

SALTSPRING ISLAND

COMMUNITY FIBER PROPOSAL



LET'S
CONNECT

ABOUT SALTSRING ISLAND

Saltspring Island is approximately 180 square kilometres, situated at the southern end of the Salish Sea (Strait of Georgia), between Vancouver Island and the British Columbia mainland. It is accessible via a 90-minute ferry ride from Tsawwassen, a 35-minute trip from Swartz Bay, and a shorter 20-minute ferry crossing from the town of Crofton on Vancouver Island.

Saltspring is Coast Salish territory and the Coast Salish people have stewarded the island's bountiful natural resources for thousands of years. Saltspring currently has about 11,000 full-time residents. The population swells in the summer, as the island is a popular tourist destination.

The island's population has some unique characteristics that are relevant to its relationship with the internet. There are more seniors and fewer children on the island than is the BC norm. The populace is more highly educated than the BC average, with 69% of those ages 25 to 64 possessing a post-secondary certificate, diploma or degree. The BC average is 55%. Studies show the more educated we are, the more we use the internet. 25% of the island's workforce works from home.

There are several internet providers on Saltspring but there is no fiber to the home network. A 2019 survey showed that 86% of households subscribe to plans that include internet, TV and often a landline phone, with 25% spending more than \$150 a month. Most pay between \$44 and \$180 monthly based on the features offered. Internet speeds are inconsistent and vary greatly depending on the provider, where you live on the island, and in the case of service provided by coaxial cable, how much bandwidth is being used at any given time by all subscribers in your neighbourhood.

According to 2016 census data, Saltspring Island's median household after-tax income is \$52,874 – about \$17,000 less than the BC average. Most income on Saltspring is generated by employment (51.6%), while 13.9 % comes from government transfers.

Saltspring is an island paradise, with beautiful lakes, forests, mountains and beaches. Known for its abundant wildlife, delicious locally grown food and creative self-sufficiency, it is a model for building vibrant, resilient and ecologically aware community.

There are ongoing grassroots projects on the island in the areas of climate justice, ethical forestry, green transportation, regenerative agriculture and more. Saltspring islanders value innovative, collaborative and sustainable solutions for meeting local needs and supporting planetary wellbeing.

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PROJECT OVERVIEW

On Saltspring Island, we are ready to take the Internet into our own hands. Our goal is to build a locally controlled and accountable wired-to-the-premises fiber optic network. The benefits? We will provide affordable, open, safe and secure internet access to our community, while serving as a role model for sustainable and life-enhancing connectivity for all.

With the Connected Coast project slated to bring an open access subsea fiber cable to four landing spots on Saltspring by early 2023, now is the time for us to build the “last mile” of our network, connecting fiber directly to our island’s businesses and homes.

This project is being lead by Let’s Connect Saltspring, a 150-member community group of organic farmers, artists, scientists, educators, entrepreneurs and elders dedicated to local self-reliance and global wellbeing - a vibrant grassroots movement committed to bringing resilient and healthy telecommunications infrastructure to our island home.



PROJECT CHRONOLOGY: ASSESSING THE NEED

Let's Connect Saltspring formed in 2018 in response to a deep concern about the limitations and objectives imposed by commercial telecommunication providers on our island as well as our community's dissatisfaction with available broadband service. Saltspring's existing substandard internet networks use obsolete coaxial cable and ADSL technology deemed by telecoms to be uneconomical to upgrade.

In 2018 and December 2019, Let's Connect conducted formal Internet Service surveys on our island as a part of our commitment to exploring and sharing local connectivity solutions with our community. Of those surveyed, 46% were satisfied with their current service. 52% were satisfied with the speed.

The fastest connection speeds reported were with Shaw's coaxial cable, although there were huge discrepancies. While Respondent 18 was getting a download speed of 620 Mbps with Shaw, another Shaw customer reported a speed of only 1.92 Mbps. Upload speeds regardless of provider ranged from .86 to 21 Mbps. (Once again lucky Respondent Number 18.)

Only 15% of respondents were satisfied with the cost. Survey results also revealed the many ways residents are now using the internet and their aspirations for a better future with advanced digital connectivity.

