

Thurston County Public Utility District

Broadband Feasibility Assessment with Cities Olympia, Tumwater and Lacey

July 21st, 2015



Our Mission: Leverage relationships and resources to develop and operate a world class open access information technology platform and network that enhances people's lives and business opportunities in the State of Washington and facilitates member utility operations.



July 21, 2015

John Weidenfeller
General Manager
921 Lakeridge Way SW, Suite 301
Olympia, WA 98502
jweidenfeller@thurstonpud.org

Re: Broadband Feasibility Assessment with Cities Olympia, Tumwater, and Lacey

Dear Mr. Weidenfeller,

It is with great pleasure that we present the attached broadband feasibility assessment with the cities of Olympia, Tumwater and Lacey. The Public Utility District of Thurston County has interest in providing telecommunication services to Thurston County to encourage opportunity for social and economic development throughout the county. Through this feasibility assessment, we have evaluated four (4) business and one (1) residential districts with a focus on determining infrastructure and costs necessary to build, construct, operate and maintain broadband facilities. We have evaluated current market conditions and anchor institutions as well as available funding sources to support municipal broadband deployments.

Northwest Open Access Network (NoaNet) is a mutual non-profit corporation created by public utility districts in rural Washington State. Formed in 2000 with a mission to provide economic development opportunities for rural counties within the Northwest, NoaNet has been providing industry-leading services for the last 15 years across a fiber network that is now over 3,000 miles in total length. Through this time we have gained valuable knowledge as to the costs of construction, operations and maintenance of a variety of different broadband infrastructure designs. We are pleased to be able to use that knowledge to provide Thurston PUD this study as they look to support the expansion of broadband in Thurston County.

NoaNet operates on a wholesale basis, providing Internet, data transport, Voice over IP (VoIP) and network monitoring. We also provide management services to communication carriers such as Incumbent Local Exchange Carriers (ILECs), Competitive Local Exchange Carriers (CLECs), cable companies, ISPs and Application Service Providers (ASPs) and some of the largest data centers in the state.

Headquartered in Tacoma with a financial services office in Gig Harbor, NoaNet also has a Network Operations Center (NOC) in Spokane which is staffed 24x7x365 with certified network engineers and analysts. The total number of NoaNet employees is currently 55, with many distributed throughout the state in small offices.

The NoaNet assessment includes all of the requirements divided into volumes for each specific business and residential district outlined in the Scope of Work. Through this feasibility study we have had the opportunity to meet with multiple individuals who are passionate about Thurston County and support economic growth. We look forward to working with Thurston PUD, and the Cities of Olympia, Lacey, and Tumwater as you endeavor to bring reliable and affordable broadband services to Thurston County.

Regards,

A handwritten signature in black ink, appearing to read 'CW', with a large, sweeping flourish at the end.

Chris Walker
NoaNet
Telecommunications Director
422 W. Riverside Ave, Suite 401
Spokane, WA 99201

cc:
Angela Bennink, NoaNet, Community Relations Director

Attachments:
Executive Summary, Projects I through V

Executive Summary

Introduction:

The Thurston County Public Utility District (PUD) is interested in participating with local entities to enable broadband within their service territory as a part of local, regional and national strategies. Throughout the nation, broadband has enabled Americans to be at the forefront of opportunity. The PUD is looking to exercise its authority in delivering telecommunication services as a utility service in Thurston County.

As a first step into providing telecommunications services, the PUD has engaged with representatives from the cities of Lacey, Olympia and Tumwater to identify areas where the entities can work together to serve broadband needs. It is clear that each city has unique challenges and opportunities to better serve their residents. To that extent over the past year, the PUD has worked with representatives from each of the cities to understand the facilities and broadband needs within those areas. The three cities, with support from the PUD, have identified broadband pilot projects that they would be interested in deploying with the PUD.

Purpose:

NoaNet has evaluated providing telecommunication services to residents and businesses of Thurston County to encourage opportunity for social and economic development throughout the county. The following evaluations look at the broadband availability, business environment, physical layout, available infrastructure and revenue opportunity in each of the 5 districts. NoaNet's engineering team designed a network that would meet the proposed needs of each area. Once the project was designed the path was evaluated for business opportunity, future growth and funding options.

Scope:

For each of the five pilot projects, a team from NoaNet inspected the area identifying facilities available for broadband deployment, spoke with businesses and residents about current service availability, and evaluated the interest in high-speed broadband expansion by Thurston PUD and the cities of Olympia, Lacey and Tumwater. This team then designed a network that would meet the stated broadband goals of each project. The costs of the project were then identified and funding opportunities were investigated.

Summary:

Public Utility Districts in Washington State have been advancing broadband services throughout the state for over 15 years. Thurston PUD is looking at building on the experience of other PUDs and NoaNet to expand high-speed broadband services in Thurston County. As a first step, the PUD has chosen to work with the cities of Lacey, Olympia and Tumwater to identify pilot projects for broadband deployment. The five projects that the cities identified with Thurston PUD have unique aspects and varying opportunity to provide services to residents of the cities.

In each of the districts two current service providers, Comcast and CenturyLink, are providing broadband services. While CenturyLink is limited to DSL in many areas, Comcast is able to provide a high-speed option. This area is considered 'served' by State and Federal government. Being a served and urban area, many of the broadband funding opportunities that are being discussed on a national level are not available for these districts. This includes the Connect America Fund and Rural Broadband Experiment from the FCC, the Community Connect Funds, Rural Telehealth, and rural economic development funds from the USDA.

The scale of the projects varies in costs from \$200,000 to over \$2 million. As stated above, all projects are located in areas that are considered urban and served by broadband; eliminating nearly all grant funding opportunities on a federal level. This makes the business case more challenging to make. Being government agencies, both the PUD and the cities have access to utility infrastructure loans, bonds, and taxes. Each source of funds should be considered when evaluating the return on investment for each area/district. In some cases it will make sense to scale back the project considerably, providing service to a smaller population, but controlling costs.

Project I: Brewery District, Tumwater

Introduction:

The City of Tumwater Brewery District is part of the oldest portion of Tumwater, located near the Deschutes River. With the closure of the Olympia Brewery there are few businesses located within the district, which are clustered near the east and south of the district. While not a thriving business district, this area has the potential to be revitalized and support economic development.

Assessment:

The Brewery District is in need of revitalization. Broadband is one ingredient to revitalizing this area, coupled with an economic development plan, improvements of the public access areas, and investment in the vacant establishments to entice business and residential relocation. The current broadband business opportunities are small, however the capital costs to build and prepare the area for high speed Internet services are marginal. With the location, availability of real estate, and broadband availability this district could become a very attractive area and lead to a high demand and eventual high take rate on high-speed broadband services.

Market Conditions:

The Brewery District has some notable agencies within it that all utilize broadband services including: Washington State Patrol, State Auditors Office, Dept. of Agriculture and Dept. of Fish and Wildlife. These and similar agencies should be part of the target market. If the vacant brewery spaces and undeveloped zones can be revitalized and turned into medium density dwellings, multi-dwelling units, light commercial and retail and small warehouse locations there could be substantial opportunity. The Major Anchor Institutions and other points of interest have been provided below and are referenced in the design drawing exhibit.

Funding Opportunities:

The historical significance of the Brewery District and its scenic setting make it a good candidate for economic development grants. This would need to be coordinated with the Thurston Economic Development Council. Some funding opportunities that could apply are:

1. Economic Development Assistance Programs for Public Works
 - a. Funded by the Economic Development Administration for investments in public works and economic development facilities.
2. CERB (Commerce Economic Revitalization Board) Grants
 - a. Funded by Washington State Department of Commerce
 - b. Can be used for Telecommunications facilities
3. PRIME – Program for Investment in Micro-entrepreneurs
 - a. Funded by the Small Business Administration
 - b. Can fund facilities to promote micro-entrepreneurs

4. USDA – Telecommunications Infrastructure Loans
 - a. Loans for infrastructure construction at US Treasury Rate.

The majority of funding opportunities for telecommunications through the USDA RUS grants and loans are focused on rural or tribal communities in the country. While areas of Thurston County do qualify as rural, the City of Tumwater does not. This does limit the grant opportunities that are available. If a plan could be developed around what the brewery facility could be converted into to, i.e. low income housing, business incubator, or school/library, specific funding opportunities could be identified.

Financial Analysis:

The Brewery District has potential to be a revitalized area of the city, where high speed broadband access can be instrumental in its success. This network will be competitive, but there will not be a guarantee of revenue associated with the build. Additionally, any revenue associated with the old brewery facility will be specific to its new purpose, i.e. residential, school, small business, etc.

The assumption made in analyzing the financial model are outlined here: 1) The revenue projections assume 100% of government agencies will choose to purchase services on this municipal network at \$400/month, 30% of small businesses will purchase services at \$199/month; 2) Additional costs for connecting each customer were calculated using the number of customers in the revenue projections multiplied by \$5500 for equipment and customer connection; 3) Repair and replacement costs are taken at 5% of the capital construction costs; 4) Operations expenses are estimated using NoaNet general Network Coordinated Services costs for the number of customers estimated earlier; 5) The return on investment is calculated by dividing the total capital costs by the monthly Revenue – Expenses; 6) The return on investment is calculated after 1 year of operations. For ROI from the point of lighting up the system, add 12 months.

The table below summarizes the financial analysis.

	Year One	Year Ten
Revenue	13	16.25
Government/Anchor Institutions	\$ 2,400.00	\$ 324,000.00
30% of Small Medium Business	\$ 1,393.00	\$ 188,055.00
Total Revenue	\$ 3,793.00	\$ 512,055.00
Construction Costs		
Backbone	\$ 196,944.80	\$ 196,944.80
Customer Connection and CPE*	\$ 71,500.00	\$ 89,375.00
Repair and Replacement	\$ 9,847.24	\$ 98,472.40
Total Capital Outlay	\$ 278,292.04	\$ 384,792.20
Capital Recovery Time (months)**	73	\$127,262.80
Monthly Facilities Operation Costs (estimated) ***		
Engineering	\$ 500.00	\$ 60,000.00
Operations and Maintenance	\$ 463.82	\$ 55,658.41
Total Expenses	\$ 963.82	\$ 115,658.41
Monthly Administrative Costs (estimated) ***		
Management and Admin	\$ 500.00	\$ 60,000.00
Sales and Marketing	\$ 1,100.00	\$ 132,000.00
Total Expenses	\$ 1,600.00	\$ 192,000.00
Return on Investment (months)**	226	\$180,395.61
*assumes customer's Aid to Construction is beyond \$5500 per connection		
**assumes one year to build up revenue not included in figure		
***assumes an outsourced model is utilized to manage and operate network		

In this study we estimate that it will take just over 7 years (73 months plus 12 months start up) to recover the capital investment. While this would be challenging for the private sector, a public entity such as Thurston PUD or City of Tumwater have low interested funding options that could support a project with the long term return on investment. Additionally, if federal, state or private grant funding can be secured for at least 50% of the capital costs, the ROI drops to a 4-5 year range. Overall this project may be able to impact the area with a reasonable ROI.

Infrastructure Build Out Costs and ongoing Operations and Maintenance:

With the estimated construction costs of roughly \$200,000, this project would take 30 - 45 days to construct after a 90-120 day permitting and pole application process. The end result is a 2-mile underground and aerial fiber network with a single hub site aggregation node. This node, as presently designed, has no connectivity to the outside world. This study assumes a connection is feasible between the City of Tumwater fiber network and the hub site, through a new construction build project or a third party network asset. This infrastructure would require additional service drops and customer premise equipment for every customer connection signed up through a service delivery model with a retail provider.

Annual maintenance costs of this network are assumed to be roughly 10% of the capital outlay of the initial build out. These expenses would cover pole expenses and any upkeep and repair that could occur during the fiscal year.

