrier's (typically an ILEC's) network used by another carrier to provide service to customers. Over time, the obligation to provide UNEs has been greatly narrowed, such that the most common UNE now is the UNE-Loop.
Universal Service	The idea of providing every home in the United States with basic telephone service.
Upstream	Data flowing from your computer to the Internet (sending E-mail, uploading a file).
UPS – Uninterruptable Power Supply	An electrical apparatus that provides emergency power to a load when the input power source, typically main power, fails.
USAC – Universal Service Administrative Company	An independent American nonprofit corporation designated as the administrator of the Federal Universal Service Fund (USF) by the Federal Communications Commission.
VDSL – Very High Data Rate Digital Subscriber Line	A developing digital subscriber line (DSL) technology providing data transmission faster than ADSL over a single flat untwisted or twisted

	pair of copper wires (up to 52 Mbit/s downstream and 16 Mbit/s upstream), and on coaxial cable (up to 85 Mbit/s down and upstream); using the frequency band from 25 kHz to 12 MHz.
Video on Demand	A service that allows users to remotely choose a movie from a digital library whenever they like and be able to pause, fast-forward, and rewind their selection.
VLAN – Virtual Local Area Network	In computer networking, a single layer-2 network may be partitioned to create multiple distinct broadcast domains, which are mutually isolated so that packets can only pass between them via one or more routers; such a domain is referred to as a Virtual Local Area Network, Virtual LAN or VLAN.
VoIP – Voice over Internet Protocol	An application that employs a data network (using a broadband connection) to transmit voice conversations using Internet Protocol.
VPN – Virtual Private Network	A virtual private network (VPN) extends a private network across a public network, such as the Internet. It enables a computer to send and receive data across shared or public networks as if it were directly connected to the private network, while benefitting from the functionality, security and management policies of the private network. This is done by establishing a virtual point-to-point connection through the use of dedicated connections, encryption, or a combination of the two.
WAN – Wide Area Network	A network that covers a broad area (i.e., any telecommunications network that links across metropolitan, regional, or national boundaries) using private or public network transports.
WiFi	WiFi is a popular technology that allows an electronic device to exchange data or connect to the Internet wirelessly using radio waves. The Wi-Fi Alliance defines Wi-Fi as any "wireless local area network (WLAN) products that are based on the Institute of Electrical and Electronics Engineers' (IEEE) 802.11 standards".
WiMax	WiMax is a wireless technology that provides high-throughput broadband connections over long distances. WiMax can be used for a number of applications, including “last mile” broadband connections, hotspot and cellular backhaul, and high speed enterprise connectivity for businesses.
Wireless	Telephone service transmitted via cellular, PCS, satellite, or other technologies that do not require the telephone to be connected to a land-based line.
Wireless Internet	1) Internet applications and access using mobile devices such as cell phones and palm devices. 2) Broadband Internet service provided via wireless connection, such as satellite or tower transmitters.
Wireline	Service based on infrastructure on or near the ground, such as copper telephone wires or coaxial cable underground or on telephone poles.

11. Appendix B – Walla Walla Business Broadband Survey Results

Port of Walla Walla Business Broadband Survey SurveyMonkey

Q1 Please use the link below to report your Internet speed. Once you click the link, you'll see a new web browser window appear that goes to speedtest.net. You'll see a "Begin Test" icon in the middle of your screen. Click this icon to begin the speed test. Wait a few moments while the test runs and measures your download and upload speeds. Once the test finishes, please record these speeds in the boxes below. Speedtest Link - Click Here

Answered: 54 Skipped: 2

Answer Choices	Responses	
Download Speed:	100.00%	54
Upload Speed:	98.15%	53

Port of Walla Walla Business Broadband Survey SurveyMonkey

Q2 Please provide your physical business address where you are testing your Internet connection.