Let's Connect informed the community of these findings and began discussing how improved broadband might be utilized to address community challenges and opportunities. Engagement included articles and letters published in the local newspaper and on a popular island online forum, meetings with local and regional government and industry, info tables at the local market and two well-attended public events.



DIGITAL ASPIRATIONS

Three key findings emerged from our public consultation process on Saltspring:

Environmental Integrity

- Our community is committed to sustainability, local resilience and reducing global climate change. We understand that wireless technology consumes up to 10 times more energy than wired connections. We see improved connectivity as a means of replacing travel, which would reduce our carbon footprint, and as a support for local renewable energy distribution;

Community Wellbeing

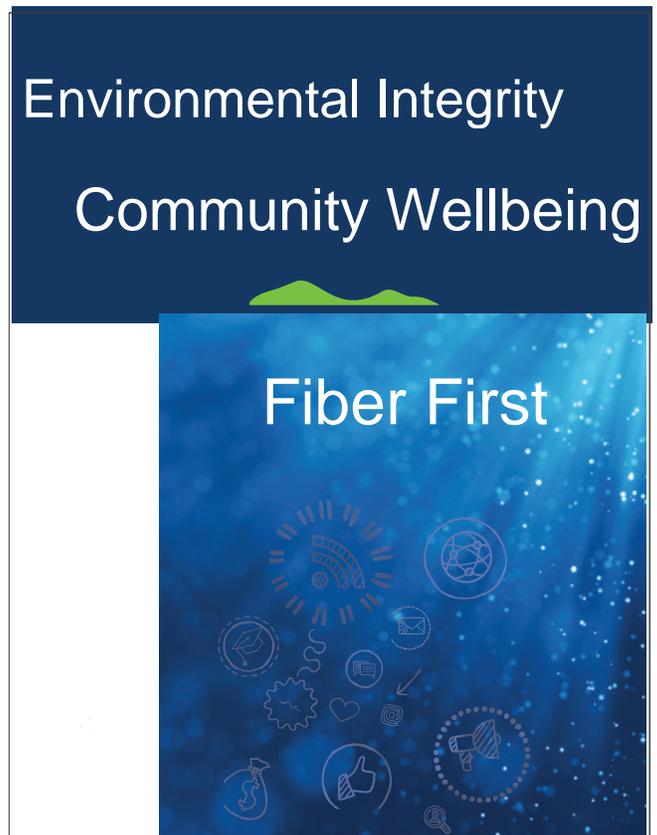
- Our community has a vision of universal Fiber to the Premise (FTTP) advancing the social and economic lives, health, safety and enjoyment of all residents;

Fiber First

- Our community is deeply concerned about electromagnetic frequencies emitted by wireless networks and understands that the benefits of building an FTTP service far outweigh the costs.

What about Cell Service?

In 2019 and 2021, Saltspring residents vocally opposed two wireless tower installations on the island. There was a common concern regarding electromagnetic frequencies emitted by wireless devices and a lack of proven safety for the technology. This perspective shapes the way islanders look at the future of digital capability. For those who choose to use cell phones, a fiber to the home network will allow for better service by way of WiFi calling, and will dramatically improve the delivery of both cell and internet services on Saltspring.





CONCLUSION

Project Benefits

Along with harm-reduction, a locally-owned fiber optic network offers our island:

Speed

Breakthroughs in fiber optics make them up to 20 times faster than wireless 5G, with symmetrical upload and download speeds of up to 200Gbps.

Cyber-security

Wired networks are much less vulnerable to hacking than wireless ones are. This protects our personal data privacy. It also helps secure any critical infrastructure like health care and emergency services connected to our network from debilitating and potentially life-threatening cyber-attack.

Self-Reliance & Energy Efficiency

A locally owned and generated renewable energy source (e.g. solar) and community radio could also be distributed to each premise along with phone, television and internet through the fiber. Renewable energy could be used to power all or parts of the network. Our fiber network could also be used to provide the energy and water monitoring promised by wireless smart city functions.

Resilience

Wireless infrastructure is a known fire hazard, and we are experiencing periods of intense drought. We will build our network to be as resilient as possible to any future windstorms, earthquakes, wildfires or extreme weather incidents.