Brewery District, City of Tumwater, WA

March 24, 2015

Description:	Quantity:	UOM:	Cost:	TOTALS:
Directional Bore up to 2" hole	2,135	Feet	\$18.00	\$38,430.00
Place strand & Lash Fiber Optic Cable	7,817	Feet	\$3.50	\$27,359.50
Blow Fiber Cable thru Duct	2,135	Each	\$1.00	\$2,135.00
Concrete Remove & Restore	60	Feet	\$18.00	\$1,080.00
Handhole placement	8	Each	\$1,000.00	\$8,000.00
Vault and Misc UG Materials	8	Each	\$750.00	\$6,000.00
Fiber - Materials Including Consumables	9,952	Feet	\$0.55	\$5,473.60
UG Materials Composite Rate	2,135	Feet	\$4.00	\$8,540.00
Splice and Test Fiber Cable	72	Each	\$85.00	\$6,120.00
Place New Riser up to 4"	7	Each	\$350.00	\$2,450.00
Placement of New Fiber Optic Enclosure	6	Each	\$350.00	\$2,100.00
Fiber Cabinet/Electronics/Battery Back-up	1	Each	\$25,000.00	\$25,000.00
Traffic Control	40	Crew Hour	\$123.00	\$4,920.00
PSE structural analysis 1-10 poles	1	Lot	\$5,931.00	\$5,931.00
PSE estimated make ready costs	2	Each	\$5,000.00	\$10,000.00
Anchor Placement New	23	Each	\$185.00	\$4,255.00
Field Engineer, Design, CAD up to 25,000 ft	9,952	Each	\$0.65	\$6,468.80
Aerial Materials Composite Rate	7,817	Feet	\$2.25	\$17,588.25
Cost of project before Sales Tax				\$181,851.15
Washington State Sales Tax 8.3%				\$15,093.65
Total Estimated Cost				\$196,944.80

Brewery Business District/Tumwater

Major points of interest:

- 1) 321 Cleveland Ave: WA State Patrol headquarters.
- 2) 411 Cleveland Ave: WA State Patrol/ Information Tech. Division.
- 3) 3200 Capitol Blvd: WA State Auditors Office.
- 4) 344 Cleveland Ave units A-J: Tumwater Center- (4) dentist offices, Ragnar Wealth Management, Orthodontics office, Disability Exams, Berschauer Construction group office.
- 5) 3309 Capitol Blvd: LEAP (WA State Legislative Evaluation and Accountability Program) / Joint Transportation Committee.
- 6) 114 Deschutes Way: WA State Dept. of Fish and Wildlife/Fish Hatchery
- 7) 300 Deschutes Way: Remax building/22 Professional offices: Remax Parkside Affiliates, Rockwell School of Real Estate, Mentoring for Success, PNC Mortgage, Capitol Properties Inc, Bennett-Thomas LLC, Olympic Engineering, Cascade Land Planning, Academy Mortgage, Barghausen Consulting Engineers Inc, Assured Analysis, Stewart Title and Escrow, Liberty Mutual Insurance, Farmers Insurance, Benek Financial Group, American Lumber Co, Raymond James, Parkside CPA (PLLC), Accu Facts Research, Corporation Service Company, NECA Western Region, Patricia Pich CPA.
- 8) 3939 Cleveland Ave: WA State Dept. of Agriculture.

Other points of Interest:

- 9) 520 Cleveland Ave: Safeway.
- 10) 310 Cleveland Ave: Schmidt Chiropractic.
- 11) 303 Cleveland Ave: Olympia Federal Savings.
- 12) 115 Cleveland Ave: Gunderson Dental.
- 13) 3900 Cleveland Ave: Obee Credit Union.
- 14) 3926 Cleveland Ave: Tumwater Dental Lab + (3) dental Offices.
- 15) 3948 Cleveland Ave: Russell Chiropractic Center.
- 16) 509 Custer Way: Chiropractic Office.
- 17) 502 Custer Way: Commercial Office space.
- 18) 510 Custer Way: Commercial Office space.
- 19) 409 Custer Way: SeaMar Medical/Dental office.
- 20) 204 Custer Way: Fuller & Fuller Attorneys at Law.
- 21) 3400 Capitol Blvd: Fairchild Records Research LTD, Legal Svcs.
- 22) 204 Erie St: Chiropractic Associates.
- 23) 205 Erie St: Account Source Inc./Accounting Office.
- 24) 205 Clark Pl: Heart of Wellness/Medical Office.

- 25) 209 Clark Pl: Edward Jones Investments.
- 26) 128 "D" St SW: Chiropractic Center.
- 27) Olympia Brewery Complex property "future mixed use redevelopment" 800,000 SQ FT of commercial space (vacant).
- 28) Historical Olympia Brewery site (vacant/set up for future feed)

Project II: Mottman District, Tumwater

Introduction:

The Mottman Business District is an established Industrial Business Park with over 100 tenants that has been around for over 25 years. This Park is occupied with many distribution warehouses, a local community college, the vacant Thurston County jail, a juvenile detention center, and various light industrial and building housing small to medium businesses.

Assessment:

The Mottman Business District is a clean and well-kept industrial park, with an over 75% occupancy rate on the available commercial buildings with little available green field opportunities for growth. The primary route through the district is recommended to be constructed using existing city of Tumwater underground duct facilities. The majority of the arterials would require an underground construction model, for both backbone route and the lateral extensions. This project's return on investment is higher than typical due to the capital costs associated with construction and with service drop extensions and the limited monthly revenue opportunities.

Market Conditions:

The Mottman district is currently served by Comcast and CenturyLink through business class cable and DSL. The service cost and reliability is typical for an industrial park of this size, volume and location. During our feasibility study, multiple tenants were interviewed and there is predominant theme that the district is underserved for high-speed connectivity at an affordable and reliable cost. However, market conditions appear to contradict this assessment as speed and feed availability appears to be adequate for the area. The Major Anchor Institutions and other points of interest have been provided below and in reference in the design drawing exhibit. Note that the three county offices located in the Mottman District already have existing fiber facilities.

Funding Opportunities:

The Mottman Business District is in an urban area that is considered served with broadband. Finding grant opportunities for broadband infrastructure builds in areas that are served will be very challenging. When looking at this district a different approach will need to be taken. There are a few large businesses, a college, Olympia School District site, and many small or medium sized businesses. The following options should be considered:

1. The eRate program will fund fiber infrastructure builds to school facilities.
 - a. Olympia School District receives a 50% subsidy from the eRate program.
 - b. A portion of the build could be covered by this subsidy.
2. South Puget Sound Community College may have greater connectivity needs that are not being met by currently available providers.

- a. An Open Access Network would open the opportunity for SPSCC to work with a variety of service providers.
 - b. SPSCC could provide fund a portion of the build that would connect to their facility.
3. There are a number of large businesses located in the district.
 - a. Large businesses have greater connectivity needs and understand the value of a high-speed broadband connection.
 - b. These businesses may be able to fund the portion of the build that will connect to their facilities.
4. Economic Development Assistance Programs for Public Works
 - a. Funded by the Economic Development Administration for investments in public works and economic development facilities.
5. CERB (Commerce Economic Revitalization Board) Grants
 - a. Funded by Washington State Department of Commerce
 - b. Can be used for Telecommunications facilities
6. USDA – Telecommunications Infrastructure Loans
 - a. Loans for infrastructure construction at US Treasury Rate.

The ideas above should be considered, however it will be challenging to get the full costs of the build covered by the current Anchor Institutions and businesses, or grants. Thurston Economic Development Council should be included in the discussion as a high-speed broadband network may support relocation of businesses to this district.

Financial Analysis:

The high number of small and medium businesses in this area provides a resource for monthly revenues. This included with the anchor institutions could provide enough monthly revenue to justify the build. The return on investment will still be long for the reasons mentioned in the assessment; underground build costs and service extension drops. The monthly revenue is based on providing broadband services to the existing large businesses, anchor institutions (not already served with fiber), and small and medium businesses.

The assumption made in analyzing the financial model are outlined here: 1) The revenue projections assume 100% of government agencies will choose to purchase services on this municipal network at \$400/month, South Sound Community College will purchase internet services at \$1000/month, 30% of small businesses will purchase services at \$199/month, two of the larger businesses will purchase services at \$400/month; 2) Additional costs for connecting each customer were calculated using the number of customers in the revenue projections multiplied by \$5500 for equipment and customer connection; 3) Repair and replacement costs are taken at 5% of the capital construction costs; 4) Operations expenses are estimated using NoaNet general Network Coordinated Services costs for the number of customers estimated earlier; 5) The return on investment is calculated by dividing the total capital costs by the monthly Revenue – Expenses; 6) The return on investment is calculated after 1 year of operations. For ROI from the point of lighting up the system, add 12 months.

The table below summarizes the financial analysis.

	Year One	Year Ten
Revenue	38	47.5
Government/Anchor Institutions	\$ 1,200.00	\$ 162,000.00
30% of Small Medium Business	\$ 6,368.00	\$ 859,680.00
Large Business	\$ 800.00	\$ 108,000.00
College	\$ 1,000.00	\$ 120,000.00
Total Revenue	\$ 9,368.00	\$ 1,405,200.00
Construction Costs		
Backbone	\$ 362,801.05	\$ 362,801.05
Customer Connection and CPE*	\$ 209,000.00	\$ 261,250.00
Repair and Replacement	\$ 18,140.05	\$ 181,400.53
Total Capital Outlay	\$ 589,941.10	\$ 805,451.58
Capital Recovery Time (months)**	63	\$599,748.43
Monthly Facilities Operation Costs (estimated) ***		
Engineering	\$ 500.00	\$ 60,000.00
Operations and Maintenance	\$ 983.24	\$ 117,988.22
Total Expenses	\$ 1,483.24	\$ 177,988.22
Monthly Administrative Costs (estimated) ***		
Management and Admin	\$ 500.00	\$ 60,000.00
Sales and Marketing	\$ 1,100.00	\$ 132,000.00
Total Expenses	\$ 1,600.00	\$ 192,000.00
Return on Investment (months)**	94	\$229,760.20
*assumes customer's Aid to Construction is beyond \$5500 per connection		
**assumes one year to build up revenue not included in figure		
***assumes an outsourced model is utilized to manage and operate network		

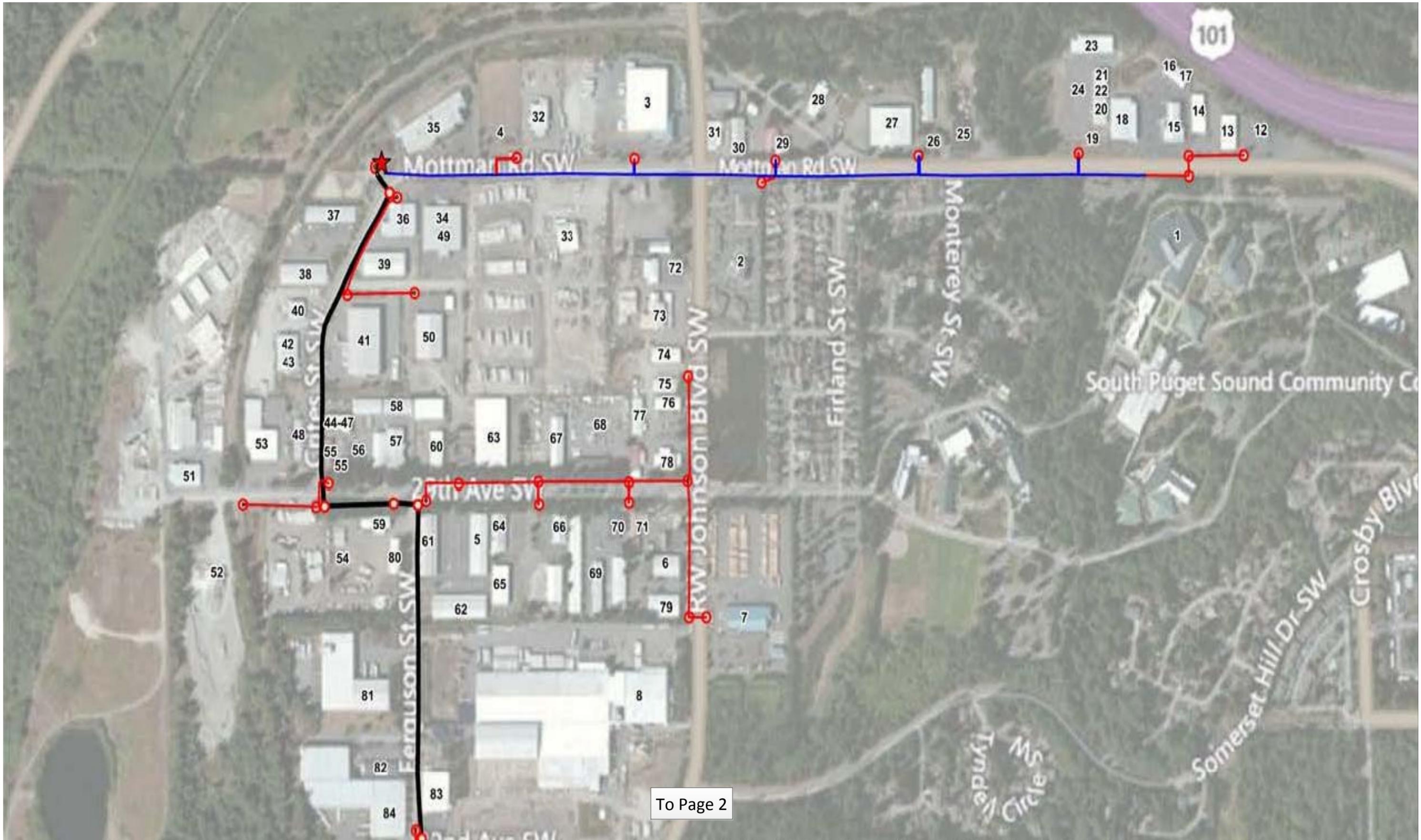
While there are multiple service providers in this area already, the feedback from the tenants in the district was very positive toward a municipal broadband option. Unfortunately, there is also Thurston County fiber in the area, so those agencies already connect to fiber will not likely more over. With these assumptions, the return on investment is calculated to be 7 years. While this is lengthy, there may be enough interest with the tenants in the area to support this long of a ROI. Furthermore, through a heavy marketing campaign the PUD or the City could gain a greater market share and reduce this ROI.

