Southwestern Waldo County
Broadband Coalition Report

Freedom
Liberty
Montville
Palermo
Searsmont

Feasibility of various approaches

Submitted by:

Mark Ouellette
mark@connectwithaxiom.com
(207)272-5617

April 2022
# Table of Contents

**Background**  
P.3  

**Technology Options**  
P.4  

**Summary of ISP Responses**  
P.10  

**Community Owned Public Utility**  
P.11  
- Benefits  
- Overview of Axiom and GWI approach  
- Axiom Muni-owned Model  
- GWI BUD Model  

**Privately Owned Networks**  
P.20  
- Unitel  
- Charter/Spectrum  
- Consolidated Communications  

**Fixed Wireless**  
P.23  
- Red Zone  

**APPENDIX A:** Axiom Model-  
- Freedom  

**APPENDIX B:** Axiom Model-  
- Liberty  

**APPENDIX C:** Axiom Model-  
- Montville  

**APPENDIX D:** Axiom Model-  
- Palermo  

**APPENDIX E:** Axiom Model-  
- Searsmont  

**Appendix F:** GWI Proposal  
P.62  

**Appendix G:** UniTel Proposal  
P.111
Background

The Southwestern Waldo County Broadband Coalition (SWCBC) is a group of volunteers from five adjacent communities searching for solutions to improve broadband internet service either together or individually as separate towns. Through the process, the group representing the towns of Freedom, Liberty, Montville, Palermo, and Searsmont has created a strong working relationship that may lead them to work together toward one solution to serve all five or a combination of five towns. At the same time, it is also possible that individual towns may take different approaches and find a solution that works for them individually as a community. This report was commissioned to help the SWCBC make informed decisions about the options and how to proceed.

This report will explore four different approaches:

- A private company fiber build
  - Unitel
  - Charter/Spectrum
  - Consolidated Communications

- A fiber hybrid Public-Private partnership- where some assets are owned by the town(s) and some owned by the private company
  - I do not believe that Consolidated Communications is offering this model

- A fiber Public-Private Partnership- where the assets are 100% owned by a Broadband Utility District or the communities
  - GWI- A public utility- BUD
  - Axiom- individual town options

- A privately owned fixed wireless system
  - Red Zone

In addition to these fundamental areas of feasibility, Axiom was asked to assess the practicability of creating a utility district where all five communities joined together under an interlocal agreement, form a BB Utility Board, and manage the system with a chosen operator who would also be a provider of service on the network, or by promoting an open-access network in which multiple operators are invited to provide service on the network. This will give a more detailed analysis of the Public-Private partnership model where the assets are owned publicly, and ISP(s) operate on the network under a long-term agreement or competitively with other providers also operating on the system.
Technology Options

This section is intended to help community leaders and community members understand the benefits of fiber optics more fully. It explains fiber superiority over other technologies, including DSL and coaxial cable -- the two technologies currently used to provide internet service throughout Maine. It contrasts the benefits of fiber optic over other emerging technologies, including 5G and Low Earth Orbiting (LEO) satellites.

Fiber Optic Glass Cable

History and Resiliency

Dating back to the 1960s, with the invention of the laser, Corning Glass Works created glass fiber that could transmit a light signal not for centimeters but for miles. Fiber optic cable technology has any communication medium's highest capacity and longevity.

Regarding capacity, Susan Crawford, in her authoritative book *Fiber: The Coming Revolution and Why America Might Miss It* (Crawford), observes that “a single fiber optic cable can carry the entire weight of data on the internet.” (Crawford at 22) One single strand of glass can carry three billion phone calls or web sessions. (Crawford at 27)

As to the issue of longevity, fiber optic cables installed 40 years ago in cities around the world still maintain high-quality performance. Glass fiber is stable. It can withstand use without any degradation for decades. (Crawford at 27)

The Mechanics

An individual optical fiber (the size of a human hair) is surrounded by several layers of material that strengthen and protect the fiber, making it virtually indestructible. A fiber-optic cable can contain any number of "fibers" ranging from one to several hundred.

![Diagram of fiber optic cable structure]

- **Outer Jacket**: Insulates fiber from outside objects
- **Kevlar Strength Members**: protects fiber from breakage under stress
- **Coating**: protective layer
- **Glass or Plastic Cladding**: surrounds core with low refractive index to encourage Total Internal Reflection of light
- **Core**: ultra pure glass that transmits light

Fiber Optic Network Systems: The Best Choice for High-Speed Internet

Internet and communication systems installing fiber optics are designed, engineered, and built for decades of future use. Broadband committees, regional municipalities, and state agencies are often asked about the differences between the available network technologies and why fiber technology is a more desirable network solution.