Economic Growth

- Shifting the internet to community ownership means we control the cost of services and avoid the proprietary equipment, forced upgrades, and expensive data plans imposed by commercial telecoms. The network can also be a viable source of revenue for our community.
- Fiber-based high-speed internet offers increased opportunities for home-based and tech-focused businesses and will attract entrepreneurs.
- Seasonal residents are of central importance to the economy of our island; this sector needs strong internet.
- Green tourism will flourish. More and more people are looking for opportunities to do a “digital detox” and vacation in places with low or no electromagnetic radiation. Wired Saltspring will be a haven for those who want respite.



CONCLUSION (cont.)

From increased educational opportunities to accessing quality telehealth care - the rural community of Saltspring needs excellent connectivity. A locally controlled fiber-to-the-premises network will offer affordable and neutral data delivery. It will limit corporate control over our island's communications services, equipment, and pricing. It will attract young families, generate self-employment, and promote community development by offering the fastest, healthiest, most-energy efficient and secure internet possible.

A fiber optic (glass) cable emits no radiation, will last for decades, and can always be kept up to date. When fiber is connected directly to the home using equipment that safely converts light to electrical data, we may choose to avoid wireless exposure by wiring our devices.

Fiber is superior to wireless or coaxial networks, as only fiber connected directly to the premises provides the symmetrical upload and download speeds essential to encouraging a diverse and vibrant local economy and community.

A wired-fiber green and healthy community-generated network will **put Saltspring on the map** as a role model in self-reliance and as a phenomenal place to visit, live and flourish.





PROJECT TIMELINE & FUNDING REQUIRED

Phase 1: Project Development and Needs Assessment

October 2018 - July 2021

- 1. Defined intent, created promotional materials, built membership
- 2. Conducted Needs Assessment and community outreach
- 3. Hosted public education events
- 4. Built relationships with other fiber-based initiatives

Funding for this Phase

- . Labour for this phase was donated by members of our Core Team. Industry Analyst and Communications Consultant Oona McOuat has given an estimated 4000 hours to project management and development. (Equivalent to \$240,000)
- . Expenses for this phase were covered by cash donations from our members. Web hosting fees and office expenses were paid by Oona.

Phase 2: Infrastructure Strategy and Business Model Framework Design

August 2021 - December 2021

Funding Required for Phase 2

Project Management and Communications	\$25,000
Network Design Study and Plan	\$35,000
Business Model Design	\$15,000
Total Funding Needed for Phase 2:	\$75,000

Phase 3: Network Build

January 2022 - June 2023

Estimated Total Funding Required for Phase 3

Network Construction	\$30,000,000
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(\$6000 per premise x 5000 premises)



NETWORK OVERVIEW

Baylink Networks, a telecommunications-engineering firm and a leader in building and developing fiber optic networks, has provided some initial information on the cost, design and delivery of a fiber network that will efficiently meet Saltspring’s current and future telecommunication needs. The information provided as outlined below creates a launching place for Phase 2 of our project – establishing an in-depth network design study and plan and a business model framework.

Design Overview

Saltspring’s fiber network will consist of two main components, the “Backbone” and the “Last Mile”.