Infrastructure Build Out Costs and ongoing Operations and Maintenance:

The build for the Mottman District is projected to be approximately \$365,000 for a 3 mile underground backbone network. The network was specifically designed with strategically placed connection points to provide easy and low cost construction laterals to facilitate future customer connections. However, this overall design and predicted construction cost model is higher than typically seen in industrial parks across Washington state. This is predominantly due to the unavailability of aerial facilities, and our design model to reduce high cost service drops.

The hub site location is on the far northwest corner of the project. This site will serve as the customer aggregation point and the hand off of broadband facilities to the City of Tumwater network in the WSDOT cabinet. This cabinet has City of Tumwater leased WSDOT fiber infrastructure that is recommended to be used to deliver the broadband services back to the City of Tumwater main offices, or other network operator.

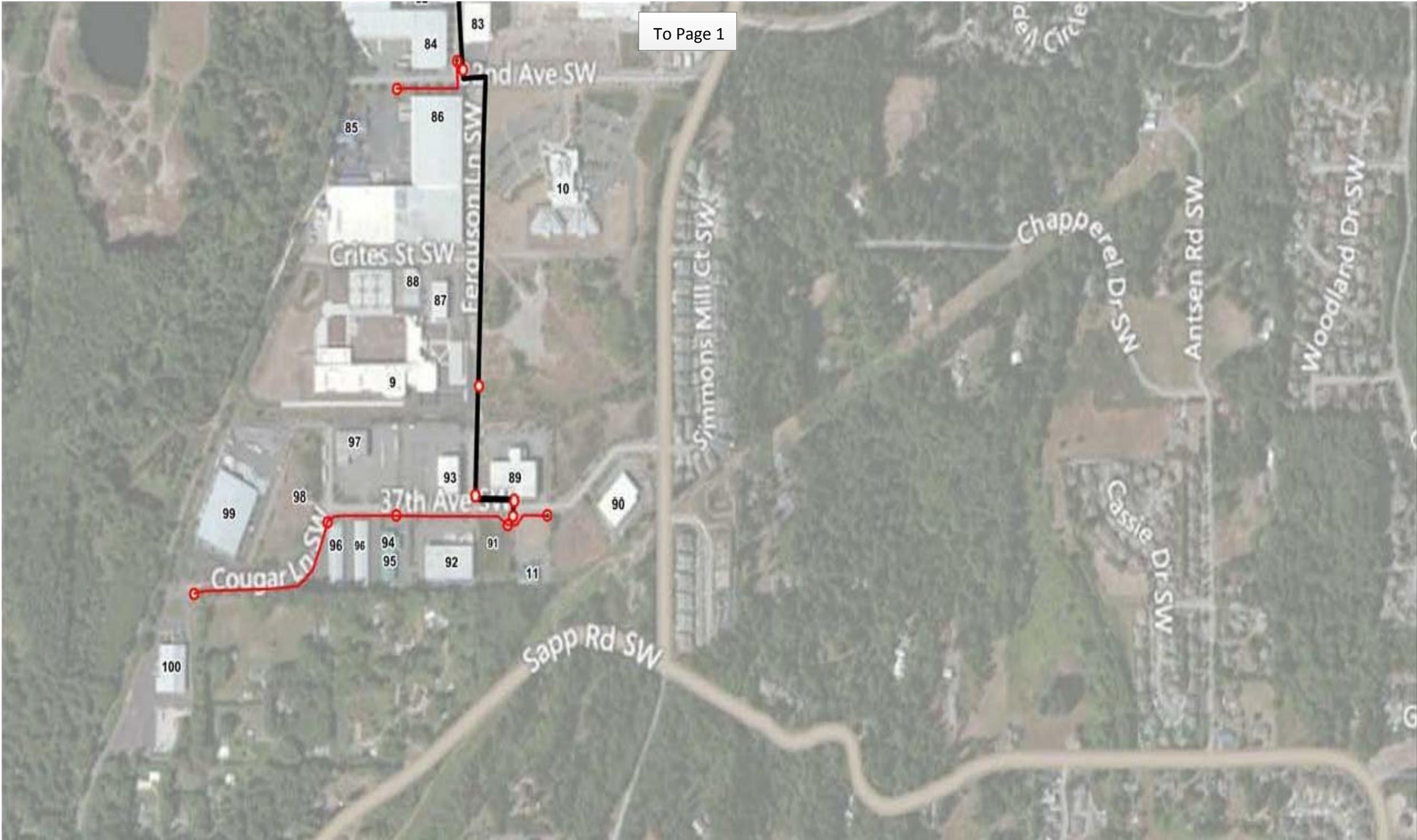
Future ongoing operations and maintenance expenses on this network should be small based on the overall underground design. Underground facilities tend to be more reliable than overhead systems thereby reducing potential repair costs. Customer connections costs range from \$5,500 to \$8,000 in outside plant fiber and duct plus associated electronics necessary to make the broadband connection. These estimated costs continue with the underground model of the industrial park.



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Mottman Business District, Tumwater WA

April 3, 2015

Description:	Quantity:	UOM:	Cost:	TOTALS:
Directional Bore up to 2" hole	2,858	Feet	\$18.00	\$51,444.00
Trench & Place up to 4' Depth	4,035	Feet	\$11.00	44,385.00
Place strand & Lash Fiber Optic Cable	4,165	Feet	\$3.50	\$14,577.50
Blow Fiber Cable thru Duct	12,813	Each	\$1.00	\$12,813.00
Concrete Remove & Restore	100	Feet	\$18.00	\$1,800.00
Handhole placement	34	Each	\$1,000.00	\$34,000.00
Vault and Misc UG Materials	34	Each	\$750.00	\$25,500.00
Fiber - Materials Including Consumables	16,978	Feet	\$0.55	\$9,337.90
UG Materials Composite Rate	12,813	Feet	\$4.00	\$51,252.00
Splice and Test Fiber Cable	144	Each	\$85.00	\$12,240.00
Place New Riser up to 4"	8	Each	\$350.00	\$2,800.00
Placement of New Fiber Optic Enclosure	13	Each	\$350.00	\$4,550.00
Fiber Cabinet/Electronics/Battery Back-up	1	Each	\$25,000.00	\$25,000.00
Anchor Placement New	6	Each	\$185.00	\$1,110.00
Traffic Control	24	Crew Hour	\$176.00	\$4,224.00
PSE estimated make ready costs	2	Each	\$5,000.00	\$10,000.00
PSE structural analysis 11-20 poles	1	Lot	\$9,556.00	\$9,556.00
Field Engineer, Design, CAD up to 25,000 ft	16,978	Each	\$0.65	\$11,035.70
Aerial Materials Composite Rate	4,165	Feet	\$2.25	\$9,371.25
Cost of project before Sales Tax				\$334,996.35
Washington State Sales Tax 8.3%				\$27,804.70
Total Estimated Cost				\$362,801.05

Mottman Business District-Tumwater

Major points of interest:

- 1) 2011 Mottman Rd : South Puget Sound Community College
- 2) 2510, 2558, 2584, 2620, 2646, 2674, 2755 Mottman Rd Business Park: (7) Professional office buildings. 2755: Olympia Physical Therapy, 2674: Law/Lyman/Daniel/Kamerrer & Bogdanovich attorneys at law, 2646: Vacant, 2620: Paul Battan Attorney at Law, 2584: Bodymechanics Massage Clinic, 2558: NW Sureity Bail Bonds, 2510: Jammin Music Studios.
- 3) 3200 Mottman Rd: L & E Bottling Company.
- 4) 3350 Mottman Rd: Quixote Village.
- 5) 2905 29th Ave SW: Thurston County Auditor “Elections Dept.”
- 6) 2947 RW Johnson Blvd: Thurston County Records.
- 7) 3000 RW Johnson Blvd: Olympia School District #111 Transportation Center.
- 8) 3003 RW Johnson Blvd: Pepsi NW Beverages “Headquarters”.
- 9) 3941 Ferguson St SW: Thurston County Jail (Vacant),
- 10) 2801 32nd Ave SW: Thurston County Juvenile Detention Center,
- 11) 2925 37th Ave SW: Thurston County Coroners Office,

Other Points of Interest:

- 12) 2030 Mottman Rd: Office Tavern.
- 13) 2120 Mottman Rd: Peoples Injury Network NW.
- 14) 2140 Mottman Rd: L.G. Isaacson Co.
- 15) 2250 Mottman Rd: NAPA Auto Parts.
- 16) 2256 “A” Mottman Rd: The Strong Center/Fitness.
- 17) 2256 “B” Mottman Rd: 1st Choice Chiropractic.
- 18) 2260 Mottman Rd: Thurston County Food Bank/Distribution Center.
- 19) 2310 Mottman Rd: Ziemek Dental Laboratories.
- 20) 2316 Mottman Rd: Unknown Business, 107/103.
- 21) 2320 Mottman Rd/102: Jacknut Apparel.
- 22) 2320 Mottman Rd/106: Platinum Motorsports Inc.
- 23) 2330 Mottman Rd: Body Mechanics/Health Clinic.
- 24) 2350 Mottman Rd: West Fork Enviromental.
- 25) 2442 Mottman Rd: Olympia Wood Flooring Supply (For Lease).
- 26) 2450 Mottman Rd: Andy Johnson & Co. Inc/General Contractors.
- 27) 2500 Mottman Rd: Electronic Resourcing Inc.
- 28) 2536 Mottman Rd: Good Year Tires.
- 29) 2601 Mottman Rd: Toy Factory Fabrication/ NW Coach Truck Trailer and Marine.

- 30) 2621 Mottman Rd: Professional Stone Products.
- 31) 2770 Mottman Rd: Pacific Stone & Tile LLC.
- 32) 3300 Mottman Rd: Cummins-(Vacant?).
- 33) 3265 Mottman Rd: Trucking Company/Warehouse.
- 34) 3395 Mottman Rd: Family Activity Center "BHG".
- 35) 3400 Mottman Rd: "Vacant" Tyson plant.
- 36) 3401 Mottman Rd: Winsor Fireform/signs.
- 37) 2517 Crites St SW: Culligan Warehouse.
- 38) 2535 Crites St SW: Abbet Carpet and Interiors Warehouse.
- 39) 2540 Crites St SW: Color Graphics.
- 40) 2655 Crites St SW: Olympic Truck Svcs.
- 41) 2670 Crites St SW: Peninsula Truck Lines Inc.
- 42) 2733 Crites St SW: Suite 101, Fastenal.
- 43) 2733 Crites St SW: Suite 105, Olympic Door and Trim.
- 44) 2840 Crites St SW: Suite 100, Christensen Inc/General Contractors.
- 45) 2840 Crites St SW: Suite 104, Ritter Holding Co. Inc.
- 46) 2840 Crites St SW: Suite 108, Lemier Phillips Construction.
- 47) 2840 Crites St SW: Suite 112, Ketola/Targus Painting Inc.
- 48) 3100 Crites St SW: Valley Supply Co.
- 49) 2950 26th Ave SW: Advance Equipment Co.
- 50) 2949 26th Ave SW: Sherwood Forest Farms.
- 51) 3150 29th Ave SW: Mutual Materials.
- 52) 3131 29th Ave SW: Holroyd Co. Inc.
- 53) 3108 29th Ave SW: Super Bee Auto Repair.
- 54) 3107 29th Ave SW: Haney Trucking Co.
- 55) 3010/3008 29th Ave SW: unknown business's.
- 56) 3006 29th Ave SW: Ameri-safe.
- 57) 2948 29th Ave SW: Genothen Holdings LLC.
- 58) 2948 "C" 29th Ave SW: Thurston Co. Police Athletic League.
- 59) 2943 29th Ave SW: Edge Fitness/HPI.
- 60) 2900 29th Ave SW: Strathmore Business Park, unit "H": Chrome Hog Associates, unit "G": S & S Auto glass, unit "E & F": Top Dog Daycare, unit "D": Black Cat Trucking, unit "C": GATX, unit "B": Nexgen.
- 61) 2915 29th Ave SW: unit "A": Big Rock Construction, unit "C": Seneca Direct, unit "E": "Epic" Event Décor.
- 62) 2918 29th Ave SW: Aircare Solutions Group/Northpointe Ind./Thurston Co. Conservative District.
- 63) 2896 29th Ave SW: Sherwood Forest Farms.
- 64) 2827 29th Ave SW: unit "A": Crossfit Ingenuity, unit "B": Apex Mailing.
- 65) 2823 29th Ave SW: Forma/Construction, Sare Electric.