Answered: 55 Skipped: 1

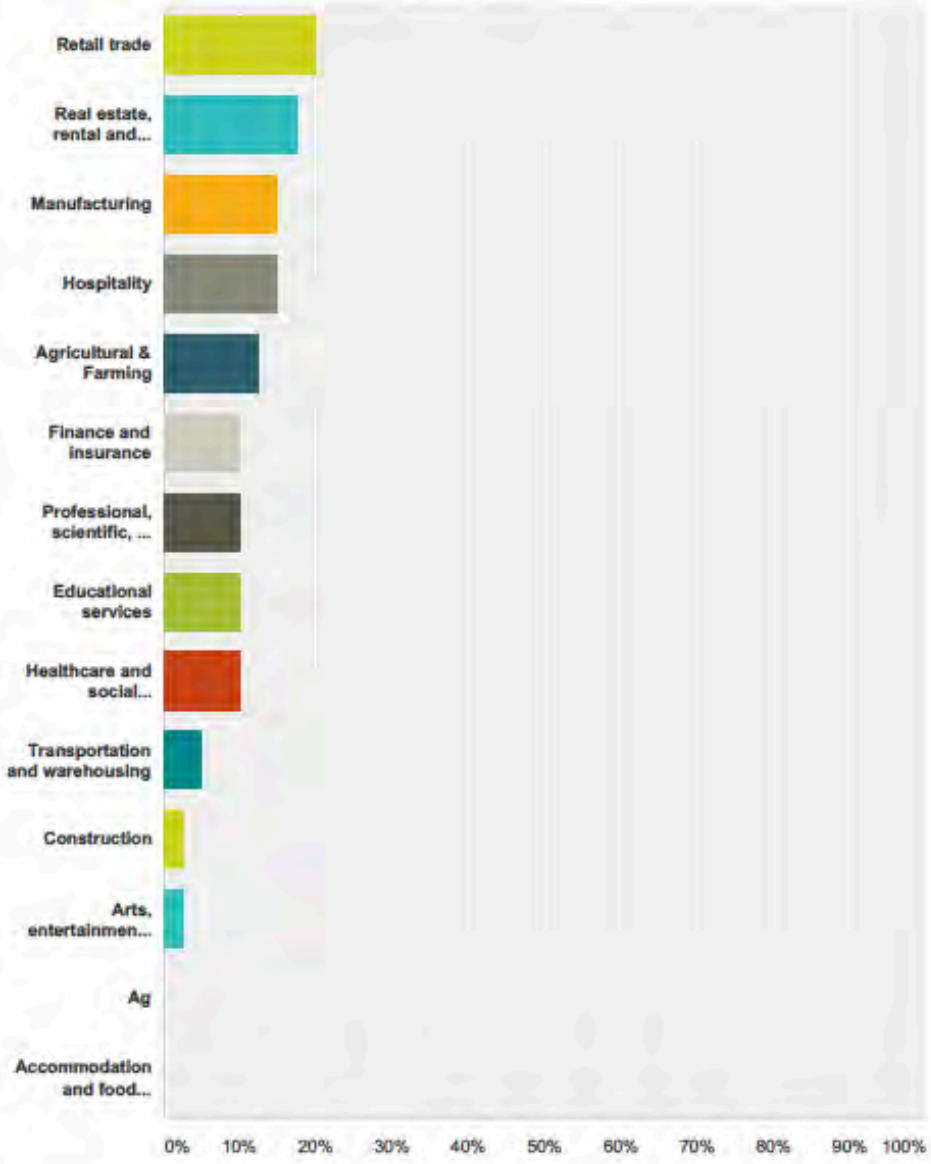
Answer Choices	Responses	
Business Name	100.00%	55
Street Address	100.00%	55
City	100.00%	55
Zip Code	98.18%	54

Q3 Please provide the number of staff in your business location.

Answered: 54 Skipped: 2

Q4 Please provide your industry.