- Fiber supports the increasing demands of 21st-century technology and provides associated economic opportunities
- Fiber advances communities through its high-speed symmetrical connectivity
• Fiber, over the long run, is a less expensive technology, yet it represents a valued asset when community-owned and operated by a regional municipal utility
• Fiber represents a tested and reliable long-term investment in a community's future

Just one visual example will underscore the capabilities of a fiber connection versus a legacy copper network connection. With today's technology, one fiber – the thickness of a human hair – can carry more data than 4,000 top-speed DSL lines.

Contrasting DSL and Coaxial Cable
Homes that are served by copper, either through DSL from the phone company or with coaxial cable from the cable TV company, have significant limitations in service because of how each technology works.

DSL
In the case of DSL, the driving technology is outdated. The old copper lines (sometimes called “twisted pairs” because they are made of pairs of copper twisted around one another) are susceptible to corrosion that severely impacts the reliability of a subscriber connection. Furthermore, the distance DSL can push a signal is limited to 3 miles. Those homes furthest from the telco equipment face connections that often cannot reach even an inadequate 3Mbps of download speed.

Coaxial Cable
In the case of coaxial cable (coax), used by TV cable providers, capacity is also an issue, but for different reasons. Coaxial cable is not as scalable as a fiber-optic system—for every step up in speed, equipment needs to be upgraded both at the home and the cable plant. Furthermore, cable systems were designed primarily to push data down to the customer (e.g., delivering television to the home), an appreciably different model than the emerging data needs for telecommuting and interactive video, which require high bandwidth in both directions (referred to as symmetrical download and upload speeds). Finally, of significant concern, cable is a shared system. The signal strength any individual user receives depends on how much bandwidth is being drawn by other users connected to that line of cable. Cable companies commonly oversaturate their subscriber networks, leading to inconsistent speeds for the end-user. Additionally, a user’s distance from the node or box where the coax is connected will also dictate the speed a user receives. This explains why some users at relatively short distances from others receive very different speeds regardless of the number of users on the system at any given time.

Competing Wireless Technology
There are two types of wireless options, fixed and satellite. While none of these technologies can deliver the speeds and reliability available with fiber optic, they play a role in today’s technology options. It is important to identify the specific uses where they may be valuable and to understand the limitations of each fully.

Fixed Wireless
Wireless service is not as reliable as fiber optic and can be susceptible to weather conditions and movement of outdoor equipment due to wind. Most wireless systems require a direct line of sight; obstructions (e.g., trees, water, granite) interfere with and can disrupt wireless signals and service. Reliability concerns and reliance on line-of-sight make wireless installations best suited to dense urban areas or certain rural locations where the physical environment makes other solutions unachievable or not financially viable. Wireless connectivity is serving some homes in Maine. Given its limitations in speed, geography, and lack of
dependability, a wireless system that can support ever-increasing bandwidth demands would be a lower-tier consideration or a specialty last mile application.

5G
Touted as the next great technology, 5G is increasingly a consideration in major urban markets where the density of buildings makes fiber optic installation expensive and complicated. But 5G is many years away from being implemented in rural Maine. As Crawford notes, 5G mobile wireless connections will be “extraordinarily useful add-ons to fiber” but they “depend on fiber being installed everywhere.” Crawford predicts that to bring 5G to fruition, we will need 20 times the number of fiber-backed cell towers and cell installations that exist today, every 15,000 feet or so, deep into neighborhoods and towns. (Crawford at 28)

In summary, 5G systems rely on a robust fiber infrastructure system to power the system. Therefore, the emergence of 5G will one day supplement fiber infrastructure—it will not replace it. Maine 5G deployment can and will depend on the fiber infrastructure being built or use fiber infrastructure currently available. Fiber and wireless should be viewed as complementary—not competing technologies.

Traditional Satellite
Hughes and ViaSat are examples of two satellite internet providers available in the U.S. This technology is expensive, slow, suffers from lag and inclement weather interruptions, and comes with tiny data caps. Residents often augment their satellite connections with mobile hotspots to ensure they are always connected, but at a tremendous expense – sometimes as much as several hundred dollars a month.

LEO Satellites
StarLink is a type of satellite technology called LEO or “Low Earth Orbital,” where the satellite sits closer to the Earth than traditional geosynchronous satellites like Hughes or ViaSat. In theory, this proximity allows LEOs to provide faster and more robust service. While trials suggest StarLink is providing speedier service, upwards of 100/20 in certain communities, this pales compared to the promised gigabit speeds. Still, Starlink appears to be capable of speeds that have been unattainable with traditional satellite internet and to regions where no wired or fiber connection exists.