- 66) 2803 29th Ave SW: Olympic Telephone.
- 67) 2806 29th Ave SW: K & L builders.
- 68) 2780 29th Ave SW: Allied Building Products Corp.
- 69) 2763/2757 29th Ave SW: Sterile Surgical Systems.
- 70) 2747 29th Ave SW: Weight & Measures Metrology Lab (WSDA).
- 71) 2745 29th Ave SW: unit "A": Fusion Graphix, unit "B": Capitol Aeroporter.
- 72) 2643 RW Johnson Blvd SW: Capitol Machine Shop.
- 73) 2649 RW Johnson Blvd SW: Capitol Industrial Inc.
- 74) 2715 RW Johnson Blvd SW: Olympic Trailer MFG/Sales.
- 75) 2747 RW Johnson Blvd SW: unit "A": Applied Industrial Technologies.
- 76) 2851 RW Johnson Blvd SW: Rapid Brake.
- 77) 2855 RW Johnson Blvd SW: Roofing Consultants.
- 78) 2875 RW Johnson Blvd SW: Whistler Communications.
- 79) 2963 RW Johnson Blvd SW: West Coast Associates/Small Planet Workshop.
- 80) 2911 Ferguson St SW: Haney Trucking Co.
- 81) 3139 Ferguson St SW: AMCOR/Plastics.
- 82) 2975 Ferguson St SW: J & S Holding Co. Inc.
- 83) 2950 Ferguson St SW: Bordeaux Wine Locators.
- 84) 3030 32nd Ave SW: Unknown warehouse.
- 85) 3045 32nd Ave SW: Mud Bay Granary office.
- 86) 3045 32nd Ave SW: AMCOR/ office, loading docks.
- 87) 3285 Ferguson St SW: units: 101/103/105, vacant office space.
- 88) 3013 Ferguson St SW: Correctional Options Programs-Public video visitation.
- 89) 2900 Ferguson St SW: Oil Trap.
- 90) 2815 37th Ave SW: unit "100": Parker Store/Industrial Hydraulics Inc, unit "110" vacant,
unit "120": C.T. Specialties Powder Coating.
- 91) 0000 37th Ave SW: All American Propane.
- 92) 2975 37th Ave SW: Capitol City Press.
- 93) 3010 37th Ave SW: Devlin Boat Company Inc.
- 94) 3035 37th Ave SW: Capitol Electric.
- 95) 3035 37th Ave SW: unit "B": Ravens Brew Coffee.
- 96) 3075/3085 37th Ave SW: warehouses.
- 97) 3060 37th Ave SW: Pioneer Building Supply.
- 98) 3112 37th Ave SW: Berschauer Group.
- 99) 3166 Cougar Ln SW: Marine View Beverage
- 100) 3215 Cougar Ln SW: Temtco Steel.

Denotes existing fiber

Project III: Hawks Prairie, Lacey

Introduction:

Hawks Prairie was developed 20 years ago from open land after the city provided tax breaks for real estate development. Over the past 10 years, the city has put in considerable effort to clean up the area and attract new business. Unfortunately, the economy over the past decade has made the reality of a robust retail district in addition to the industrial aspect of the area difficult.

Assessment:

The Hawks Prairie area that has been included in this study has the most potential for growth; this north side has less retail than the south portion of Hawks Prairie but substantially more industrial development. There are extensive vacant land resources, however these areas were not included in the underlying design, yet the backbone system traverses through enabling future connectivity should the area grow and expand. There are dominant industrial uses in this district with an additional waste and recovery center and large box retail companies.

Market Conditions:

The current service providers and service in the area include Comcast Cable and limited CenturyLink Business DSL. This area is in need for additional pro-active service delivery offerings; however in order to fully understand demand and market for broadband services, a survey program should be under taken. This survey could be provided to the Small to Medium Business market and industrial centers inquiring into overall demand and service delivery desires. There are fewer than 100 potential clients in this serving area with one million dollars in construction costs (including backbone and lateral extensions) to cover 14 miles of backbone infrastructure. With a 30% take rate, the overall cost per service offering is \$33,000 per customer connection.

A project of this size and high cost would be a substantial undertaking. The recommendation of this feasibility study is that a more detailed and intense study and market analysis is necessary to determine if the cost benefit of a system warrants such a substantial expense.

The Major Anchor Institutions and other points of interest have been provided below and in reference in the design drawing exhibit.

Funding Opportunities:

The size, urban classification, and number of service providers in this district makes it challenging to find funding sources for the full costs. If this project were to be broken up into smaller areas, the following resources should be considered for funding:

1. State agencies – CTS - Consolidated Technology Services
 - a. Department of Ecology

- b. Washington Farm Bureau
- 2. Thurston County
 - a. Waste Recovery Center
- 3. Intercity Transit
 - a. Park and Ride
- 4. Puget Sound Energy
 - a. Costs associated with PSE pole make ready work and pole attachment fees could be offset with services to PSE substations and reclosures
 - b. Energy Conservation using Smart Grid Technologies could have large impact on the electricity consumption of the large warehouses.
 - i. PSE would need to run point on this source of fund.
 - ii. Department of Energy – Smart Grid/Conservation grants
- 5. Providence Medical Group – Telemedicine funding
 - a. USDA funding for telemedicine is focused on rural areas, but private funding could be obtained to support telehealth efforts.
 - b. Connecting Telehealth service to the Nooksack tribe could open up federal grant funding as well.
- 6. Economic Development Assistance Programs for Public Works
 - a. Funded by the Economic Development Administration for investments in public works and economic development facilities.
- 7. CERB (Commerce Economic Revitalization Board) Grants
 - a. Funded by Washington State Department of Commerce
 - b. Can be used for Telecommunications facilities

Thurston Economic Development Council should be included in discussions on recruiting businesses and agencies to occupy vacant areas. Depending on the type of industry, other revenue sources could be considered.

Financial Analysis:

The Hawks Prairie district is a fairly new industrial area with much growth potential. There are many national chains, medical facilities, city and county facilities and vacant land. As with any industrial area, there are revenue opportunities that could offset the capital construction costs however, there are challenges as well. Many chains work with national providers to contract for services on a national basis. This municipal network could provide services to the national providers for those large chains. The portion of the revenue associated with the city and county facilities is somewhat dwarfed by the business revenue, but there may be more benefit to those entities that could factor into offsetting costs. The vacant property provides options for future revenue, but this also makes the size of the project larger along with the associated capital costs. Overall, these capital costs may make the project unfeasible.

The assumption made in analyzing the financial model are outlined here: 1) The revenue projections assume 100% of government agencies will choose to purchase services on this municipal network at \$400/month, 30% of small businesses will purchase services at \$199/month, 30% of the larger businesses will purchase services at \$400/month; 2) Additional

costs for connecting each customer were calculated using the number of customers in the revenue projections multiplied by \$5500 for equipment and customer connection; 3) Repair and replacement costs are taken at 5% of the capital construction costs; 4) Operations expenses are estimated using NoaNet general Network Coordinated Services costs for the number of customers estimated earlier; 5) The return on investment is calculated by dividing the total capital costs by the monthly Revenue – Expenses; 6) The return on investment is calculated after 1 year of operations. For ROI from the point of lighting up the system, add 12 months.

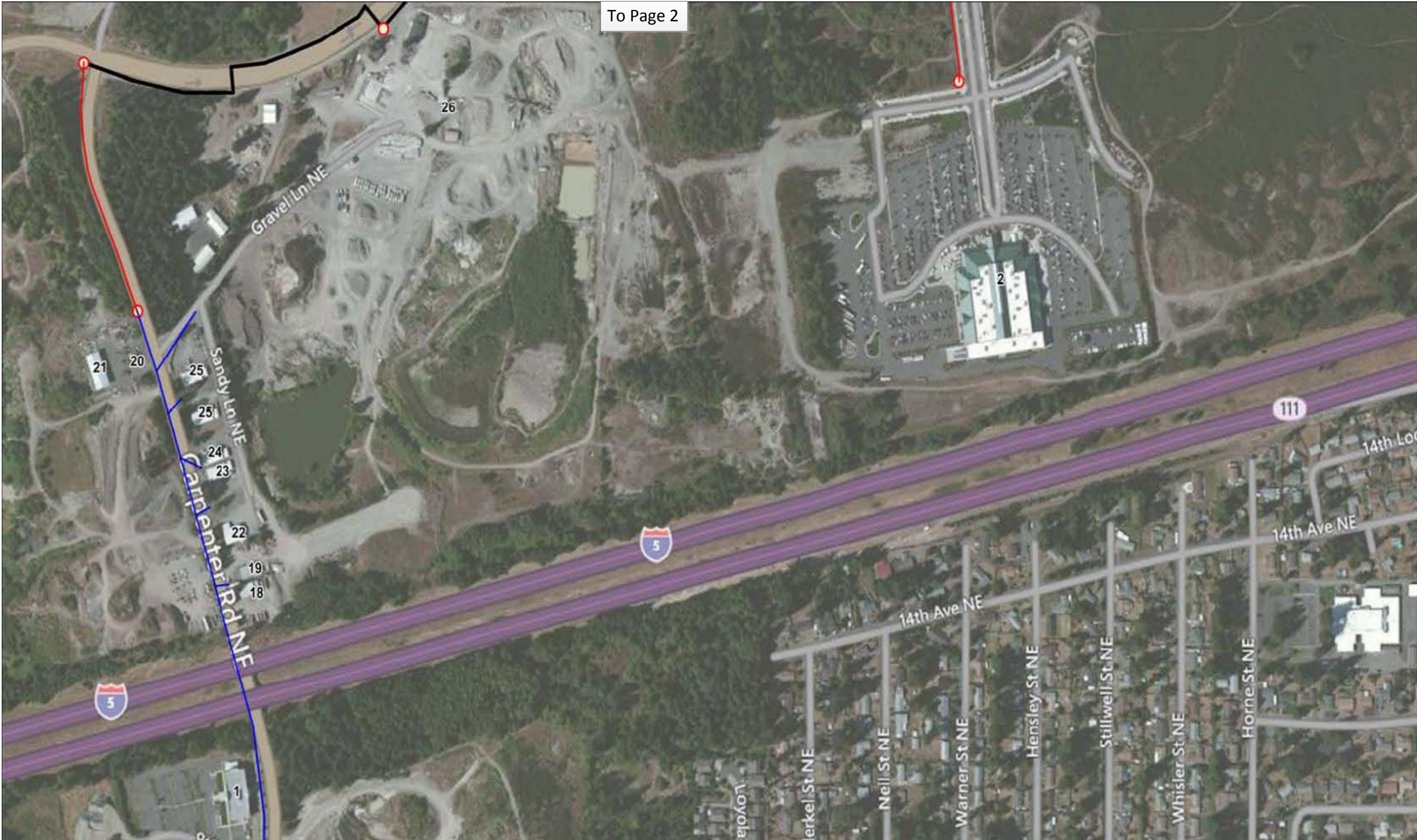
The table below summarizes the financial analysis:

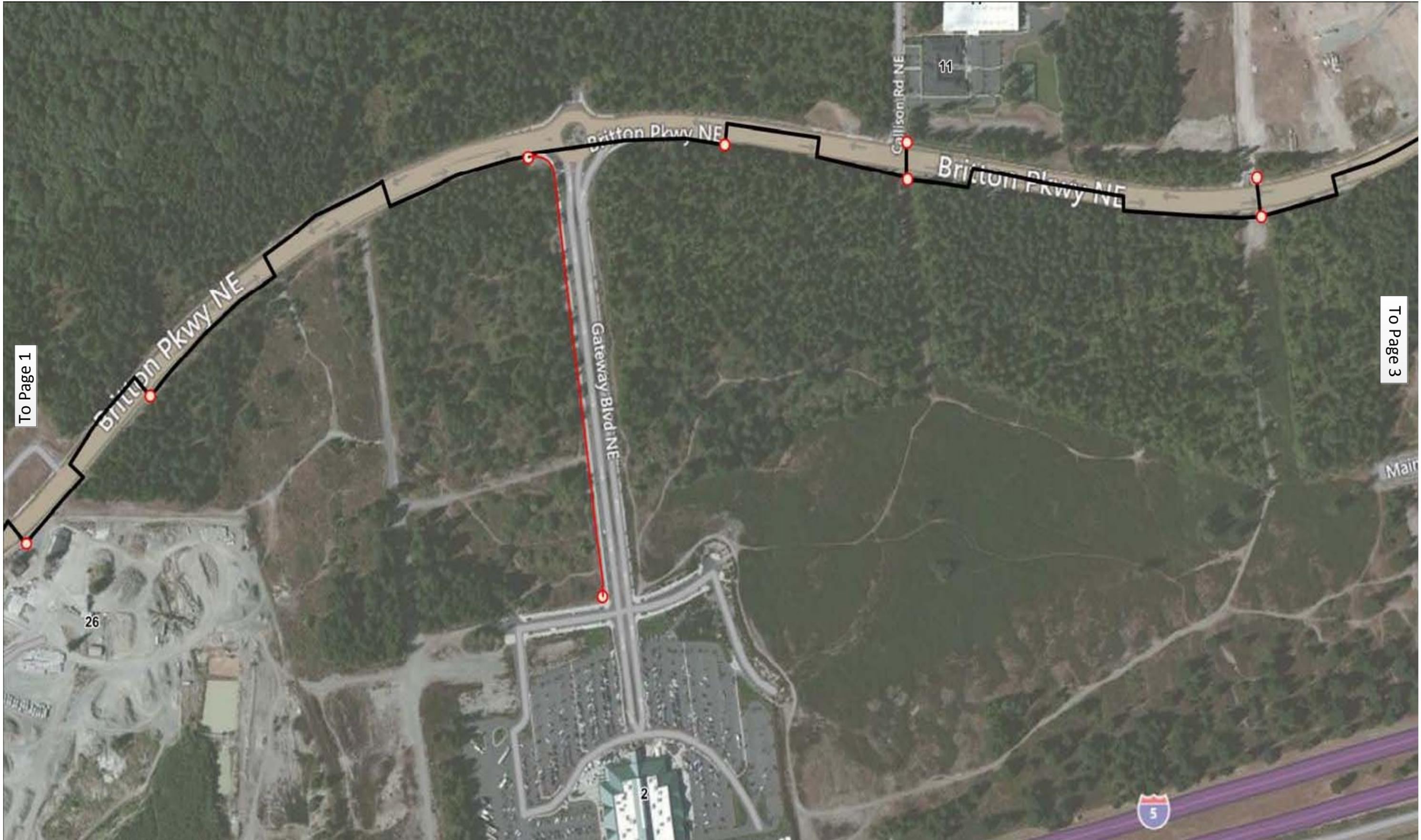
	Year One	Year Ten
Revenue	32	40
Government/Anchor Institutions	\$ 1,600.00	\$ 216,000.00
30% of Small Medium Business	\$ 4,577.00	\$ 617,895.00
30% Large Business	\$ 2,000.00	\$ 270,000.00
Total Revenue	\$ 8,177.00	\$ 1,103,895.00
Construction Costs		
Backbone	\$ 869,793.83	\$ 869,793.83
Customer Connection and CPE	\$ 176,000.00	\$ 220,000.00
Repair and Replacement	\$ 43,489.69	\$ 434,896.92
Total Capital Outlay	\$ 1,089,283.52	\$ 1,524,690.75
Capital Recovery Time (months)*	133	\$420,795.75
Monthly Facilities Operation Costs (estimated) ***		
Engineering	\$ 500.00	\$ 60,000.00
Operations and Maintenance	\$ 1,815.47	\$ 217,856.70
Total Expenses	\$ 2,315.47	\$ 277,856.70
Monthly Administrative Costs (estimated) ***		
Management and Admin	\$ 500.00	\$ 60,000.00
Sales and Marketing	\$ 1,100.00	\$ 132,000.00
Total Expenses	\$ 1,600.00	\$ 192,000.00
Return on Investment (months)**	256	\$890,652.45
*assumes customer's Aid to Construction is beyond \$5500 per connection		
**assumes one year to build up revenue not included in figure		
***assumes an outsourced model is utilized to manage and operate network		

With these assumptions, the return on investment is calculated to be over 11 years. This area is considered served and urban, so most Federal Funding will not be available for this type of project. With no federal funding and the ROI, large capital contributions from the governmental agencies and other customers will be needed to make this feasible. We believe more investigation needs to be made into the benefits to the County, City and other agencies to better evaluate this project.

Infrastructure Build Out Costs and ongoing Operations and Maintenance:

The below figures show an initial outlay of just under \$900,000 to build a 14 mile fiber backbone that includes a hub site to aggregate customer traffic by interconnecting to the city's fibers back to their local Internet Service Provider, Reach One. If for example 30% of the existing customer base were to take service, the additional expense of lateral connections to those customer would drive the overall network to nearly one million dollars.





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— = Aerial

— = Underground

★ = HUB

○ = Vault



City of Lacey Hawks Prairie
 District

NORTHWEST OPEN ACCESS NETWORK

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SCALE	N/A	SHEET	2 OF 6
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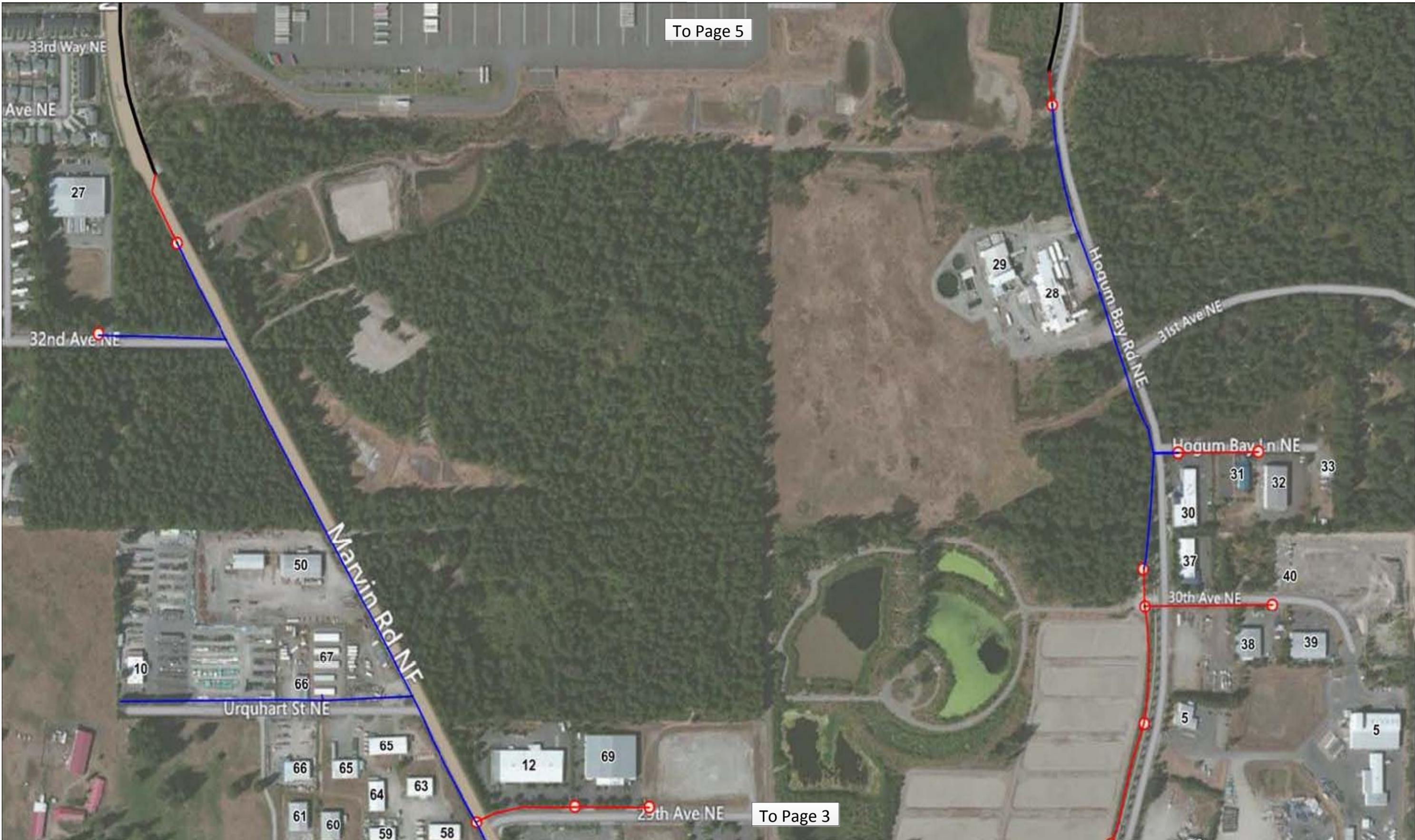
City of Lacey Hawks Prairie
 District

NORTHWEST OPEN ACCESS NETWORK

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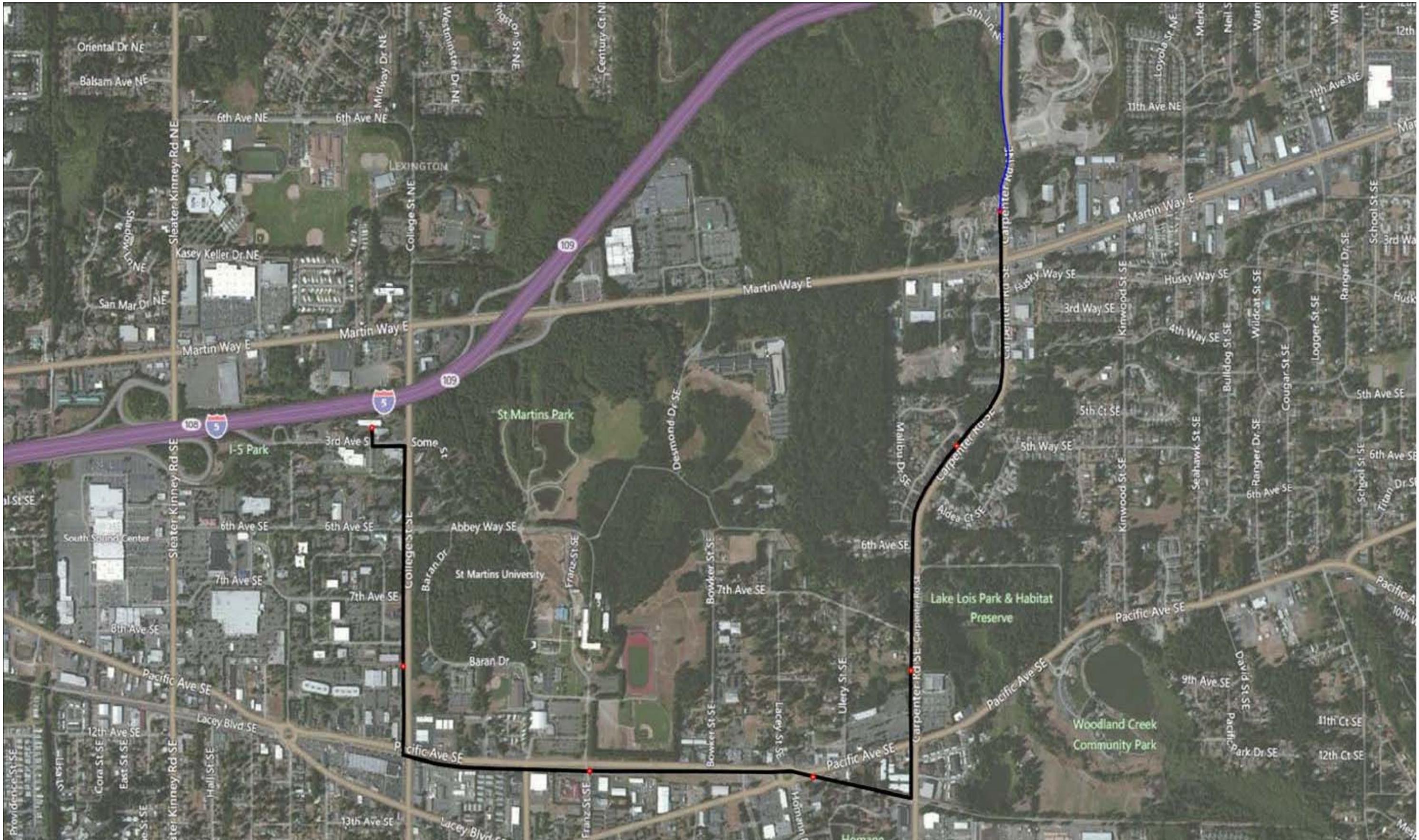
City of Lacey Hawks Prairie
 District

NORTHWEST OPEN ACCESS NETWORK

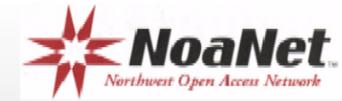
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City of Lacey Hawks Prairie
 District