Answered: 46 Skipped: 16



Answer Choices	Responses	
Retail trade	20.00%	8
Real estate, rental and leasing	17.50%	7
Manufacturing	15.00%	6
Hospitality	15.00%	6

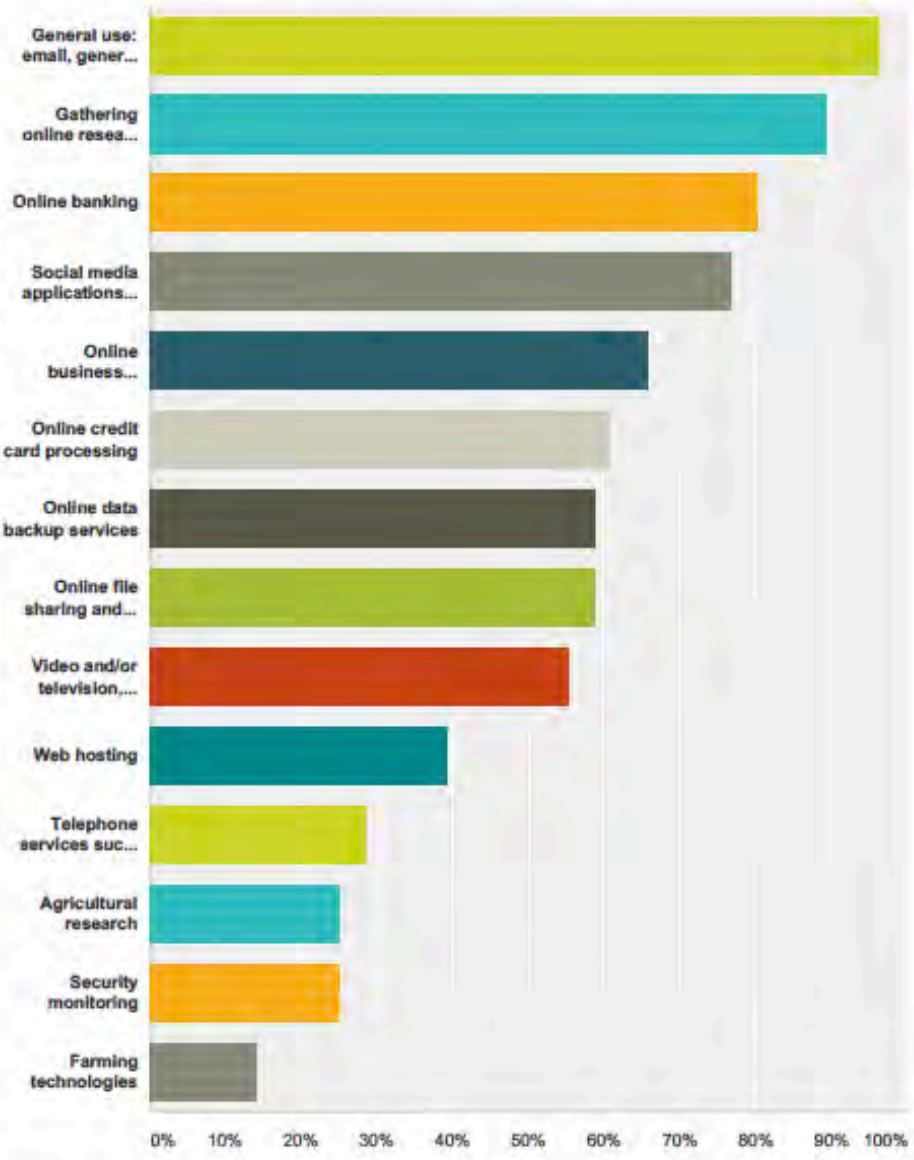
Agricultural & Farming	12.50%	5
Finance and Insurance	10.00%	4
Professional, scientific, and technical services	10.00%	4
Educational services	10.00%	4
Healthcare and social assistance	10.00%	4
Transportation and warehousing	5.00%	2
Construction	2.50%	1
Arts, entertainment, and recreation	2.50%	1
Ag	0.00%	0
Accommodation and food services	0.00%	0
Total Respondents: 40		

Q5 From which broadband Internet service provider do you receive service for your business?

