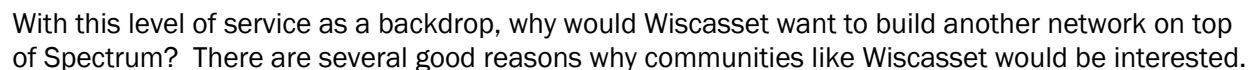# Wiscasset

Wiscasset citizens have begun to organize a broadband committee and has done some good work with initial involvement of at least one member of the select board. Originally a champion for fiber and a regional approach in this planning grant process, both goals were reaffirmed when a larger broadband committee was formed. This plan includes a full fiber build to every home in Wiscasset. As part of this overall report, a regional plan is also included.

Wiscasset is covered by Spectrum cable/phone/internet service. The map from Spectrum indicates their service coverage area to be virtually ubiquitous across the community.

CHARTER TOWN OF WISCASSET, ME SERVED STREETS

With this level of service as a backdrop, why would Wiscasset want to build another network on top of Spectrum? There are several good reasons why communities like Wiscasset would be interested.

Own your Own

Any privately-run company, who answers to investors and shareholders, needs to maximize profits. Sometimes, this goal does not align with consumer demands or needs. In Maine, across the many surveys that Axiom has conducted, Spectrum is considered expensive. There are also complaints about price hikes after low introductory offers, and a number of other issues including variable speeds and reliability. Owning your own infrastructure gives the community more leverage with

pricing, customer service expectations, and speed and reliability. Many communities who feel left behind, or want to have a leg up, are investigating publicly owned networks as a way to address these issues.

Better Technology

Installing fiber instantly differentiates Wiscasset from other communities.   Fiber optics is the industry choice, offering state-of-the-art connectivity, reliability and speeds. While co-ax cable providers like Spectrum continue to upgrade their systems, the technology has significant limitations that can lead to frustrating user experiences, especially during peak usage times when the system gets bogged down by many users using a "shared line" with limited internet to handle all the traffic. During these times, users who conduct speed test often complain that they are paying for 100Mbps service and yet may be receiving a good deal less, sometimes only 10% of their service contract.

Fiber Benefits

- Best in class speed and reliability
- Handle 21st Century applications and uses
- Futureproof

Fiber offers a number of benefits. Because of its properties (internet delivered over glass vs copper), unlimited speeds are attainable. Current fiber technology that you can buy off the shelf can deliver 10,000Mbps to a home or business. Gig service (1000Mbps) is common, and fiber can also deliver true symmetrical service, where both the upload and downloads are equal. With this type of speed, applications and on-line tools are beginning to utilize the speed and reliability that fiber technology delivers. It will not be long before unimaginable connectivity opportunities like 3-D holographic television will be available- having the right delivery system- fiber- makes these innovations possible. With this type of capability, fiber is virtually futureproof. If you invest in fiber today, it's very likely that demand would not outrun the capability of the service for 40 years or more.

Community Benefits

Small rural communities are struggling with their identity and the challenges of ageing populations, out migration of young families and a struggling downtown and economy. Fiber can make towns cool and connected, helping to revitalize economic development, especially for those that can work from home; increase telemedicine and educational service delivery via fiber; and help attract or retain young families who understand the value of a fiber connection.

## Wiscasset's Place in the regional economy and ecosystem

There are many reasons this proposal should be seriously considered by Wiscasset thought leaders. Beyond the benefits listed above, Wiscasset is a regional hub, with 10s of 1000s of vehicles passing through the heart of the city along Route 1 and many amenities that include historical landmarks, exceptional dining, shopping experiences and accommodations for those interested in exploring the area. Wiscasset has done a lot to create an energetic, forward looking community. For a town of its size, it has a lot going for it. Taking the next step would be to consider a significant investment in its people by bringing world class fiber optics to each home and the business corridor. Axiom believes strongly that a thriving Wiscasset positively affects surrounding communities and creating better connectivity can surely help the town by attracting new families and entrepreneurs, helping the older population remain in their homes longer, strengthening Wiscasset's role as a regional hub and

economic driver while opening up a whole world of communications and entertainment possibilities and the Internet of Things for the citizens who currently call Wiscasset their home.

Fiber Plan

While there are unquestionable benefits of fiber and the community owning any new infrastructure, the cost and upkeep of a system are important considerations for the Broadband Committee and Town Officials to consider.