NORTHWEST OPEN ACCESS NETWORK		
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SCALE	N/A	SHEET
		1 OF 1

Hawks Prairie District, Lacey WA

April 7, 2015

Description:	Quantity:	UOM:	Cost:	TOTALS:
Directional Bore up to 2" hole	4,025	Feet	\$25.50	\$102,637.50
Trench & Place up to 4' Depth	14,138	Feet	\$11.00	155,518.00
Place strand & Lash Fiber Optic Cable	12,449	Feet	\$3.50	\$43,571.50
Blow Fiber Cable thru Duct	64,058	Each	\$1.00	\$64,058.00
Concrete Remove & Restore	500	Feet	\$18.00	\$9,000.00
Handhole placement	68	Each	\$1,000.00	\$68,000.00
Vault and Misc UG Materials	68	Each	\$750.00	\$51,000.00
Fiber - Materials Including Consumables	73,358	Feet	\$0.55	\$40,346.90
UG Materials Composite Rate	18,163	Feet	\$4.00	\$72,652.00
Splice and Test Fiber Cable	144	Each	\$85.00	\$12,240.00
Place New Riser up to 4"	16	Each	\$350.00	\$5,600.00
Placement of New Fiber Optic Enclosure	16	Each	\$350.00	\$5,600.00
Fiber Cabinet/Electronics/Battery Back-up	1	Each	\$25,000.00	\$25,000.00
Rod and Rope Conduit	35,746	Wall to Wall	\$0.78	\$27,881.88
Traffic Control	200	Crew Hour	\$176.00	\$35,200.00
Anchor Placement New	28	Each	\$185.00	\$5,180.00
Field Engineer, Design, CAD up to 25,000 ft +	64,058	Each	\$0.65	\$41,637.70
PSE estimated make ready costs	2	Each	\$5,000.00	\$10,000.00
Aerial Materials Composite Rate	12,449	Feet	\$2.25	\$28,010.25
Cost of project before Sales Tax				\$803,133.73
Washington State Sales Tax 8.3%				\$66,660.10
Total Estimated Cost				\$869,793.83

City of Lacey Hawks Prairie District

Major Points of Interest:

- 1) 975 Carpenter Rd NE: Wash. Farm Bureau.
- 2) 1600 Gateway Blvd NE: Cabela's.
- 3) 3901 Hogum Bay Rd NE: Harbor Wholesale Foods.
- 4) 3707 Hogum Bay Rd NE: World Class Distributions Inc./Trader Joes, MCA Logistics, WCD NW Warehouse.
- 5) 2910 Hogum Bay Rd NE: Pacific Disposal Inc./Lemay.
- 6) 2420 Hogum Bay Rd NE: Thurston County Waste Recovery Center.
- 7) 3500 Hawks Prairie Rd: Target Distribution Center.
- 8) 8270 28th Ct NE: Dept. of Ecology.
- 9) 2555 Marvin Rd NE: Providence Medical Group.
- 10) 3011 Marvin Rd NE: HD Fowler.
- 11) 2400 Callison Rd NE: IP Callisons & Sons.
- 12) 7820 29th Ave NE: Federal Express Distribution Center.
- 13) 8501 Zenith Ct NE: SW WA. Pipes Trade Training Center, Plumbers and Steamfitters UA Local 26 office.
- 14) 2660 Willamette Dr NE: Econet, Univera, Aloecorp, Unigen/Pharmaceuticals.
- 15) 8535 Commerce Pl Dr NE: Xerox.
- 16) 9225 Orion Dr NE: Providence Health Svcs.
- 17) 9303 Orion Dr NE: Home Depot/Distribution Center.

Other Points of Interest:

- 18) 1220 Carpenter Rd NE: Heck LM Concrete Pumping.
- 19) 1244 Carpenter Rd NE: Gary's bulldozing.
- 20) 1543 Carpenter Rd NE: Always Done Right Construction.
- 21) 1547 Carpenter Rd NE: Everson Asphalt and Paving.
- 22) 1311 Sandy Ln NE: TNS Detail and Tint.
- 23) 1836 Sandy Ln NE "B": Accurate Striping.
- 24) 1836 Sandy Ln NE "C": Ecology Youth Corps.
- 25) 1836 Sandy Ln NE "D & E": Warehouses.
- 26) 6538 Gravel Ln NE: Miles Sand and Gravel.
- 27) 7430 32nd Ave NE: NW Processing.
- 28) 3145 Hogum Bay Rd: Nutriom LLC.
- 29) 3141 Hogum Bay Rd: Deseca Manufacturing.
- 30) 8343 Hogum Bay Ln NE: Top Rung Brewery, Coastal, Day Wireless Systems.
- 31) 8365 Hogum Bay Ln NE: Richmond Engineering.
- 32) 8401 Hogum Bay Ln NE: Specialty Steel Fabricators (Vacant).
- 33) 8431 Hogum Bay Ln NE: Hogum Bay Industries.

- 34) 2820 Hogum Bay Rd NE: Industrial Warehouse property.
- 35) 2806 Hogum Bay Rd NE: Kell Chuck Glass/Commercial Division.
- 36) 2750 Hogum Bay Rd NE: Tru Truss Inc.
- 37) 8310 30th Ave NE: TCMS/Air Conditioning.
- 38) 8351 30th Ave NE: PR Systems/Construction.
- 39) 8401 30th Ave NE: Lacey Glass.
- 40) 8410 30th Ave NE: MB Electric.
- 41) 8300 28th Ct NE: Suite 100/Empire Office Equipment, Suite 200/Vacant, Suite 300/Len's Home Repair, Suite 400/Soundworks, Suite 500/ServiceMaster Clean, Suite 600/All Pro Screenprinting.
- 42) 8294 28th Ct NE: Suite 100/NW Iron, Suite 200/Espresstechs LLC, Suite 300/Vacant, Suite 400/Pacific NW Technologies, Suite 600/Vacant.
- 43) 8292 28th Ct NE: Grant & Associates.
- 44) 8290 28th Ct NE: PSW Benefits/Vantage Community Management.
- 45) 8288 28th Ct NE: Pacific Rim/Log Scaling Bureau.
- 46) 8286 28th Ct NE: Deploy H.R. Inc., Black Rock Logistics, Belle Vie Salon.
- 47) 8284 28th Ct NE: Vacant.
- 48) 8282 28th Ct NE: Basics NW, Sandler Training.
- 49) 8258 28th Ct NE: Ferrell Gas Propane.
- 50) 3105 Marvin Rd NE: Olympic Iron Works.
- 51) 2839 Marvin Rd NE: Olympia Sheet Metal Inc.
- 52) 2833/2835 Marvin Rd NE: Capitol Lumber.
- 53) 2831 Marvin Rd NE: Marvin Rd Mini Golf/Driving range.
- 54) 2825 Marvin Rd NE #1: "A-C": Tops Solid Surface Granite/Slate, "D": Madsen Family Cellars, "E": Thurston County Youth Football League.
- 55) 2825 Marvin Rd NE #2: Food Service Equipment, Hefty Harvest, The Stair Co., NW Mountain Winery, Metro OH Doors, Flood EX.
- 56) 2825 Marvin Rd NE #3: RHD Enterprises Inc, HAS Precision Tactical.
- 57) 2901 Marvin Rd NE: Gensco.
- 58) 2903 Marvin Rd NE: Cross Fit-Finish first.
- 59) 2905 Marvin Rd NE: Wishing Well Treasures.
- 60) 2907 Marvin Rd NE: Custom Security.
- 61) 2909 Marvin Rd NE: A-1 Concrete Supplies.
- 62) 2911 Marvin Rd NE: Baroo Pet Spa.
- 63) 2913 Marvin Rd NE: Tanglewilde Marine.
- 64) 2915 Marvin Rd NE: The Retreasury Thrift Store.
- 65) 3003/3005 Marvin Rd NE: PKMM Inc/Welding.
- 66) 3007/3019 Marvin Rd NE: Summit Fence.
- 67) 3017 Marvin Rd NE: Marvin Rd Mini Storage.
- 68) 7851 29TH Ave NE: Sunbelt Rentals.

- 69) 7860 29th Ave NE: “A”: Distinctive Tile and Stone, “B”: G-Tech Corp.
- 70) 7961 29th Ave NE: Black Hills Gymnastics.
- 71) 2590 Willamette Dr NE: Colonial Life.
- 72) 2600 Willamette Dr NE: Right Systems Inc.
- 73) 2604 Willamette Dr NE: Morgan Transfer Inc, A & E Relocation Svcs.
- 74) 2601 Willamette Dr NE: Western Hydro Corp, Phimsr Providence, Direct TV Office.
- 75) 2610 Willamette Dr NE: Vacant.
- 76) 2625 Willamette Dr NE: Alliance Enterprises Inc.
- 77) 2626 Willamette Dr NE: Tempur-Sealy.
- 78) 2633 Willamette Dr NE: Paul Davis Restoration, Full Steam Ahead Staffing, AutoTrim NW, Sign A Rama.
- 79) 2640 Willamette Dr NE: All West Transportation.
- 80) 2641 Willamette Dr NE: Stottle Winery, Salish Distillery, Prince Telecom, NW Landscape Svcs, Auto Additions Inc.
- 81) 2830 Willamette Dr NE: Funeral Alternatives of WA, MWE-Midwest Equipment.
- 82) 8560 Commerce Pl Dr NE: Shipwreck Beads.
- 83) 8575 Commerce Pl Dr NE: State Farm Insurance, Organic Herbs & Vegetables.
- 84) 8605 Commerce Pl Dr NE: RT London, Dish Network office.
- 85) 8719 Commerce Pl Dr NE: “VSP”one.
- 86) 8729 Commerce Pl Dr NE: Exeltech.
- 87) 8735 Commerce Pl Dr NE: Earth Friendly Products.
- 88) 8743/8751 Commerce Pl Dr NE: I-5 Design & Manufacture.
- 89) 8760 Commerce Pl Dr NE: Mutual Materials.
- 90) 8925 Orion Dr NE: Augustine Consulting Inc, Pacific Green Group.
- 91) 9050 Orion Dr NE: Premier Transportation/Retail Distribution Center.
- 92) 9107 Orion Dr NE: Crown Packaging, Hawks Prairie Home Furnishing Outlet.
- 93) 9127 Orion Dr NE: Vacant/For Lease.

Project IV: Madison Neighborhood FTTx

Introduction:

The Madison Neighborhood covers about a 1,200 home area near downtown Olympia. The median income could be classified as medium to low income range with a wide range of ages and children. There is one 48 unit apartment complex within this single family home community, as well as a few townhouses and quadplexes. The area has 2 elementary schools and a number of small to medium businesses along 4th street. The study was able to capture 100% homes passed along this community with a service delivery point from the water tower located in the community.

Assessment:

This feasibility study captures a Fiber to the Curb (FTTC) design platform which generically is defined as a platform that relies on a service connection that can be performed within 1,000 feet (300 meters) from a distribution fiber point, in this case is a fiber port on a pole. From this distribution fiber point, a completed service to the residence can be enabled through a fiber connection, a high-bandwidth copper technology via wired Ethernet, or wireless Wi-Fi technology. Since every design alternative cannot be evaluated in this study, the facilities were financially modeled with a fiber connection point at the distribution point to facilitate a fiber drop to the residence. It was also decided upon during the design to generally assume an active optical network would be modeled rather than a passive optical network. There are pros and cons to both which would need to be decided upon, but for the purpose of this report, one model had to be selected.

Market Conditions:

Residential Internet in Olympia is currently provided by both Comcast and CenturyLink throughout the city; with nearly 50% of the population having access to 3 or more wireline providers. Both providers offer their services between \$35.00 to \$45.00 a month for services less than 25mps. The City of Olympia compared to nationwide would be considered a wired area with roughly 91% of the population having access to 100 Mbps download speeds compared to the national average for metropolitan areas at 65%. Census reports have over 38,000 of the 49,000 residence connected to high speed broadband. With that said, less than 1% of the residences have access to fiber connections compared to the national average of 8% in metro areas.

During our review of the area, we had an opportunity to meet with some of the residents. Feedback was positive and can be generally summarized as follows: The residents have service, predominantly with Comcast, and although they have broadband they were hopeful this project or some similar initiative would happen to increase competition thereby naturally increasing service offerings, cost and reliability.

Nationally, it has been shown that municipal fiber networks foster competition that drives down costs. The incumbent providers, such as CenturyLink and Comcast, are national providers that

rely on national promotional rates, service delivery, and customer service. A new FTTx project would have to offer superior services and a similar if not lower price to attract business and growth.