Answered: 52 Skipped: 4

Q6 Please indicate all of the ways you use the Internet (Check all that apply):

Answered: 56 Skipped: 0

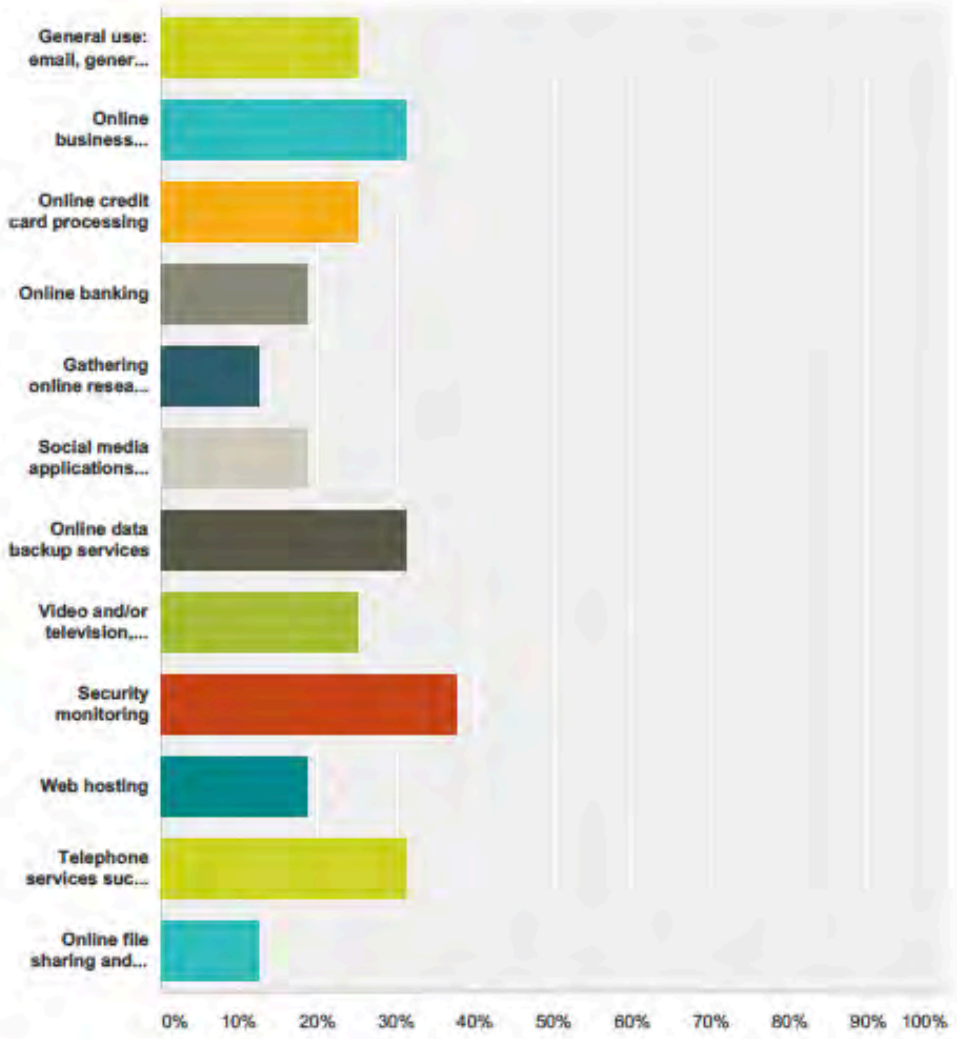


Answer Choices	Responses	
General use: email, general Internet browsing	96.43%	54
Gathering online research and information	89.29%	50
Online banking	80.36%	45

Social media applications for your business	76.79%	43
Online business applications such as accounting, payroll or other	66.07%	37
Online credit card processing	60.71%	34
Online data backup services	58.93%	33
Online file sharing and collaboration	58.93%	33
Video and/or television, (including video conferencing)	55.36%	31
Web hosting	39.29%	22
Telephone services such as Vonage, Skype or other	28.57%	16
Agricultural research	25.00%	14
Security monitoring	25.00%	14
Farming technologies	14.29%	8
Total Respondents: 56		

Q7 Based on Question 2 above, would your business benefit from the services below if not currently in use? (Select all that apply)