Wiscasset Fiber Construction Maps
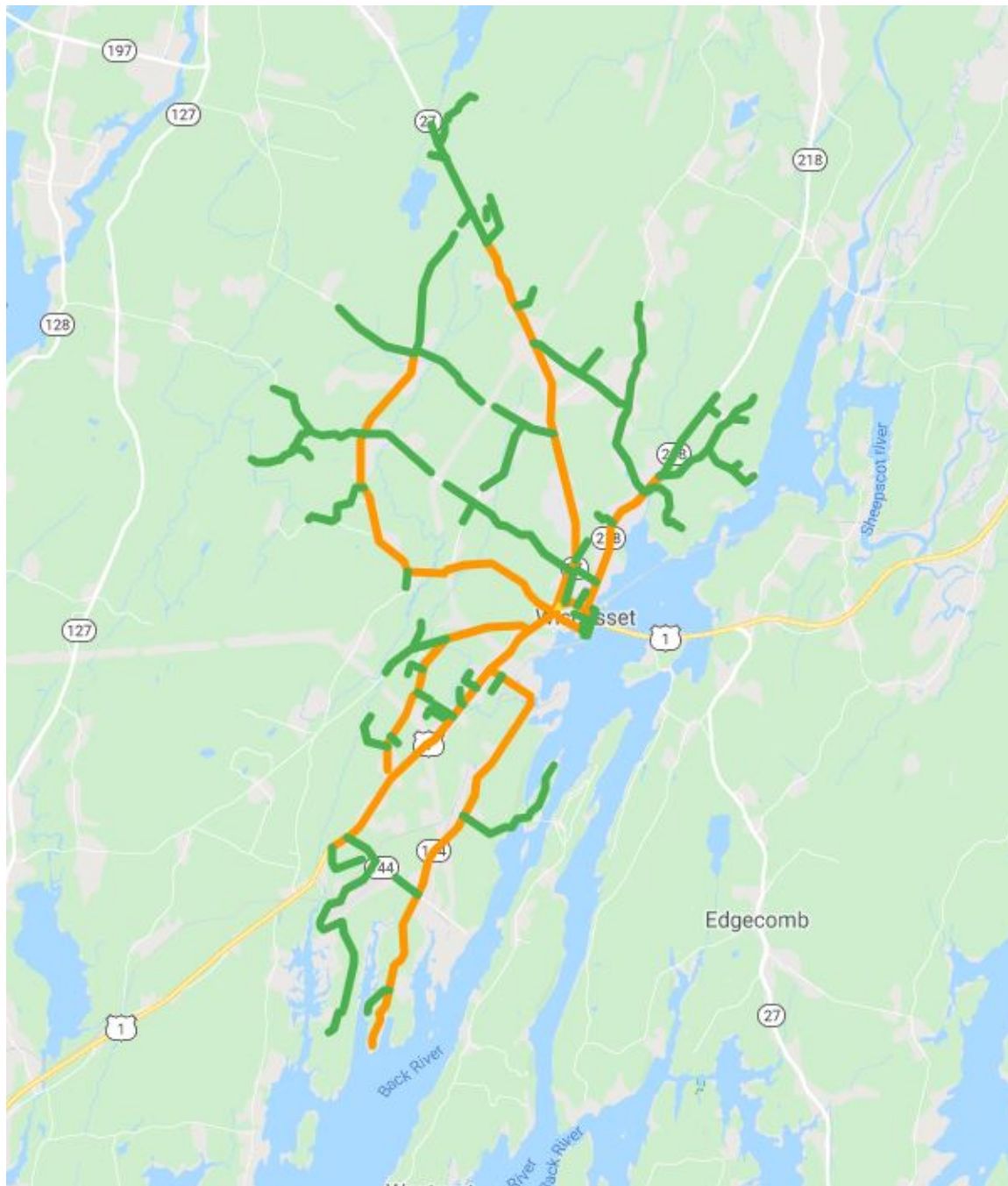
Orange= High Capacity Fiber Trunk Lines
Green= Lower Fiber Count Drop Lines