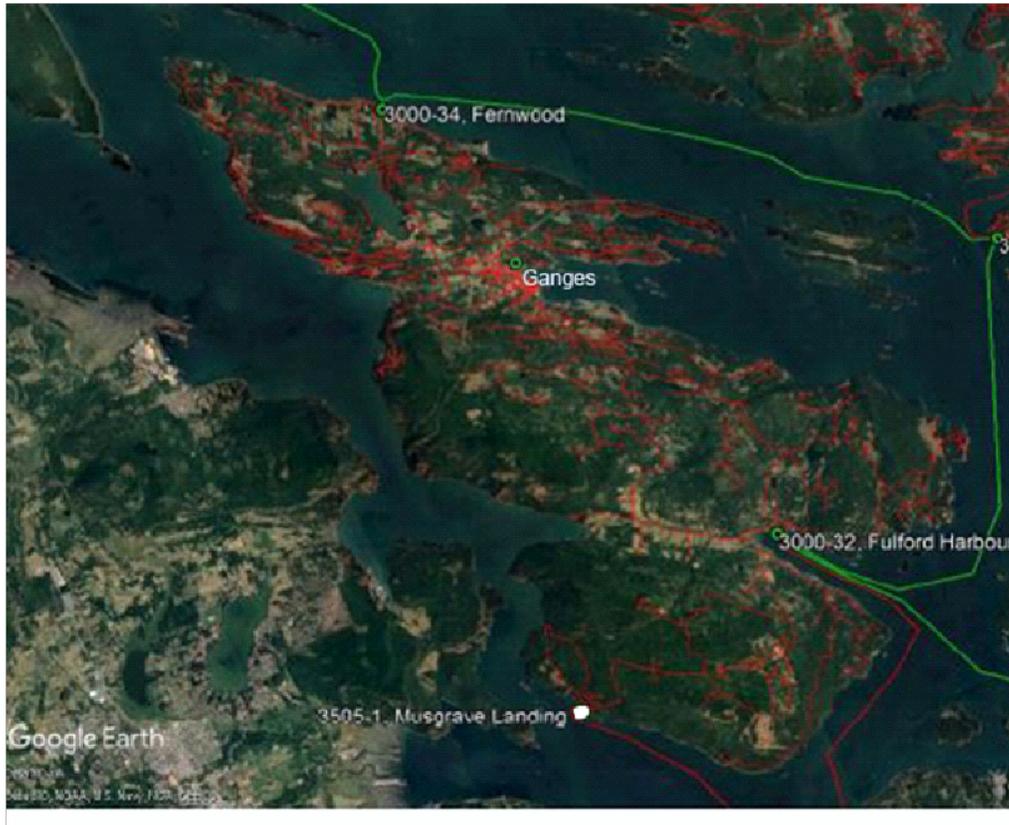
The Backbone

The Backbone consists of very large capacity trunks that connect to multiple fibre-optic lines capable of transmitting large amounts of data. It provides a path for the exchange of information that local or regional networks can connect with for long distance data transmission.

The best option for establishing a fiber backbone on our island is the Connected Coast project, an open-access subsea fibre network that will bring fiber to four landing sites on Saltspring by 2023.



NETWORK OVERVIEW (cont.)



Connected Coast - Proposed backbone submarine fiber path and landing points for Salt Spring
(Estimated Completion 2023)