Answered: 16 Skipped: 40

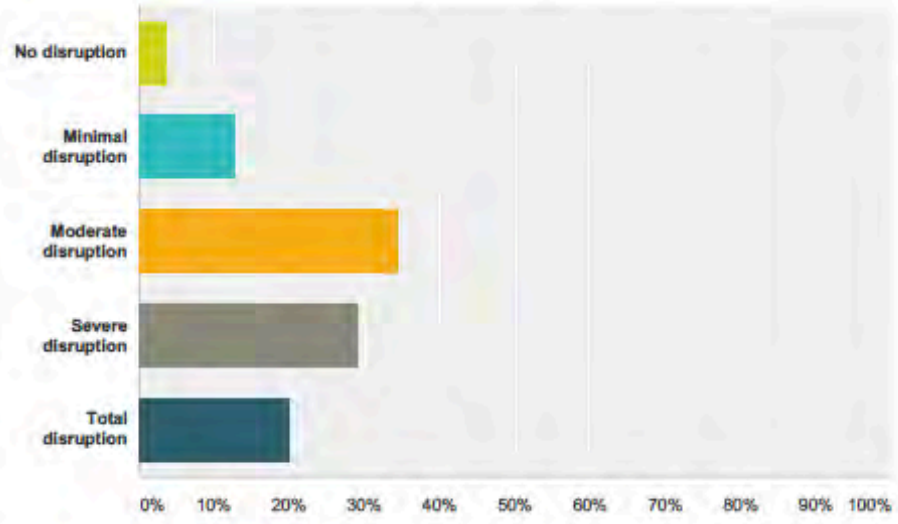


Answer Choices	Responses
General use: email, general Internet browsing	25.00%
Online business applications such as accounting, payroll or other	31.25%
Online credit card processing	25.00%
Online banking	18.75%
Gathering online research and information	12.50%
Social media applications for your business	18.75%

Online data backup services	31.25%	5
Video and/or television, (including video conferencing)	25.00%	4
Security monitoring	37.50%	6
Web hosting	18.75%	3
Telephone services such as Vonage, Skype or other	31.25%	5
Online file sharing and collaboration	12.50%	2
Total Respondents: 16		

Q8 What kind of impact do Internet problems including reliability and speed have on your business?

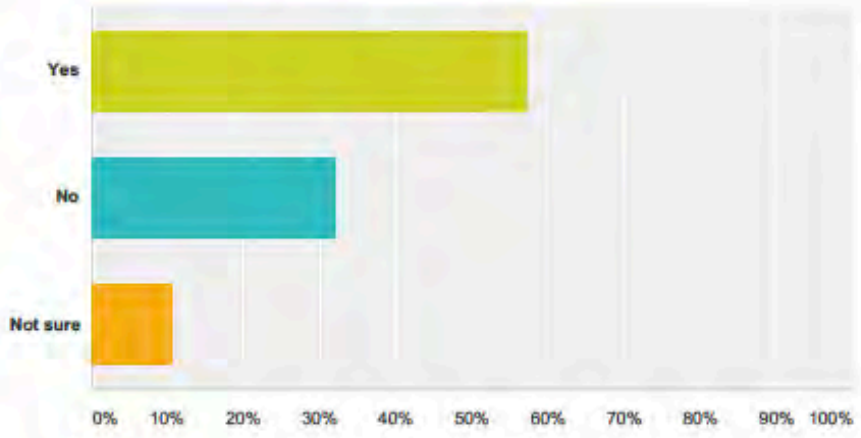
Answered: 55 Skipped: 1



Answer Choices	Responses	
No disruption	3.64%	2
Minimal disruption	12.73%	7
Moderate disruption	34.55%	19
Severe disruption	29.09%	16
Total disruption	20.00%	11
Total		**55**

Q9 Are your current Internet services sufficient for your business needs?

