

## Somerville

There are several ingredients that can make a Broadband expansion possible. One of the most indispensable of those ingredients is to have champions that will drive the process. Somerville has such a group of champions and are holding regular BB meetings in the community. Inviting providers, soliciting feedback from town citizens and reporting to the community and select board about the committee's vision, this group is passionate about finding a solution to this pressing problem.

One unique and difficult problem to overcome is that Spectrum cable service does not provide its service anywhere in the community. Unlike the other six communities in the planning process, this likely means that they will have to build ubiquitous service across the whole community. The plans below reflect that reality.

### Current Service Provider: Consolidated Communications

Consolidated service is uneven, leaving much of the community with less than adequate service. The chart below, provided by Consolidated confirms what citizens are feeling.

Speed/Bandwidth [Max Available]	# Locations	% available
768K/3M	71	20.7
7M	57	16.6
10M	77	22.4
20M	28	8.2
25/2M	43	12.5
40M	11	3.2
60M	1	.3
80M	25	7.3
NS	30	8.8
TOTALS	343	100.0

Out of a total of 343 homes, almost 9% (30) homes are unserved and 60% (205) homes do not meet the 10/1Mbps standard- a standard, well below the FCC standard of 25/3Mbps.

*Only 23% of residents can achieve close to the 25/3Mbps or above the FCC federal standard.*

As the internet becomes more and more integral to the lives of rural Mainers, Consolidated coverage is less than optimal.

### Current Service Provider: Others

There are only two other choices which are expensive and unreliable. Using your phone to access the internet or buy satellite service. As one Somerville resident described the current situation:

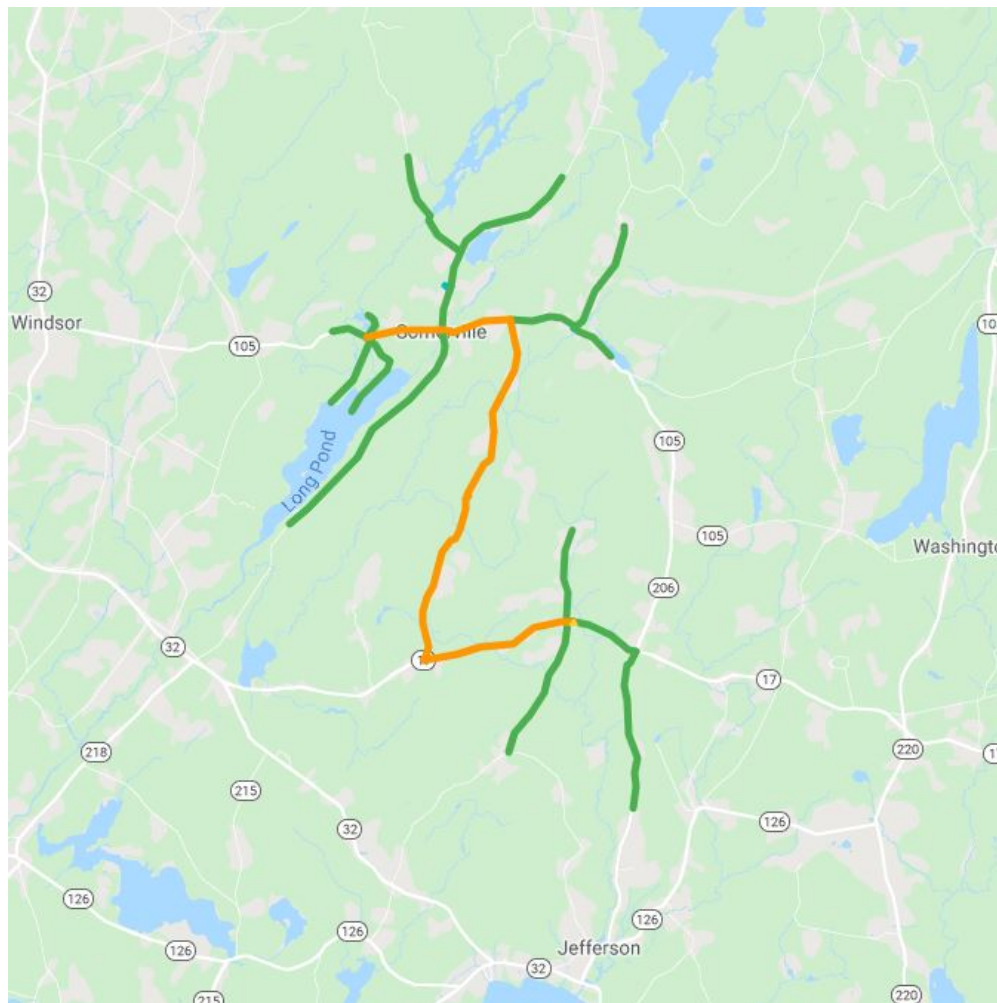
*"It's still slow, despite the fact that I have opted for a more costly plan. There are NO choices in my town."*- A Consolidated Customer testimonial from Somerville.