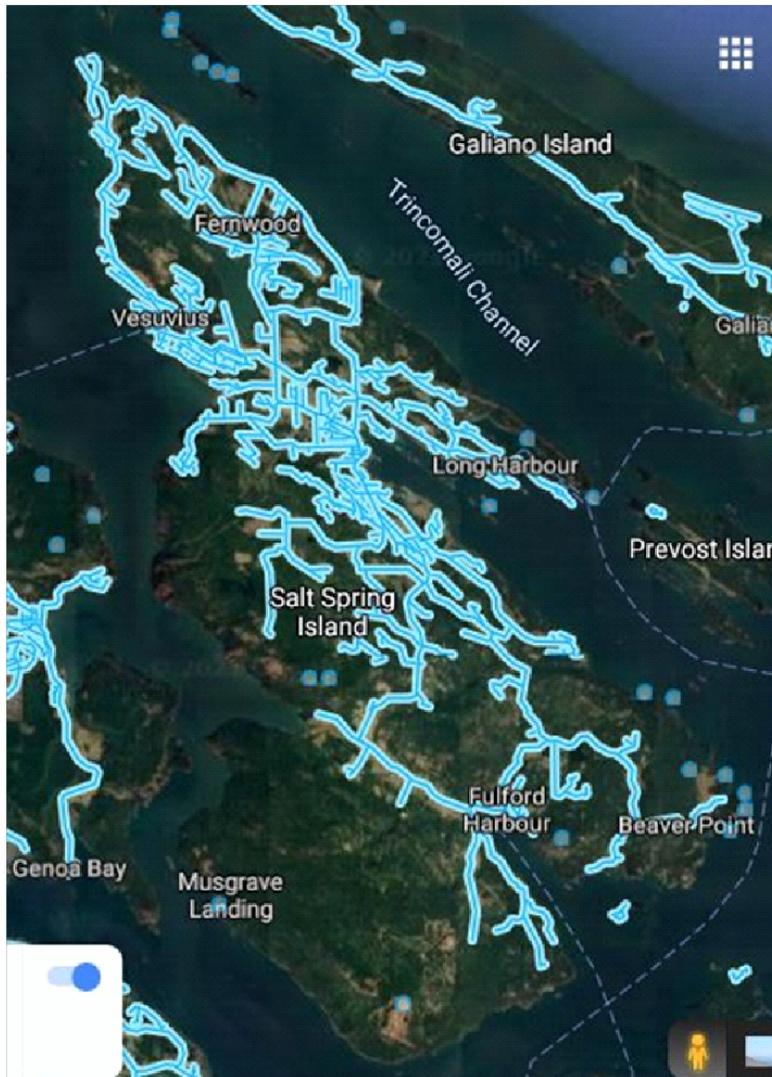
The Last Mile

Census data from 2016 shows there are 4,885 occupied private dwellings on Salt Spring. The number of businesses on the island that require an internet connection is currently unknown. For this proposal, it is estimated that there are a total of 5000 homes and businesses on the island that could connect to our Last Mile.

Salt Spring's network build-out would involve approximately 350 kilometres of fiber placed along every road and an additional estimated 150 kilometres of fiber to get from the road to each house.