Fiber Map with locations of homes
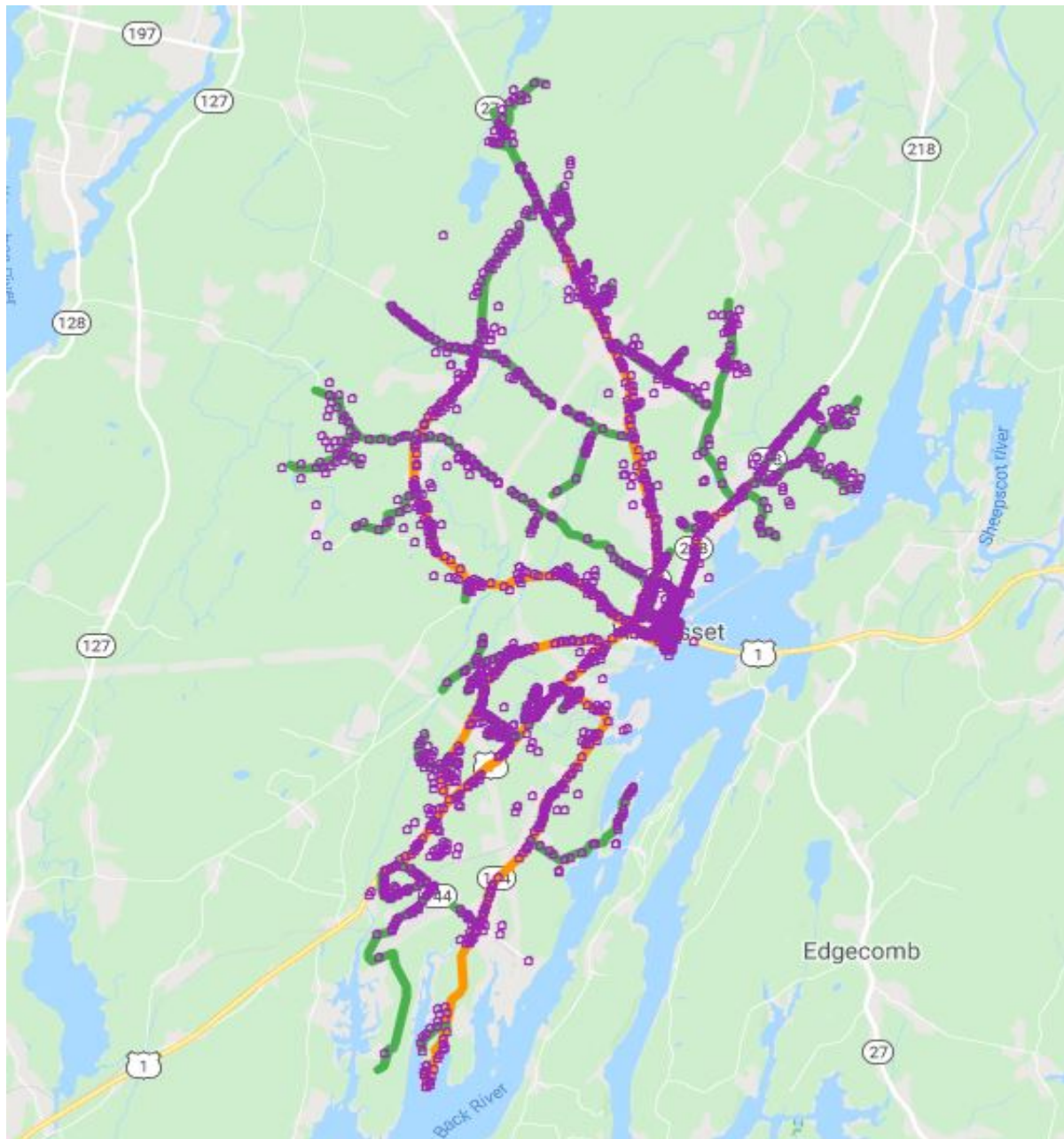
Purple circles= locations of homes or businesses

Cost

Category Description		Cost
Materials		$2,606,276
Pole Licensing Application		$80,234
Utility Pole Make Ready	Estimate	$397,575
Utility Pole Replacement	Estimate	$530,100
Regen Hardware		$404,905
Customer Premise Drop Cable	Estimate	$223,960
Customer Premise Installations		$1,527,000
Total		$5,770,051

The total cost of the budget contains several line items that may change and lower the cost of the project overall. A lot of additional costing information will be learned by proceeding with the pole licensing process. For example, we have made some assumptions based on past experience, but the true understanding of the costs associated with pole attachments and make-ready - the cost of other users of the poles moving their lines to "make-ready" a space for a new cable - only will come through the licensing process. In addition, pole replacement costs are estimated and will not be known till the pole make ready work is completed.

This budget contains the hardware for 100% of homes to be connected, however, we calculate a take rate of 40% in year one, which would reduce the up-front cost of customer premise installations by approximately $600,000. Along with other potential reductions, we would expect the cost of construction to be $5M or less.

Breakdown of Cost Components

Materials
The materials line item is the total cost of all the materials and equipment needed to install the system minus the CO/Regen equipment and the Customer Drop Cable, which are located on separate line items.

Pole Licensing Application
This plan requires the placement of fiber optic cabling to be placed on existing utility poles across the community. In order to receive approval, a several step process of several months is required, but begins with the application. The cost of the application is based on the number of utility poles you would like to attach to.

Utility Pole Make-Ready
Make-Ready is the cost of making the poles ready (make-ready) to accept a new fiber cable. In order to install new fiber optics cable on utility poles, a licensing process is in place that evaluates each pole for readiness to accept a new cable. Each provider (other than the electrical) would move the current lines to accommodate a space for a new cable. The cost of this process is estimated in our calculations and can change depending on the application process costs associated with each pole.