Obstacles to LEO implementation in Maine include LEO service requiring a clear view of the sky to stay connected. Any object obstructing the line of sight between your home and the satellite, such as a tree branch, pole, or roof, will cause service interruptions. Customers find that a permanent mount in an elevated location, like a roof, pole, or wall, provides the best installation and service. LEO in today’s market with current technology is suited for vast open areas where connectivity is unreliable or completely unavailable.

Summary

- Fiber is the network standard and best consumer and community choice due to its reliability in consistently high speeds, long-lasting duration, and resiliency.
- A fiber network will assist in social equity and inclusion by helping to close the digital divide through universal access and affordable service options.
- Fiber allows for symmetrical upload and download speeds, allowing all users to share files and communicate seamlessly.
- 5G and low earth orbit satellites are years away from effective rural deployment and will not meet the same reliability and capacity that fiber currently has. It is essential to keep in mind that 5G technologies remain dependent on a robust fiber optic infrastructure.
- Fiber is the only technology with unlimited bandwidth capacity, making it a future-proof investment.
Fiber Optic Broadband—The Key to High-Speed Connectivity

State-of-the-Art Technology

Fiber-optic systems represent “state-of-the-art” technology, and their data delivery networks provide fast, reliable, and future-proof internet, data transfer, and communication services. With trillions of dollars of fiber infrastructure installed worldwide, the global economy has developed utilizing a fiber backbone. To ensure its most total capacity, the information and data technology industry has proven to be highly adept at developing new electronics to push more and more data through existing fiber lines.

This same advanced fiber technology is now available to serve homes and businesses in rural and urban areas throughout the United States and right here in Maine. Fiber-to-the-Premise (FTTP) networks are being rapidly deployed. Multiple fiber networks are in the Portland area and Downeast Maine. Others are planned to be built in the years ahead, including the Maine communities of Georgetown, Millinocket, Roque Bluffs, Southport, and Searsport (and many others). The extensive network of fiber already installed and the nationwide focus on building out fiber demonstrate the technology’s superiority. With virtually unlimited capacity, multiple-decades longevity, and extremely low maintenance, there is a significant shift in market forces that make fiber optic the dominant and preferred choice.

Fiber-optic systems provide a dedicated fiber to each premise. The equipment in the CO will deliver up to 1/1Gig of service (1000Mbps/1000Mbps) to EVERY premise on the network and throughout the service communities. Connections to the system can be upgraded to 10/10Gig (10,000Mbps/10,000Mbps) as future bandwidth needs increase. The system will include ports that will currently deliver this speed level should the communities attract a business or research center that would require ultra-high-speed connectivity.

A concern with fiber optic systems is the up-front cost. However, over time, other technologies will need to be replaced, upgraded, or, as seen currently, deemed obsolete. On the other hand, fiber will allow communities to provide the bandwidth required by new applications in the years to come while using the same fiber distribution network for decades.

Consumer Benefits of Fiber

Speed and Capacity
Experts say that fiber optic is the only technology with enough bandwidth to support projected consumer demands over the next decade. The average home has multiple connected devices now, and the number of such devices is expected to grow. According to Deloitte, the average home has 25 internet-connected devices, up from an average of 11 in 2019. Deloitte defined connected devices as laptops, tablets, and smartphones; video streaming devices and smart TVs; wireless headphones and earbuds; gaming consoles and smart home devices; and fitness trackers and connected exercise machines. But the list continues to grow with home appliances, GPS trackers for devices, pets, and more.

**Future Proof**
Because of fiber's capabilities, new technological innovations are being invented daily to utilize its superior ability to transport tremendous amounts of data at blazingly fast speeds. The ways we use the internet at home and in our businesses that seem commonplace now were, in many cases, not even conceived of five years ago. Moving forward, technologies such as 3D holographic 4K television and 8K immersive gaming will be everyday items in Maine and households worldwide. Fiber (FTTP) networks will be able to handle the estimated 30 gigabit-per-second needs of such equipment.

**One Delivery System**
A fiber customer will receive telephone, video, audio, television, and almost any type of data transmission using a single seamless FTTP connection. That trend will continue as consumers have an increasing array of à la carte choices for communication, data, and streaming options. Potential subscribers will realize that receiving bundled services through a streaming fiber connection saves money.