LAST MILE STREET MAP



Satellite Street Map of Saltspring from Google Maps

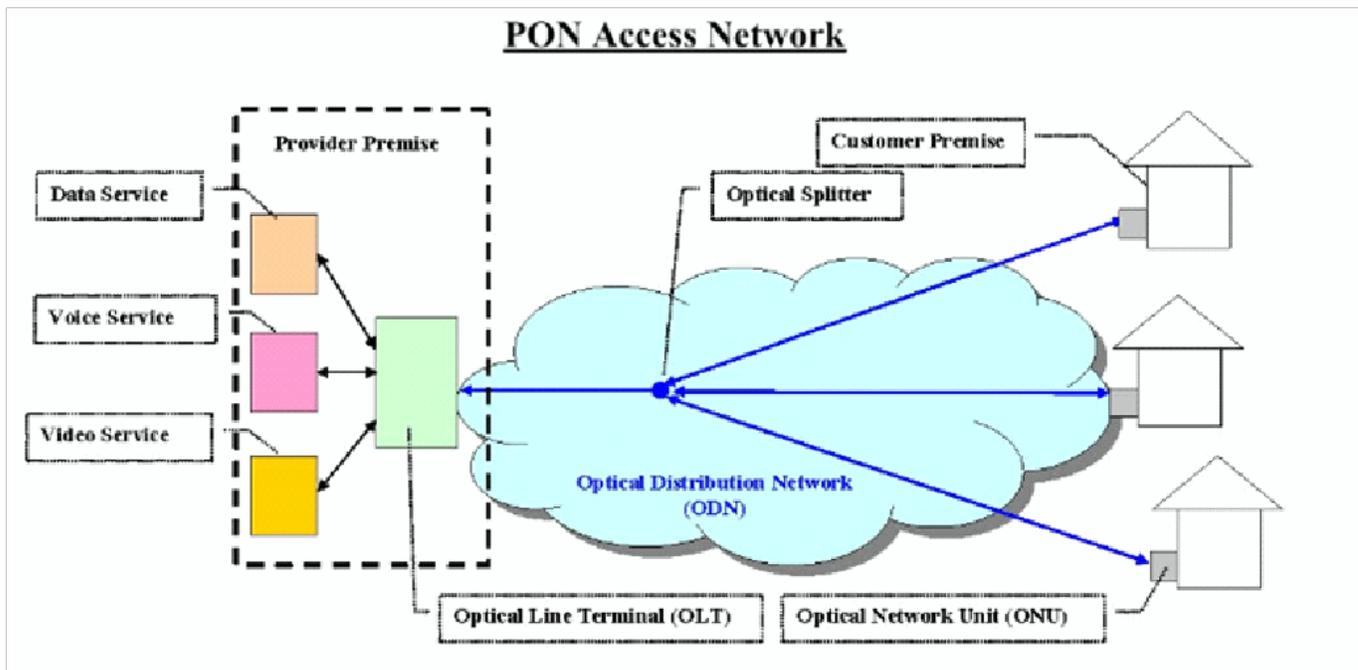


SYSTEM DESIGN

The best technical system for providing the FTTP connectivity has yet to be determined. Options include a Passive Optical Network and an Active Ethernet System. Either accommodate multiple applications simultaneously (internet, telephone, television, and more). We will want to choose a system as well as equipment that will not produce electromagnetic interference (“dirty electricity”) on the wiring in our buildings.

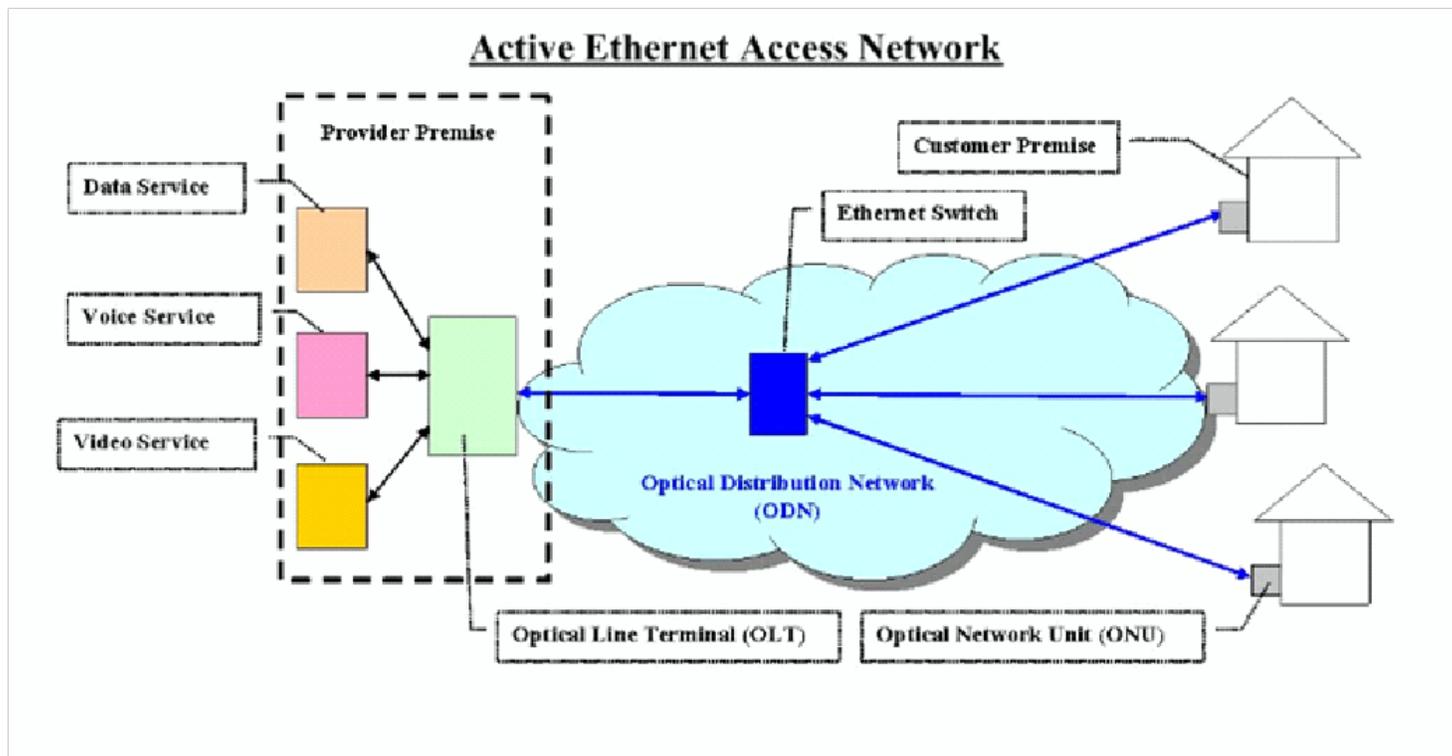
Below are graphic representations from Baylink Networks of the PON and Active Ethernet Systems.