Funding Opportunities:

The Madison Neighborhood is considered an urban served area. Federal and State grant opportunities funding municipal fiber builds are focused on rural, underserved and tribal areas. There may be some creative approaches to funding a build such as the following:

1. Work with Puget Sound Energy PSE to develop an energy conservation study that would bring smart metering to the homes in the Madison Neighborhood using a new fiber to the premises network.
 - a. Funding
 - i. Department of Energy
 - ii. PSE – offset carbon emissions with investment in conservation.
 - iii. Private philanthropic agency focused on climate change and energy conservation.
2. The eRate program will fund fiber infrastructure builds to school facilities.
 - a. Olympia School district receives a 50% subsidy from the eRate program.
 - b. A portion of the build could be covered by this subsidy.

Financial Analysis:

The Madison Fiber-to-the-Home project would benefit that community and the overall area by providing high-speed broadband access. There appears to be much interest in accessing a competitive product to Comcast and CenturyLink. This all depends on the services that will be provided and the costs. We have estimated a price of \$50/month from broadband access, without defining specifically speed of that access.

The assumption made in the analyzing the financial model are outlined here: 1) The revenue projections assume both schools will choose to purchase services on this municipal network at \$400/month and 30% of residences will purchase services at \$50/month; 2) Assumed revenue projections over a ten year period are expected to triple; 3) Additional costs for connecting each customer were calculated using the number of customers in the revenue projections multiplied by \$1500 for equipment and customer connection, assuming a \$300 connection fee; 4) Repair and replacement costs are taken at 7.5% of the capital construction costs; 5) Operations expenses are estimated using NoaNet general Network Coordinated Services costs for the number of customers estimated earlier ; 6) Ongoing technical support costs are estimated at \$10 per customer per month 7) The return on investment is calculated by dividing the total capital costs by the monthly Revenue – Expenses; 8) The return on investment is calculated after 1 year of operations. For ROI from the point of lighting up the system, add 12 months.

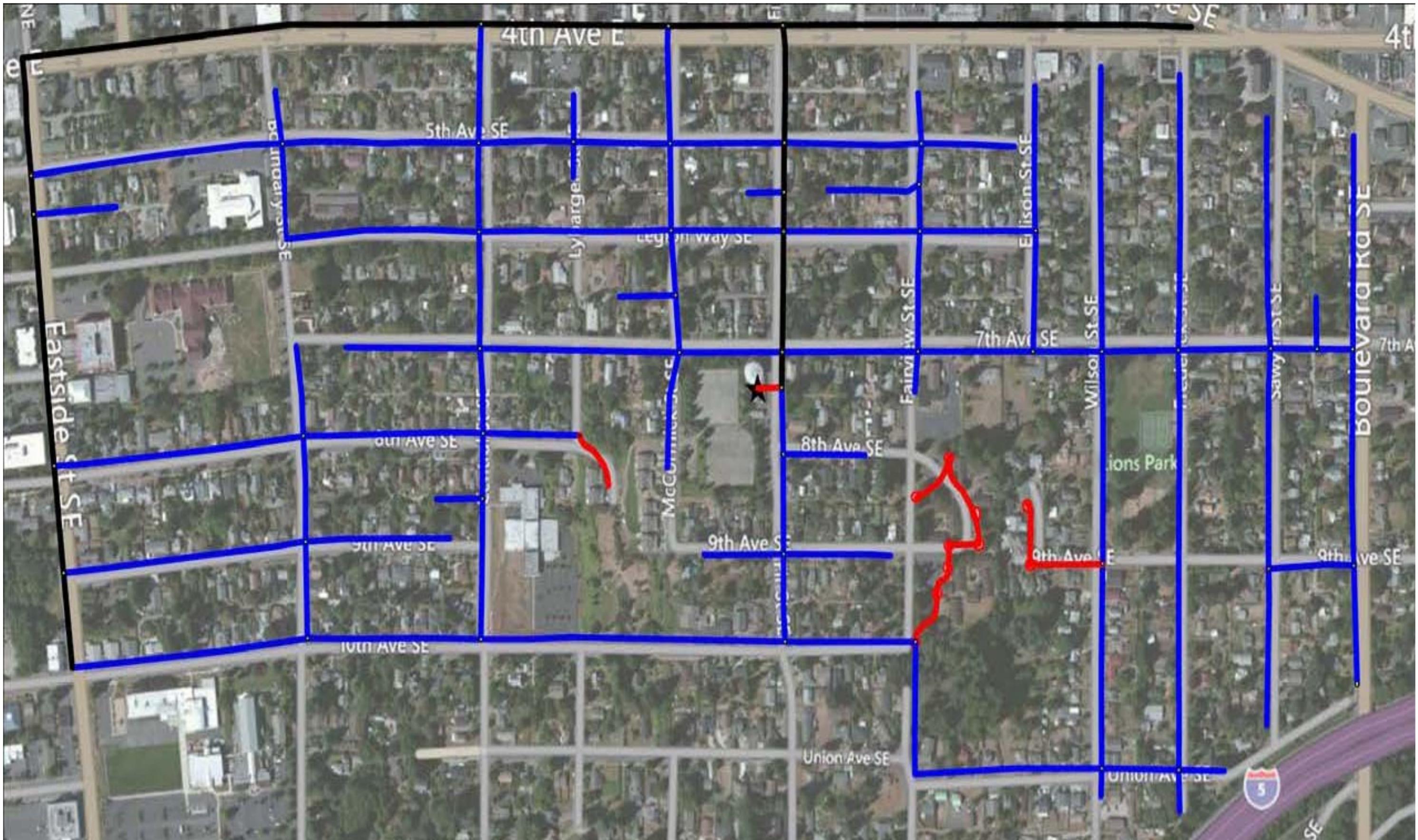
The table below summarizes the financial analysis.

	Year One	Year Ten
Revenue	300	900
Government/Anchor Institutions	\$ 800.00	\$ 108,000.00
30% of Residential Subscribers	\$ 15,000.00	\$ 4,027,500.00
Total Revenue	\$ 15,800.00	\$ 4,135,500.00
Construction Costs		
Backbone	\$ 584,008.07	\$ 584,008.07
Customer Connection and CPE*	\$ 450,000.00	\$ 1,350,000.00
Repair and Replacement	\$ 77,550.61	\$ 775,506.05
Total Capital Outlay	\$ 1,111,558.68	\$ 2,709,514.12
Capital Recovery Time (months)**	70	\$1,425,985.88
Monthly Facilities Operation Costs (estimated) ***		
Engineering	\$ 2,500.00	\$ 300,000.00
Operations and Maintenance	\$ 4,631.49	\$ 555,779.34
Tech Support	\$ 3,000.00	\$ 805,500.00
Total Expenses	\$ 7,131.49	\$ 855,779.34
Monthly Administrative Costs (estimated) ***		
Management and Admin	\$ 1,500.00	\$ 180,000.00
Sales and Marketing	\$ 2,000.00	\$ 240,000.00
Misc.	\$ 500.00	\$ 60,000.00
Total Expenses	\$ 4,000.00	\$ 300,000.00
Return on Investment (months)**	128	\$270,206.54
*assumes customer's Aid to Construction is \$300 per connection		
**assumes one year to build up revenue not included in figure		
***assumes an outsourced model is utilized to manage and operate network		

For this project, the return on investment is estimated at just under 6 years. Broadband adoption in low-income communities is a large focus of non-profit organizations. Groups such as EveryoneOn are working with private and public Internet service providers to support reduced pricing for low-income households. Comcast is a provider who participates in such programs and offers a \$9.99 service for qualifying households. The current offerings and system utilized for this model provides for a residential Internet product only. An additional service provider relationship with triple play functionality could be included with additional expense and associated revenues.

Infrastructure Build Out Costs and ongoing Operations and Maintenance:

The backbone cost associated with this project is roughly \$585,000 with an electronics cabinet facility at the water tower. This location would be the distribution point for the network to the homes, and would be fed by City of Olympia fiber to a connectivity point to a Service Provider. The additional outlay per customer connection in this design model is less than \$1,500 per connection. However, in order to support a delivery model, the owner would need to have an ongoing technician team capable of installing the service drop and setting top boxes.



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Olympia Fiber to the Home Project

NORTHWEST OPEN ACCESS NETWORK		
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City of Olympia Madison Neighborhood FTTx

Description:	Quantity:	UOM:	Cost:	TOTALS:
Directional Bore up to 2" hole	1,700	Feet	\$18.00	\$30,600.00
Place strand & Lash Fiber Optic Cable	38,974	Feet	\$3.50	\$136,409.00
Blow Fiber Cable thru Duct	1,700	Each	\$1.00	\$1,700.00
Handhole placement	11	Each	\$1,000.00	\$11,000.00
Vault and Misc UG Materials	11	Each	\$750.00	\$8,250.00
Fiber - Materials Including Consumables	62,049	Feet	\$0.55	\$34,126.95
UG Materials Composite Rate	1,700	Feet	\$4.00	\$6,800.00
Splice and Test Fiber Cable	856	Each	\$85.00	\$72,760.00
Place New Riser up to 4"	3	Each	\$350.00	\$1,050.00
Placement of New Fiber Optic Enclosure	96	Each	\$350.00	\$33,600.00
Fiber Cabinet/Electronics/Battery Back-up	1	Each	\$25,000.00	\$25,000.00
Traffic Control	120	Crew Hour	\$176.00	\$21,120.00
Anchor Placement New	23	Each	\$185.00	\$4,255.00
Field Engineer, Design, CAD up to 25,000 ft +	69,049	Each	\$0.65	\$40,331.85
PSE structural analysis 11-20 poles	1	Each	\$9,556.00	\$9,556.00
PSE estimated make ready costs	3	Each	\$5,000.00	\$15,000.00
Aerial Materials Composite Rate	38,974	Feet	\$2.25	\$87,691.50
Cost of project before Sales Tax				\$539,250.30
Washington State Sales Tax 8.3%				\$44,757.77
Total Estimated Cost				\$584,008.07

EOPC includes , Pole attachment fees, Power Make Ready, City / County Franchise and or permits and easements.

Project V: Downtown Olympia

Introduction:

This fiber to the business project covers the downtown core of Olympia east of the boardwalk and includes WiFi from Percival Landing to Heritage Fountain Park. The downtown has a multitude of older buildings that have been neglected and in some cases are vacant. There are many multi dwelling units however due to zoning issues, there are no high-rise commercial or residential developments. The WiFi portion of this project is intended to provide access for transient populations as they use the waterfront parks.

Assessment:

This area of downtown Olympia has had minimal economic development success in recent years. Although the boardwalk and some community events attract local commerce, the approach to attracting people to recreate and live appears to have had limited success. A broadband system to encourage local business development certainly would help the area, however for long term success the area needs additional support in design, community activities, architecture, cultural storefronts, safety, and dining and commerce projects. Coordination with Thurston County Economic Development Council and local businesses should be considered.

Market Conditions:

Business class services such as Comcast and CenturyLink currently serve this area. The addition of a competitive high speed broadband service provider would be beneficial to attract future business consumers, however the current class of business and the tepid economic development occurring in the area will hinder immediate success for a broadband deployment. As seen in build out costs below, with a hypothetical outlay of \$5,000 per service drop, a 30% take rate of the Anchor Institutions identified; the average cost per committed service drop is roughly \$25,000.

The WiFi portion of this project can be broken out to be a stand-alone system. This project would not have revenue associated with it and would benefit residents and visitors to the city on a transient basis.

Funding Opportunities:

The downtown Olympia area is in a revitalization phase. Providing high-speed broadband facilities would encourage this. The project should be coordinated with Thurston County Economic Development Council. Funding options to consider are:

1. Economic Development Assistance Programs for Public Works
 - a. Funded by the Economic Development Administration for investments in public works and economic development facilities.
2. CERB (Commerce Economic Revitalization Board) Grants
 - a. Funded by Washington State Department of Commerce

- b. Can be used for Telecommunications facilities
- 3. USDA – Telecommunications Infrastructure Loans
 - a. Loans for infrastructure construction at US Treasury Rate.

This project should also be coordinated with the Port of Olympia. The port may have access to other funding opportunities that could support businesses in the area.

The Chamber of Commerce may also have funds to support the WiFi project, using the landing page for advertisement for activities going on in the area.

Financial Analysis:

This project would serve a unique area of Olympia with historical buildings, the port, the farmers market, and public areas and parks. Building a municipal high-speed broadband network could benefit those areas and the citizens of Olympia that use them as well as and encourage economic development. This may be limited due to the challenges associated with building new facilities in this area. Should the city choose to move forward with this project, it would be good to include it with the larger economic development plan.

The assumptions made in analyzing the financial model are outlined here: 1) The revenue projections assume both government agencies will choose to purchase services on this municipal network at \$400/month and 30% of small or medium businesses will purchase services at \$199/month; 2) Additional costs for connecting each customer were calculated using the number of customers in the revenue projections multiplied by \$5500 for equipment and customer connection; 3) Repair and replacement costs are taken at 5% of the capital construction costs; 4) Operations expenses are estimated using NoaNet general Network Coordinated Services costs for the number of customers estimated earlier; 5) The return on investment is calculated by dividing the total capital costs by the monthly Revenue – Expenses; 6) The return on investment is calculated after 1 year of operations. For ROI from the point of lighting up the system, add 12 months.