**Reliability**
Fiber provides the most reliable connection for internet services. In surveys across Maine, the #1 complaint about internet service is reliability. An internet connection is a necessity, not a luxury. When connectivity is interrupted or slowed down unexpectedly or inexplicably, consumers are furious that they cannot accomplish basic online tasks, leading to a significant loss of productivity and time. As discussed above, fiber's reliability is far superior to all other technologies.

**Community Benefits of Fiber Networks**

**Closing the Digital Divide**
A driving force of many communities is the urgent need to address equity and inclusion. In communities across Maine, far too many people are without access/connectivity and without knowledge of how to utilize and benefit from the technologies associated with a broadband connection.

- Universal access to all residents and businesses;
- Providing the tools, training, and personnel for community education and outreach programs; and
- Making available robust and affordable broadband solutions for all income and opportunity levels through assistance funds, low-income rates, subsidized rates, and free hot spots.

These efforts will help close the digital divide and improve the daily lives of people most in need throughout our communities.

**Job Creation**
Fiber networks create jobs by supporting existing businesses and attracting new ones. Having the requisite broadband availability opens up the opportunity to develop new lines of business for Mainers, e.g., customer service representatives for major corporations, tech support, and all bi-directional communication and service industries that will place Maine workers on a par with job opportunities in more densely populated portions of the country.

**Business Attraction**
Business attraction means providing the connectivity and IT backbone for businesses that quickly move large amounts of data--architects, designers, media companies, banks, online retail businesses, medical
specialists, and other heavy users. With high-speed broadband access, companies and professional offices can relocate to those areas—a trend that we are seeing across the nation resulting from the pandemic and demographic trends already underway.

**Telemedicine**
The medical field and how patients and providers interact are undergoing seismic change. One of those changes is how patients are treated, monitored, and increasingly given tools to manage health care from their homes. A fiber connection has a symmetrical download and upload capacity, which facilitates our elders aging in place, relieving an increasingly burdened health care system and ensuring medical access to remote Maine areas even during winter months when roads are less passable.

**Telecommuting/Entrepreneurship**
As remote work has changed from a luxury to a necessity, having a consistent and robust connection is crucial, especially when uploading from home to the internet. The technology of fiber makes it ideally suited for telecommuting. Virtual meetings, cloud sharing documents, scheduling, and other applications are made seamless with a fiber connection. While telecommuting is important to temporary and seasonal Maine residents, remote work has become necessary to the recent population changes in Maine.

As a result of demographic shifts in the U.S. and hastened by the Covid-19 pandemic, we are seeing entrepreneurs relocate to Maine full-time, as well as full-time staff workers, management teams, and executives of corporations, associations, and other entities. Fiber optic connectivity makes this remote work possible, further contributing to economic growth and opportunity for Maine.

High-speed connectivity plays a major role in attracting and retaining Maine’s “next generation” in an increasingly aging State, ensuring a more prosperous future for all Maine residents.

**Education**
Equal access through universal connectivity typical of fiber builds eliminates “the homework gap.” Students who must complete assignments online but lack a fast, reliable fiber internet connection at home fall into that gap.

High-speed internet goes beyond closing the gap, providing access to a world of distance learning, including music lessons, museum tours, and interactive classes from around the globe. High school students can also access advanced opportunity and placement courses that allow them to jumpstart their college education.

Adult learners benefit from online learning options that utilize distance learning, interactive video, or other required tools and take advantage of high-speed fiber connections.

**Increased Home Values**
A Broadband Communities study indicated that FTTH networks increase the value of a $300,000 home by an average of $5,000-$6,000. Another study by the FTTH Council in conjunction with the University of Colorado showed that homes with an FTTH connection are worth, on average, 3.1% more than homes that do not have a fiber connection. Conversely, poor, unreliable internet service areas experience below-market home values.

Increasingly, Maine real estate professionals anecdotally report that the number one question of potential homebuyers used to be about the quality of the schools—now, it’s high-speed internet access. Home values are increased by high-speed internet connectivity, but we are also increasingly seeing a world where homes will not sell to many buyers without it.
## Summary Table of ISP Responses