## The Plan

The plan we recommend is fiber optics and is capable of reaching every home in Somerville, and regardless of their location would be able to receive the same level of reliability and service as anyone else in the community.

- Equal Access to All- no matter where you live in Somerville your home would have access to the same speeds and reliability as any other resident
- Fast & Reliable- The system would be built to withstand fluctuations in demand, would deliver lightning fast speeds and use the most reliable technology on the market
- Futureproof- This technology would allow Somerville to never fall behind again, with little to no upgrades to the system over the next 20 plus years

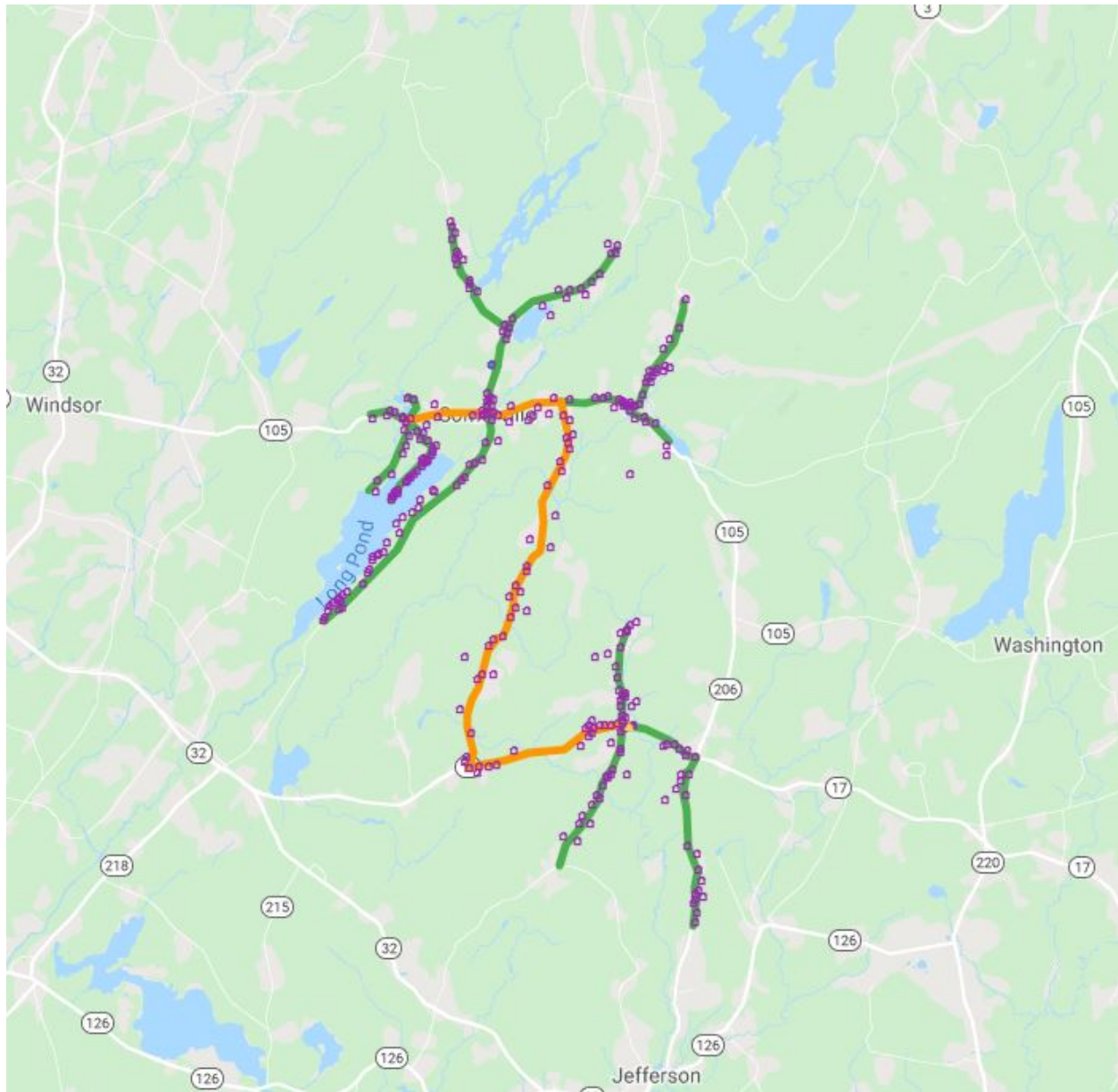
The map does not depict each connection from the fiber to the individual homes. However, we have built into our pricing model connections to every home that wants service. Any home is capable of receiving a connection from this construction design.