Replacement Poles (10%)

We estimate that 10% of the poles, through the licensing process might need replacement. There are two major reasons for pole replacements. First, the amount of equipment or utility lines on a pole deem it necessary to increase the height of the current pole to allow for an additional line to be placed on it (pole too short). Or the current pole is aged to the point where it would be unsafe to place the additional line strain on the pole without a replacement pole. (aged poles). We make an estimate, but these the evaluation of each pole will take place during the pole licensing process.

CO/Regen Hardware & Installation
CO refers to Central Office, which is a term of art that Internet Service Providers use to describe where the equipment that would be needed to power the system and where the internet would be distributed from to each home. Regen hardware is the equipment that would be used to power the internet system and control each individual connection through this central system. These costs also include a heated and cooled utility shack that would house the equipment.

Customer Premise Cable
This is an estimated cost of the fiber to connect each home from the street to the home.

Customer Premise Installations
These costs are associated with the equipment needed at each home. This is the cost of connection 100% of the homes.

Revenue and Expense Model

As part of Axiom's commitment to our mission to help rural communities more fully understand what ISPs are facing serving a small community, we have created a revenue and operational expense budget that helps the community and the ISP better negotiate an operating agreement through a Public-Private Partnership, should the community choose to own the fiber network.

It's important to understand that these are just an illustration of how Axiom would envision the feasibility of operating a system and what potential customer rates could look like. The potential revenue is based on service levels and take rates that are solely Axiom projections and are intended for illustration only, each provider would have their own revenue and cost models. However, these numbers can show you generally what a provider might expect if the town were to build a new fiber system and importantly, how much capital participation, if any, might be expected from the provider.

Revenue

Year Round

Rate Group	# of Subscribers	Monthly Rate	Annual Revenue
25/5Mbps	508	$69.99	$426,659
50/10Mbps	145	$79.99	$139,182
100/20Mbps	73	$109.99	$96,351
Business Class-50/50M	5	$109.99	$6,599
TOTALS	725 (40%)		$662,193

Seasonal

Rate Group	# of Subscribers	Annual Rate	Annual Revenue
25/5Mbps	63	$713.99	$44,981
50/10Mbps	18	$815.99	$14,688
100/20Mbps	9	$1121.99	$10,098
TOTALS	90		$69,767

Total Revenue		$731,960

- The Rate Groups and monthly cost are entirely Axiom's and may differ depending on provider
- Take-rate is the estimated number of homes we believe would take service. In Wiscasset's case we believe a 40% take-rate is achievable- in year one, with a steady rise as people in town convert slowly from Spectrum and Consolidated

Expenses

Yearly Operating Expenses		Yearly Cost
Bandwidth		$111,456
Phone Technical support		$10,641
Administrative support		$5,608
FC support (local)		$37,868
FC support (Remote)		$144,212
	TOTAL	$309,785

Bandwidth is the cost of bulk wholesale internet.
Phone tech support is the estimated cost to maintain phone support for customers for the year.
Administrative Support is the cost of billing/collections and support for billing questions.
Local Field Crew is the cost of Axiom hiring a local person to conduct simple trouble shooting at the home. Field Crew (Remote) is the cost of dispatching Field Crew from Machias to deal with more serious issues- breakage, splicing, etc.

Three important takeaways of this section:

◊ How critical take-rate is to the overall viability of the project (less subscribers, less opportunity for profits)- In the case of Wiscasset, the number of homes would be attractive to a provider
◊ The monthly operating expenses are generally fixed, no matter the number of subscribers (there is not a direct correlation between subscriber counts and expenses)
◊ The yearly profits meet industry standards (50% plus)

Final Thoughts

There are three options for Wiscasset to consider- all are dependent on strong support from the select board, because all choices will require the participation (as a champion and as a financial supporter) to varying levels depending on the path forward.

- Working with Spectrum
    - Spectrum maps can be notoriously inaccurate, so there may be a few small pockets that need to be filled in, Spectrum may help with these areas
    - Investigate your franchise agreement with Spectrum to ensure you are maximizing the value of that contract
        - Leverage the contract to bring Spectrum to the table
- Installing new Fiber optic system
    - State-of-the-art system that will last for at least 30 years or very likely much longer
    - Gives Wiscasset a competitive advantage
        - Attract new families
        - Build home-based businesses
        - Telehealth and educational opportunities
        - Options for cutting cord and cost savings on communications bill
- Work with an alternative provider
    - With LCI having fiber in or near Wiscasset, working with LCI would be a good first step
        - Mindful that LCI model typically has them owning their own fiber
        - LCI is typically willing to participate with capital, in the right circumstance