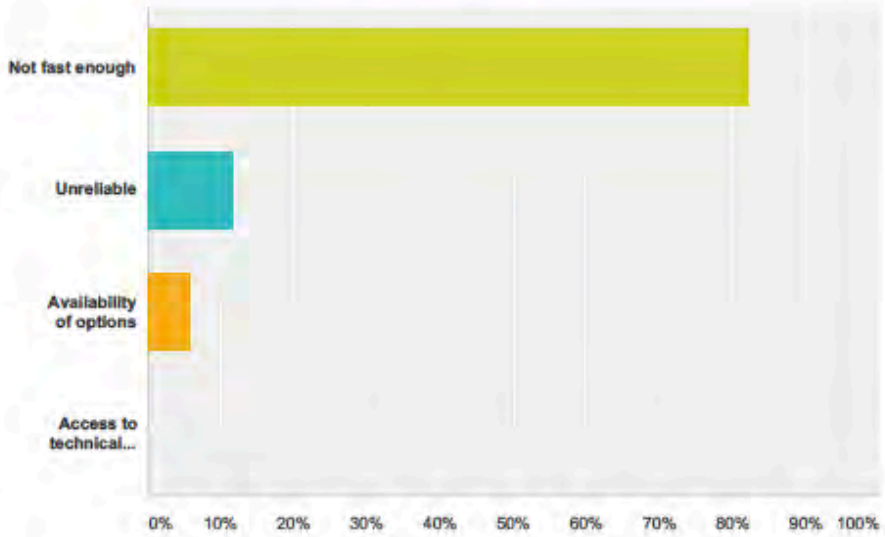
Answered: 56 Skipped: 0



Answer Choices	Responses	
Yes	57.14%	32
No	32.14%	18
Not sure	10.71%	6
Total		56

Q10 If you answered "No", to Question 9, how are your Internet services insufficient for your business needs?

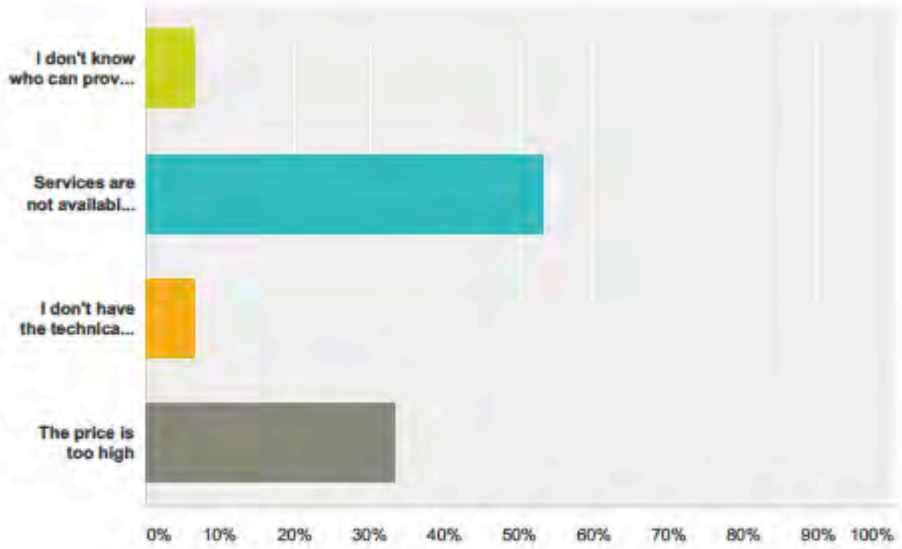
Answered: 17 Skipped: 29



Answer Choices	Responses	
Not fast enough	82.35%	14
Unreliable	11.76%	2
Availability of options	5.88%	1
Access to technical support	0.00%	0
Total		17

Q11 If you answered "No", to Question 9, why haven't you upgraded your Internet services?