Somerville Fiber routes

Orange line= High Count Fiber Trunk Line- Green lines depict lower count Drop Lines

Fiber Lines with homes



This is the same fiber map with E911 addresses added to give you a good visual of the density of homes across the community. The map does not depict each connection from the fiber to the individual homes. However, we have built into our pricing model connections to every home that wants service. All homes would be capable of receiving a connection from this construction design.

## Cost

The projections for this project are based on a number of assumptions. Please remember, this is a desktop estimate and additional, significant work would need to be completed to give the community a final cost that eliminates all of the variables. The different cost components will give the reader a good idea of where estimated cost would possibly change.

Category Description		Cost
Materials		\$761,412
Pole Licensing Application		\$32,039
Utility Pole Make Ready	Estimate	\$167,625
Utility Pole Replacement	Estimate	\$223,500
Regen Hardware		\$109,058
Customer Premise Drop Cable	Estimate	\$33,110
Customer Premise Installations		\$225,750
Total		\$1,552,493

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.

Additionally, a contingency budget has not been included with this budget to account for unforeseen construction cost overruns.

### Breakdown of Cost Components

#### Material

The materials line item is the cost of all materials and equipment required for the construction of the project, less the Regen hardware and Customer Drop cable which have 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

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.

Rate Group	# of Subscribers	Monthly Rate	Annual Revenue
25/5Mbps	148	\$69.99	\$124,302
50/10Mbps	42	\$79.99	\$40,315
100/20Mbps	21	\$109.99	\$27,717
Business Class- 50/50M	5	\$109.99	\$6,599
TOTALS	211 (70%)		\$192,335



- The Rate Groups and monthly cost are entirely Axiom and may differ depending on provider
- Take rate is the estimated number of homes we believe would take service. In Somerville's case we believe a 70% take rate is achievable- this makes the project more viable.

## Expenses

Yearly Operating Expenses		Yearly Cost
Bandwidth		\$27,864
Phone Technical support		\$2,755
Administrative support		\$1,452
FC support (local)		\$9,804
FC support (Remote)		\$37,336
5% gross Rev returned to Community	(negotiated amount)	\$9,617
	<b>TOTAL</b>	<b>\$88,828</b>

**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 FC from Machias to deal with more serious issues- breakage, splicing, etc.

**Revenue return of 5%** is Axiom's commitment to give 5% of Gross revenue- \$9,617/year- back to the community for the life of any contract.

Three important takeaways of this section:

- ◇ How critical take rate is to the overall viability of the project (less subscribers, less opportunity for profits)
- ◇ 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 are below industry standards

## Final Thoughts

- Fiber Optics is the only solution for Somerville
  - Building upon Consolidated old copper and limited DSL capabilities is not a viable solution
- Given the small number of homes, a significant public subsidy will be required to achieve success
- If owning the internet system is an important goal this will limit the number of ISPs who will work with you
- A regional approach may be viable to reduce costs and risks, but the amount of effort and time for such an approach would be years away- are citizens willing to wait?
- The town might want to consider a USDA grant for those homes that have less than 10/1Mbps service from Consolidated- able to discuss pros and cons when ready