Attribute	G-PON	Active Ethernet
Type of Optical Distribution Network	Passive	Active
Capacity	32+ users per passive tree	
Reach	20km (28db) from OLT	10km (6db) from Active Node
Rates	Up to 2.4Gbps per PON	Up to 1.2Gbps per user
Bandwidth Efficiency	High	Low
Security	AES encryption	AES encryption
Scalability	Up to 32(64) users at 1.2(2.4) Gbps on one PON tree and more users can be supported with more fiber and equipment	Higher capacities and more users can be supported with more equipment





NETWORK DESIGN OPTIONS



Network Construction

At this time, two methods of building the Last Mile have been considered:

- **Aerial** (involving thousands of poles, as well as potentially difficult to secure pole-accessing agreements.)
- **Underground** (likely requiring three crews installing a total of about 600 meters of fiber per day).

Many implications of both methods have yet to be assessed, including community preference, resilience, timing, regulatory processes and ongoing maintenance. important technical considerations.



COST OF CONSTRUCTION

In December 2019, the total network construction cost for Saltspring was estimated by Baylink at about \$4000 per premise for a total of \$20.4 million.

In July 2021, telecommunications industry consultant Paul Daniell suggested that post-COVID construction costs may result in a cost of \$6000 per premise, with an estimated total project cost of \$30 million.

The Strathcona Regional District has budgeted \$5600 per premise for a fiber build beginning in September 2021 on Cortes Island.



Affordable Community Housing at Salt Spring Commons



BUSINESS MODEL

Operating Budget

Initial analysis tells us that once constructed, monthly operating costs (gateway, staff and overhead, maintenance and equipment, insurance, and other expenses) would be about \$58,000.00.

The table below created by Baylink is the operational budget for the network based on a staff of two technicians, one manager and three administrative staff. The budget includes expenses for two vehicles for the technicians and all of the appropriate tools, as well as office overhead.

General Monthly Expenditure:	
Description:	Monthly Cost:
Gateway connection	\$8,000.00
One Call and Locates	\$100.00
Maintenance and Repairs	\$625.00
Office Space	\$3,000.00
Utilities	\$400.00
Vehicles and Tools	\$2,000.00
Fuel	\$600.00
Ferry Costs	\$300.00
Additional Vehicle allowance	\$400.00
New Equipment Accrual	\$1,666.00
Insurance	\$2,966.00
Software	\$200.00
Staffing	\$37,859.40
Total:	\$58,116.40
Total Annual Budget:	\$697,396.80



REVENUE & PROFIT

This valuable broadband network design would be profitable to operate. Estimated monthly revenue would range from a conservative \$77,000 (1,100 subscribers averaging \$70 in fees) to an aggressive \$495,000 (4,500 subscribers averaging \$110 in fees).

Residential ISP	Take Rate			
	30%	60%	90%	Aggressive Triple Play @ 90%
Average Monthly Billing	\$70.00	\$70.00	\$70.00	\$110.00
Number of Subscriber	1500	3000	4500	4500
Total Monthly Revenue	\$105,000.00	\$210,000.00	\$315,000.00	\$495,000.00
Total Annual Revenue	\$1,260,000.00	\$2,520,000.00	\$3,780,000.00	\$5,940,000.00

*The estimated cost to run this network annually is approximately \$696,000.00, which means a take rate of a bit over 16% (800 subscribers) would be the break-even mark. Table design by Baylink.

The tables below show a conservative and an aggressive revenue model. The models are missing loan repayments, cost of capital and interest.