<table>
<thead>
<tr>
<th>Company</th>
<th>Total Cost</th>
<th>Community Cost</th>
<th>Risk assessment</th>
<th>Capital participation By ISP</th>
<th>Muni owned or private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axiom</td>
<td>$12,236,838</td>
<td>Muni Bonding/</td>
<td>Risk of not paying full amount of bond falls on communities or regional entity</td>
<td>No- not for construction, will pay back bond through subscriber fees</td>
<td>Muni-Owned</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost covered by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>subscribers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GWI</td>
<td>$13,400,000</td>
<td>Form a BUD, minimal</td>
<td>No risk to the towns</td>
<td>No- but some soft costs covered by GWI</td>
<td>BUD owned</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unitel</td>
<td>$8,691,230</td>
<td>$150,000 minimum</td>
<td>No risk to the towns</td>
<td>$1,500,000</td>
<td>Owned by Unitel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Zone</td>
<td>Total Project</td>
<td>30% of total cost</td>
<td>Some risk that the new technology does not perform or reach 100% of homes</td>
<td>70% of cost</td>
<td>Owned by Red Zone</td>
</tr>
<tr>
<td>cost unknown, but $100,000 per tower and $900 per subscriber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charter/ Spectrum</td>
<td>$9,209,660</td>
<td>$2,696,044</td>
<td>No risk, but high-cost participation</td>
<td>$6,513,616</td>
<td>Owned by Spectrum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>based on each</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>community share</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consolidated</td>
<td>$Unknown</td>
<td>Some, but likely</td>
<td>No risk, other than delays in completing project because of CCI projects ahead</td>
<td>$Significant-up to 90% in some cases</td>
<td>Owned by CCI</td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td>would require grants for community share</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Take away

- The cost of the projects is not relevant; only the cost and risk to the community or SWCBC
  - However, in the case of Unitel, the cost of the project seems low, and there will need to be substantial grant funds and therefore match; the overall price for this proposal will matter
- Good public ownership choices and good private projects- depends on what each town is inclined; risk seems the same with the GWI proposal and Unitel.
- Waiting on a Consolidated response
The SWCBC Regional Utility Project

One of the reasons that the SWCBC came together was to have enough scale to attract providers who otherwise would not be interested in serving individual small towns but together provide an opportunity that providers would be more likely to consider serving. A community-driven, open-access network is an exciting opportunity to bring tangible benefits to subscribers with potentially lower pricing, better response times, local customer service/installation/repair, and a community-minded experience, where the subscriber is part of a regional project that benefits the entire community.

The economies of scale that a regional approach offers and the increased power of size while being hyper-responsive to the communities they serve are critical components to the feasibility and success of a regional utility project. Currently, the Downeast Broadband Utility is serving the communities of Calais and Baileyville and soon to include Alexander. The Our Katahdin Region (Millinocket, East Millinocket, and Medway) is also strongly considering forming a Utility.

Benefits of SWCBC Public Ownership

Communities across Maine and the United States have implemented the public ownership approach and found a synergistic benefit when aligning the interests of internet service providers (ISPs) and the communities that they serve. This model is a pathway for municipal leaders to have a strong voice in operation, service level, and internet connectivity pricing. In a non-profit public ownership model, a notable economic and essential benefit is that the utility retains some profits to reinvest in the community. Furthermore, it can ensure that all premises in their service area have affordable, high-speed FTTP broadband access.

While the public ownership model increases a community’s responsibility, it also provides a collaborative approach with the ISP, which brings better customer experience and the ability of the regional utility to change providers if service agreements are not met. The partnership dynamic fosters a relationship where the ISP is accountable for the user experience, and the community is committed to mutual success.

The Institute for Local Self-Reliance (ISLR) focuses on open access and municipally owned networks. The ISLR website (https://muninetworks.org) offers significant resources for communities considering municipal networks. Peer to Peer learning, podcasts about various issues, and locations of municipal broadband networks across the United States are a sampling of the resources available.

Communities throughout the country demonstrate success with the public ownership approach by providing high-speed internet to all premises, generating healthy revenue streams, keeping prices affordable, and staffing local customer service centers. Chattanooga, Tennessee; Wilson, North Carolina; Longmont, Colorado; Ammon, Idaho; and Huntsville, Alabama are a handful of the successful municipally-owned broadband networks in the country. Read about community ownership success in Ammon, Idaho: https://www.fastcompany.com/90416863/the-city-with-the-best-fiber-optic-network-in-america-might-surprise-you.

Maine municipalities have also successfully implemented community-owned fiber networks. Communities in the planning stages to become the public owners of their broadband internet systems and working with Axiom Technologies include Georgetown, Arrowsic, Roque Bluffs, Monhegan Plantation, Southport, Isle au
Haut, Somerville, and Washington. Recent positive town votes grant approvals in Leeds and Chebeague Island have added an expanding list of community-owned projects. Because these are individual towns, they are not genuinely open-access and will be operated under a long-term contract with Axiom. Communities working with GWI under their open-access model are in Vermont, and they have recently proposed networks in two regions in Maine.