The table below summarizes the financial analysis:

	Year One	Year Ten
Revenue	15	18.75
Government/Anchor Institutions	\$ 800.00	\$ 108,000.00
30% of Small Medium Business	\$ 2,587.00	\$ 349,245.00
Total Revenue	\$ 3,387.00	\$ 457,245.00
Construction Costs		
Backbone	\$ 196,243.93	\$ 196,243.93
Customer Connection and CPE*	\$ 82,500.00	\$ 103,125.00
Repair and Replacement	\$ 9,812.20	\$ 98,121.97
Total Capital Outlay	\$ 288,556.13	\$ 397,490.90
Capital Recovery Time (months)**	85	\$59,754.10
Monthly Facilities Operation Costs (estimated) ***		
Engineering	\$ 500.00	\$ 60,000.00
Operations and Maintenance	\$ 480.93	\$ 57,711.23
Total Expenses	\$ 980.93	\$ 117,711.23
Monthly Administrative Costs (estimated) ***		
Management and Admin	\$ 500.00	\$ 60,000.00
Sales and Marketing	\$ 1,100.00	\$ 132,000.00
Total Expenses	\$ 1,600.00	\$ 192,000.00
Return on Investment (months)**	358	\$249,957.12
*assumes customer's Aid to Construction is beyond \$5500 per connection		
**assumes one year to build up revenue not included in figure		
***assumes an outsourced model is utilized to manage and operate network		

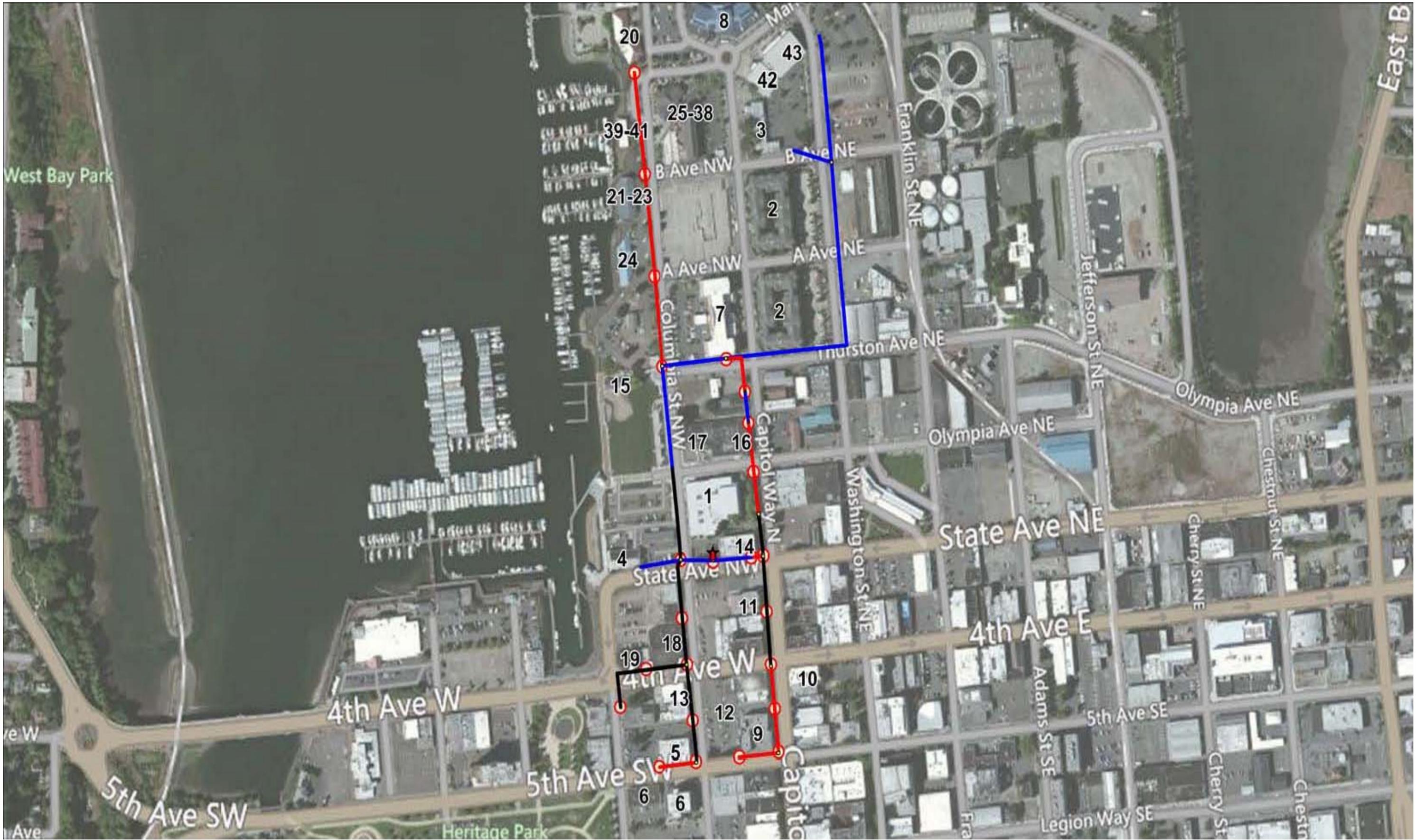
The revenue opportunity in this area is limited, resulting in about a 7 year return on investment. It may be that we are underestimating the number of businesses that would purchase services on this network. If that number were to be closer to 60%, you drop the ROI in half. There is a benefit to providing a high speed broadband utility, such as the one proposed here for future business relocating. While this can not necessarily be quantified, there is understanding that for every dollar invested into fiber optic infrastructure you receive more than that back in economic development. There would be no revenue expected from the WiFi service. Advertisements could be sold for the landing page, but this may cost more in labor than it would generate.

The original pilot project looked at providing a WiFi mesh for transient population from Percival Landing to The Heritage Park Fountain. We have broken out the WiFi Mesh Network from the rest of the project. The total costs for this project would be just over \$26,000, with no expectations of revenue. There are some assumptions made with this estimate:

1. City of Olympia will provide the following:
 - a. Fiber handoff at Percival Landing (Splicing is included in the estimate)
 - b. Access and Power at city owned light poles (this does not use PSE power poles)
 - i. AC Power from photo cell light pole tap
 1. Assumes Poles are directly powered and not daisy chained
 - c. All APs will use built-in backhaul to access the fiber at the root AP (Percival Landing)
 - i. This will reduce the throughput at Heritage Fountain Park, but will still be adequate for the intended purpose.

Infrastructure Build Out Costs and ongoing Operations and Maintenance:

With the estimated construction costs of roughly \$200,000, this project would take 60 - 90 days to construct after a 90-120 day permitting process. The end result is a 2-mile predominantly underground fiber network with a single hub site aggregation node and a WiFi Mesh network from Percival Landing to Heritage Fountain Park. This node, with minor adjustments to the design could be relocated to an existing facility of the city's choosing to reduce costs. This infrastructure would require additional service drops and customer premise equipment for every customer connection signed up through a service delivery model with a retail service provider. Due to the variance in entrance requirements to each building, there isn't a median price connection that could be determined. Each facility would require individual engineering in order to create a distribution model.



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City of Olympia Pilot Project 1

NORTHWEST OPEN ACCESS NETWORK		
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City of Olympia Downtown, Olympia WA

Description:	Quantity:	UOM:	Cost:	TOTALS:
Directional Bore up to 2" hole	1,988	Feet	\$18.00	\$35,784.00
Place strand & Lash Fiber Optic Cable	1,588	Feet	\$3.50	\$5,558.00
Blow Fiber Cable thru Duct	1,988	Each	\$1.00	\$1,988.00
Concrete Remove & Restore	456	Feet	\$18.00	\$8,208.00
Handhole placement	23	Each	\$1,000.00	\$23,000.00
Vault and Misc UG Materials	23	Each	\$750.00	\$17,250.00
Fiber - Materials Including Consumables	7,650	Feet	\$0.55	\$4,207.50
UG Materials Composite Rate	1,988	Feet	\$4.00	\$7,952.00
Splice and Test Fiber Cable	144	Each	\$85.00	\$12,240.00
Place New Riser up to 4"	6	Each	\$350.00	\$2,100.00
Placement of New Fiber Optic Enclosure	13	Each	\$350.00	\$4,550.00
Fiber Cabinet/Electronics/Battery Back-up	1	Each	\$25,000.00	\$25,000.00
Anchor Placement New	10	Each	\$185.00	\$1,850.00
Traffic Control	40	Crew Hour	\$176.00	\$7,040.00
PSE estimated make ready costs	2	Each	\$5,000.00	\$10,000.00
PSE structural analysis 1-10 poles	1	Lot	\$5,931.00	\$5,931.00
Field Engineer, Design, CAD up to 25,000 ft	7,650	Each	\$0.65	\$4,972.50
Aerial Materials Composite Rate	1,588	Feet	\$2.25	\$3,573.00
WiFi Percival Landing to Heritage Fountain Park				
WiFi Access Points (APs) with AC power	6		\$2,600.00	\$15,600.00
AP Installation	6		\$500.00	\$3,000.00
AP Controller	1		\$6,000.00	\$6,000.00
Fiber Connection/Splicing at Percival Landing	1		\$1,500.00	\$1,500.00
WiFi Subtotal				\$26,100.00
Cost of project before Sales Tax				\$181,204.00
Washington State Sales Tax 8.3%				\$15,039.93
Total Estimated Cost				\$196,243.93

EOPC includes , Pole attachment fees, Power Make Ready, City / County Franchise and or permits and easements.

City of Olympia Downtown

Points of Interest:

- 1) Olympia Community Center/Senior Center @ 222 Columbia St NW (has fiber)
- 2) Boardwalk Apartments/Senior Living @ 510 Capitol Way N (284 units)
- 3) WA State Dept. of Fish and Wildlife Engineering/Real Estate @ 1111 Washington St SE
- 4) Les Schwab Tire Center @ 210 State Ave NW
- 5) Bank of America @ 210 W 5th Ave
- 6) Heritage Bank & Human Resources building @ 201 5th Ave
- 7) Double Tree Inn @ 415 Capitol Way N
- 8) Olympia's Farmers Market @ 700 Capitol Way N
- 9) Olympia Federal Savings @ 421 Capitol Way S
- 10) US Bank @ 402 Capitol Way S
- 11) Labor Temple @ 119 Capitol Way N
- 12) 138 unit/3 story Apt building, under construction @ 123 4th Ave SW
- 13) Olympia "Odd Fellows" Lodge @ 405 Columbia St SW
- 14) Family Support Center of South Sound @ 201 Capitol Way N
- 15) City of Olympia Harbor House-Community Center @ 325 Columbia St NW (has fiber)
- 16) Lassen Electric @ 301 Capitol Way N
- 17) Olympia Taproom @ 312 Columbia St NW
- 18) Graphic Communications @ 109 Columbia St SW
- 19) Childhoods End Gallery @ 222 4th Ave W
- 20) Anthonys Homeport @ 704 Columbia St NW
- 21) Budd Bay Café @ 525 Columbia St NW
- 22) Environ International @ 525 Columbia St NW
- 23) Swalling Walk Architects LLC @ 525 Columbia St NW
- 24) Judge John E Turner Attorney at Law @ 501 Columbia St NW
- 25) Port of Olympia/Engineering (new office under remodel) @ Percival Plaza-606 Columbia St NW
- 26) Seifert Law Offices @ Percival Plaza-606 Columbia St NW
- 27) Pacland @ 606 Columbia St NW
- 28) Wells Fargo @ 606 Columbia St NW
- 29) Cullen Palmer Law Offices LLP @ 606 Columbia St NW
- 30) Cascadia Law Group @ 606 Columbia St NW
- 31) Trinity Capitol Management @ 606 Columbia St NW
- 32) HDR @ 606 Columbia St NW
- 33) Wall & Associates @ 606 Columbia St NW
- 34) Priest Point Townhomes @ 606 Columbia St NW
- 35) Edward Stevens Engineering @ 606 Columbia St NW

- 36) Caskadian @ 606 Columbia St NW
- 37) Clipa @ 606 Columbia St NW
- 38) WSWRA @ 606 Columbia St NW
- 39) Fiddlehead Marina Moorage office @ 611 Columbia St NW
- 40) Capital City Yacht Sales @ 611 Columbia St NW
- 41) Kevin M Byrne/Richard M Millar-Financial Planning/Investment Management @ 611 Columbia St NW
- 42) Panowicz Jeweler's @ 111 Market St NE