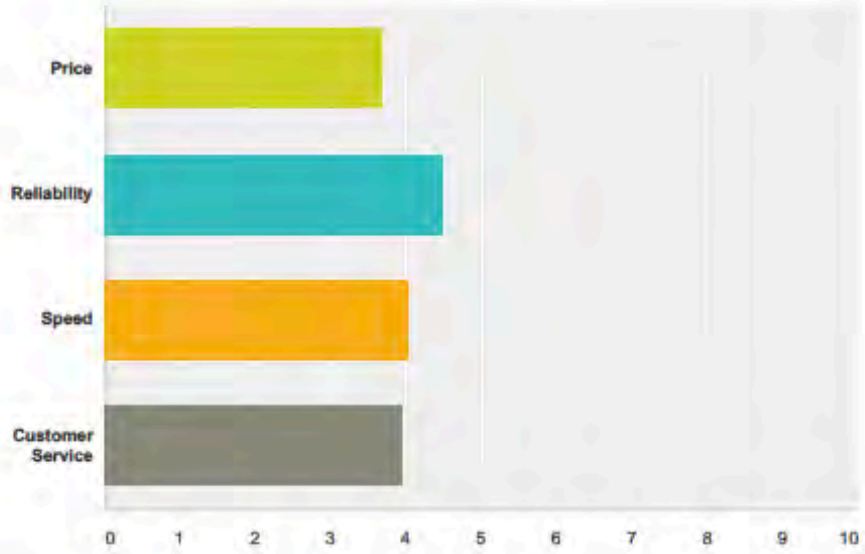
Answered: 15 Skipped: 41



Answer Choices	Responses	
I don't know who can provide services in my area	6.67%	1
Services are not available in my area	53.33%	8
I don't have the technical skills necessary	6.67%	1
The price is too high	33.33%	5
Total		15

Q12 Please rate your current Internet services on a scale of 1-5, with 5 being the most important.

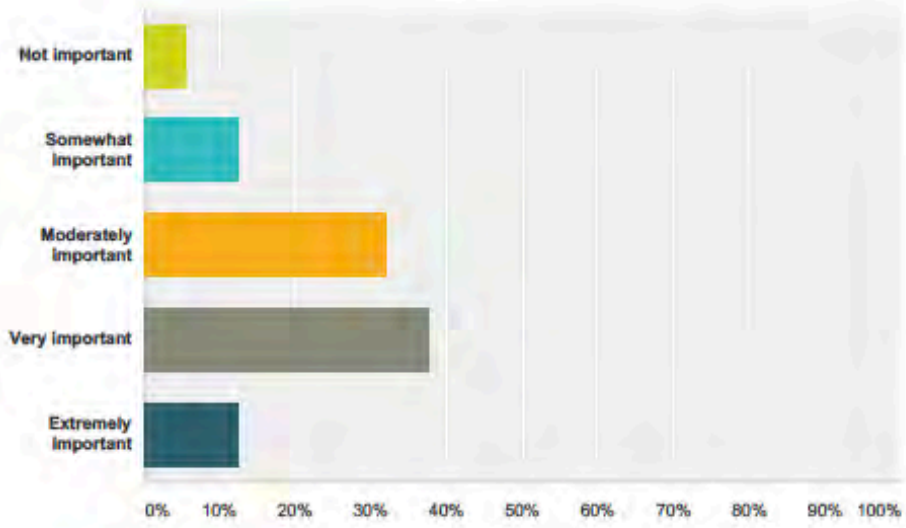
Answered: 54 Skipped: 2



	1	2	3	4	5	Total	Weighted Average
Price	1.96% 1	11.76% 6	29.41% 15	29.41% 15	27.45% 14	51	3.69
Reliability	1.85% 1	5.56% 3	5.56% 3	16.67% 9	70.37% 38	54	4.48
Speed	3.70% 2	3.70% 2	14.81% 8	38.89% 21	38.89% 21	54	4.06
Customer Service	0.00% 0	5.88% 3	27.45% 14	31.37% 16	35.29% 18	51	3.96

Q13 How important is having multiple choices of Internet and broadband providers to your business.

Answered: 56 Skipped: 0



Answer Choices	Responses	
Not important	5.36%	3
Somewhat important	12.50%	7
Moderately important	32.14%	18
Very important	37.50%	21
Extremely important	12.50%	7
Total		56

12. Appendix C – Public Policy – Templates and Examples

Under Separate Cover