While public ownership benefits through individual municipalities are clear, those benefits are enhanced through the collaborative regional approach. For example, a regional broadband utility will:

- Help mitigate risk by spreading out the cost across multiple jurisdictions
- Increase scale, thereby attracting multiple providers
- Have more potential to generate long-term benefits beyond downward pricing and improved speeds and reliability, allowing the broadband utility to invest profits into expanding the network infrastructure to those areas of the communities where such infrastructure is not financially viable for a profit-making entity
- Be an excellent marketing tool to attract talent, jobs, and other economic benefits like improved productivity and profits for businesses already in the region
- Help unify a strategy to address the affordability gap in each of the communities

In short, a multi-town broadband utility can bring tangible benefits beyond a single community's efforts. However, many communities that have embraced public ownership have not had the advantage of scale; this is a particular shortcoming in Maine.

Downeast Broadband Utility is the first and only multiple municipal fiber-optic broadband utility in the State of Maine. It is owned by Calais, Baileyville and Alexander. At this time, DBU has Pioneer Broadband as its internet service provider. Because of its size and location—approximately 2900 premises are anticipated being passed—DBU has not yet attracted another provider to operate on the publicly owned network. Relevant elements of the DBU structure in consideration of the SWCBC project include the following:

- Each town took out a bond to pay for the system.
- Payback occurs through the fees collected from ISPs on the system
- Pioneer Broadband is contracted to perform maintenance
- A utility board oversees the system

At a similar scale to DBU, the SWCBC may have difficulty attracting multiple providers on an open-access network. There are two critical elements to an open-access network that may not be achieved at the scale of your project (SWCBC 3200 homes passed). First, with the number of homes passed, can SWCBC attract multiple service providers. Second, because of the scale of the project, will the numbers confirm that a utility is financially viable.

While important to remember the size of the project as a possible impediment, GWI has offered to build an open-access network for all of the communities. That model will be analyzed in this report.

**Summary**

- This model has been successfully implemented in Maine and across the USA
- The cornerstone of any publicly owned model begins with ensuring that the fiber infrastructure is owned and controlled by the towns/utility
- Because of the scale of the project, it may be difficult to attract multiple providers
- As a regional broadband utility, this model has added benefits beyond communities working individually
Also of note is that the Axiom Model and the GWI model are different in key ways that will be further discussed. The following section will discuss each approach and weigh its viability.

Overview of Axiom and GWI approach

If SWCBC’s vision and goal are to build a world-class, open-access fiber optic system that covers all five communities, each of the Axiom and GWI approaches are different. For Axiom, it’s a town-by-town approach that can mix and match any communities interested in owning their network, but not necessarily inclined to move forward with a full Broadband Utility Board that would take decision making out of the hands of each local community. This model is not open access because Axiom does not believe that multiple providers can succeed on the number of home passings that the SWCBC region represents. Therefore, the Axiom Model assumes that the Towns that participate in Axiom’s Model individually or collectively will sign a long-term contract for Axiom to operate the system and derive revenue from that system. In return, Axiom would provide up to $30/per subscriber/per month to support the debt and hopefully produce a surplus that would help other aspects of the publicly owned network.

In contrast, GWI proposes a public utility model where they envision at least one provider besides GWI offering service across a Layer 2 network. The simplest way to think about this difference is that a Layer 2 network focuses on data transfer, which means that the BUD would be in the business of selling a data pipe rather than just “allowing” multiple providers to come onto the network and operate their own physical equipment and drops. By suggesting this model, the BUD would not just own all the infrastructure, including every home connection and equipment but would oversee operating the network and monitoring providers on the network. Making this a Layer 2 network opens the possibility of purely content providers using the network to deliver a service. Phone and other data-driven content providers can bypass network ISP provider protocols because of the Layer 2 network architecture.

The cost, revenue, and operations estimates in this report are high-level. Refinement and adjustment to the numbers/tables and inputs will be made throughout the design, engineering, and implementation periods to accurately monitor and secure the final cost associated with the construction and operation of the network.

Each Town estimate is in Appendices A–E; in these Appendices, each community has also been provided cost/revenue estimates as a stand-alone project in The Appendix section, with its separate components and ability to work as a complete system within the confines of each community.

**Costs Overview- Axiom Model**

The following estimates contemplate a complete build to all five SWCBC towns.