Conservative Revenue:		Aggressive Revenue:	
Average Monthly Billing:	\$70.00	Average Monthly Billing:	\$110.00
Number of Subscribers:	1100	Number of Subscribers:	4500
Total Monthly Revenue:	\$77,000.00	Total Monthly Revenue:	\$495,000.00
Total Annual Revenue:	\$924,000.00	Total Annual Revenue:	\$5,940,000.00
Summary:		Summary:	
Total monthly expenditure:	\$58,116.40	Total monthly expenditure:	\$58,116.40
Total monthly revenue:	\$77,000.00	Total monthly revenue:	\$495,000.00
Gross monthly profit:	\$18,883.60	Gross monthly profit:	\$436,883.60
Gross annual profit:	\$226,603.20	Gross annual profit:	\$5,242,603.20



OWNERSHIP MODEL

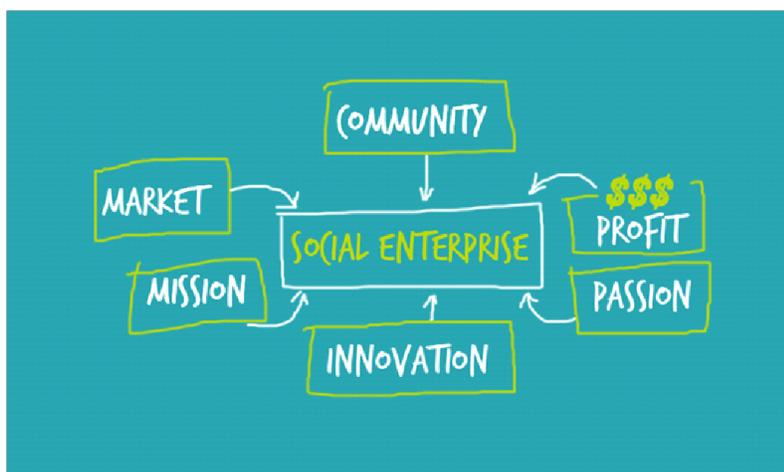
Determining the most effective and resilient ownership model is an important aspect of insuring our network remains independent from the influence of the major telecom providers and fulfills the vision and the needs of our island community.

Although more in-depth research is required, at this time, Let's Connect is exploring two ownership options:

Model One – A Locally Owned and Operated Social Enterprise

This model would involve contracting out the network build and maintenance, and working in collaboration with an established Internet Service Provider who will white label their existing services as the Saltspring brand. This option would guarantee that network profits and control stay in our community.

In considering this option, the community must ensure it has the managerial and financial skills to play a successful, central role. The legal structure of the social enterprise could be a cooperative, for-profit or a non-profit.



Model Two – Joint Public-Private Partnership

We have been invited to create a partnership with the Connected Coast and CityWest, a small, BC based, rural community telecommunication specialist, to build and maintain the network. The details of this model have yet to be determined.



THE NEXT STEP

We are now ready to hire an expert team to examine the broadband situation and the detailed physical environment on our island, and produce a technical implementation plan and appropriate business plan to bring quality connectivity to Saltspring.

This study will support survey and construction planning, budget and economic modelling, and hazard identification and risk management for our project.

A five-phase approach is recommended:

- **Phase 1:** Data Gathering
- **Phase 2:** Data Assimilation and Consolidation
- **Phase 3:** High Level System/Service Requirements Design
- **Phase 4:** Complete Last-Mile Fiber System Design
- **Phase 5:** Report Delivery and Recommendations

The end objective of this study is to recommend a project design and business model and to establish estimated costs to construct and operate a quality FTTP system on Saltspring Island.



The Saltspring Farmer's Market - a successful, home-grown approach to building a thriving local economy

MEASURING SUCCESS

These milestones will allow us to measure our project's success:

- **Take rates.** How many households and businesses have connected and subscribed to our network?
- **Diversity of institutions on the network.** Are the benefits of connectivity reaching all corners of our community?
- **Financial stability.** Is the network's business model sustainable based on take rates and returns on investment?
- **New businesses.** Have new companies chosen to set up shop in our community? Are existing businesses taking advantage of new opportunities?
- **Mutually beneficial partnerships.** Have partnerships been formed with stakeholders that maximize benefits and mitigate risk for all parties?
- **Engaged community.** Is the community involved in and supportive of the project? Does the project work to serve our community's highest needs and potential?



The View from the top - Mt. Maxwell, Saltspring Island

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