Cost of construction: $5,022,418 after grant and savings  
Number of Homes passed: 3,334

<table>
<thead>
<tr>
<th>Town</th>
<th>Construction cost estimate</th>
<th>Potential for State Grant</th>
<th>Other potential savings</th>
<th>Total to be funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedom</td>
<td>$1,674,575</td>
<td>($837,287)- 50%</td>
<td>($148,341)</td>
<td>$688,947</td>
</tr>
<tr>
<td>Liberty</td>
<td>$2,501,250</td>
<td>($1,250,625)- 50%</td>
<td>($247,277)</td>
<td>$1,003,348</td>
</tr>
<tr>
<td>Montville</td>
<td>$2,374,193</td>
<td>($1,187,096)- 50%</td>
<td>($205,806)</td>
<td>$981,292</td>
</tr>
<tr>
<td>Palermo</td>
<td>$3,355,526</td>
<td>($1,677,763)- 50%</td>
<td>($311,760)</td>
<td>$1,366,003</td>
</tr>
<tr>
<td>Searsmont</td>
<td>$2,331,294</td>
<td>($1,165,647)- 50%</td>
<td>($182,819)</td>
<td>$982,828</td>
</tr>
</tbody>
</table>
Total construction cost | $12,236,838 | ($6,118,418) | ($1,096,003) | $5,022,418

If you model the $5,022,418 through a municipal bond calculator, the payment is $329,862 a year for 20 years. A reminder that the loan amount is dependent on a significant grant from the state and other cost savings potentially derived as described in the individual town Models contained in the Appendix.

Axiom Revenue/Expense Modeling Overview

Axiom has modeled a conservative 30% take rate for year-round residents and a 35% take rate for seasonal residents. Taken together across all five communities, the number of subscribers generates a revenue return to SWCBC to operate the system. For the system to be viable, the returns from ISPs operating on the system must cover these costs to make the system sustainable.

<table>
<thead>
<tr>
<th>BUD Revenue</th>
<th>Freedom</th>
<th>Liberty</th>
<th>Montville</th>
<th>Palermo</th>
<th>Searsmont</th>
<th>Total BUD Yearly Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$61,200</td>
<td>$115,560</td>
<td>$84,600</td>
<td>$132,840</td>
<td>$137,520</td>
<td>$531,720</td>
</tr>
<tr>
<td>Year 2</td>
<td>$66,240</td>
<td>$124,920</td>
<td>$91,080</td>
<td>$148,680</td>
<td>$144,360</td>
<td>$575,280</td>
</tr>
<tr>
<td>Year 3</td>
<td>$72,000</td>
<td>$136,080</td>
<td>$99,360</td>
<td>$153,720</td>
<td>$156,960</td>
<td>$618,120</td>
</tr>
<tr>
<td>Year 4</td>
<td>$78,120</td>
<td>$147,240</td>
<td>$107,640</td>
<td>$162,000</td>
<td>$170,280</td>
<td>$665,280</td>
</tr>
<tr>
<td>Year 5</td>
<td>$84,240</td>
<td>$158,400</td>
<td>$115,920</td>
<td>$170,280</td>
<td>$183,240</td>
<td>$712,080</td>
</tr>
<tr>
<td>Total 5 YR</td>
<td>$361,800</td>
<td>$682,200</td>
<td>$498,600</td>
<td>$767,520</td>
<td>$792,360</td>
<td>$3,102,480</td>
</tr>
</tbody>
</table>

Total Operational Revenue derived by subscribers at $30/each/per month

<table>
<thead>
<tr>
<th>Year</th>
<th>Freedom</th>
<th>Liberty</th>
<th>Montville</th>
<th>Palermo</th>
<th>Searsmont</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$531,720</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
<td>$575,280</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td></td>
<td></td>
<td>$618,120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 4</td>
<td></td>
<td></td>
<td></td>
<td>$665,280</td>
<td></td>
</tr>
<tr>
<td>Year 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$712,080</td>
</tr>
</tbody>
</table>

Yearly debt service on $5,022,000 million for 20 years | $329,862 (2% low interest muni bond)

SWCBC Cash Flow over the first five years of operation

<table>
<thead>
<tr>
<th>Year</th>
<th>Rev/Debt service</th>
<th>Operating cash flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$531,720 - $329,862</td>
<td>$201,858</td>
</tr>
<tr>
<td>Year 2</td>
<td>$575,280 - $329,862</td>
<td>$245,418</td>
</tr>
<tr>
<td>Year 3</td>
<td>$618,120 - $329,862</td>
<td>$288,258</td>
</tr>
<tr>
<td>Year 4</td>
<td>$665,280 - $329,862</td>
<td>$335,418</td>
</tr>
<tr>
<td>Year 5</td>
<td>$712,080 - $329,862</td>
<td>$382,218</td>
</tr>
<tr>
<td>Total 5-Year Cash flow</td>
<td>$1,453,170</td>
<td></td>
</tr>
</tbody>
</table>
### Expected SWCBC Expenses

**Year 1**

<table>
<thead>
<tr>
<th>Cash Flow</th>
<th>SWCBC Expense Categories</th>
<th>Calculation</th>
<th>Estimated Cost/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>$201,858</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$151,858</td>
<td>Insurance+ Equip Replacement</td>
<td>Estimate</td>
<td>$50,000</td>
</tr>
<tr>
<td>$140,658</td>
<td>Legal</td>
<td>70 hours x $160/hr.</td>
<td>$11,200</td>
</tr>
<tr>
<td>$120,473</td>
<td>Systems Operations</td>
<td>1% of gross revenue</td>
<td>$20,185</td>
</tr>
<tr>
<td>$115,273</td>
<td>Accountant/bookkeeper</td>
<td>4 hours a week x$25/hr.</td>
<td>$5,200</td>
</tr>
<tr>
<td>$103,273</td>
<td>Maintenance Cost</td>
<td>$0 in year one</td>
<td>$0</td>
</tr>
<tr>
<td>$93,273</td>
<td>Office Lease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$80,273</td>
<td>Marketing</td>
<td>$1000/month</td>
<td>$12,000</td>
</tr>
<tr>
<td>$50,000</td>
<td>Emergency Repair Contract</td>
<td>Before repairs</td>
<td>$10,000</td>
</tr>
<tr>
<td>$13,000</td>
<td>Field Crew (2 Part time)</td>
<td>$50/hour x 5 hours/wk x 52</td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>Field Equipment</td>
<td>Splicer and materials</td>
<td></td>
</tr>
<tr>
<td>$72,504</td>
<td>Pole Licensing</td>
<td>6042 poles x $12/yr.</td>
<td></td>
</tr>
</tbody>
</table>

As revenues increase, the BUD finances produce a larger surplus as subscribers are added. It is getting extremely difficult to obtain insurance for the fiber cable. Many communities are considering self-insurance, meaning they insure the Central Office and equipment there but build up a fund to pay for events in the future. At $50,000/year (or more starting in Year 2), you can build a fund of $250,000 over the first five years of operations. In addition, new guidance from MMA has indicated that a FEMA emergency declaration will cover any catastrophic loss.

**Positives**
- Financial modeling confirms the viability of the project
- Can be one town or more- no need for scale
- Even at conservative take rates, the model works–as early as Year 1 of operation
- Reducing the overall cost of construction by attracting grants or private investment is critical
- If the project can obtain capital with interest-only payments for the first three years, this would free up significant cash flow as the utility builds a subscriber base

**Concerns**
- Risk is on the town to meet bond payments if take rates fall short
- Smaller towns are more challenging because of the limited number of passings
- Requires at least a 50% grant from the state

**Costs Overview- GWI Model**

GWI proposes a multi-town Broadband Utility District that goes beyond the single established BUD of Downeast Broadband by proposing several ideas on how the network would operate, how it would get paid for, and providing a “one-stop” shop that includes how to form a BUD and FAQs about Utility Districts. In contrast to the Axiom approach, GWI, as stated earlier in the document, is proposing a fully functioning district that is owned and operated by the BUD and is an ISP in and of itself, with GWI operating the network on behalf of the BUD and also being a service provider on the network, should the BUD attract multiple providers. The model spells out the partners of ValleyNet (this is the entity that GWI is working with Vermont),
Pioneer Broadband (who would be the constructor and a possible ISP on the network), and GWI (who would be the operator of the network and an ISP provider).

GWI is a B Corporation that requires them to meet higher performance, accountability, and transparency standards. This type of designation signals to potential clients that the company is committed to other factors and not solely driven by corporate profits.

Another important potential highlight of the GWI proposal is that the debt would not be the responsibility of the individual towns but the BUD, with no liability falling to the towns. This is a differentiator from the Axiom Model, where the individual towns assume some risk of the debt.

Establishment of the BUD

The concept that GWI proposes is one in which the organization of the BUD would be such that it can easily expand to include other towns and the proposal suggest a county or multi-county BUD. This informs the 5-Town BUD that GWI would like to create an even bigger scale and that they would strongly prefer that the majority (all) of the communities join. This will make the numbers work better.

SWCBC is already on its way to establishing a BUD with Bernstein Shur, so GWI’s recommendation only further bolsters your choice of council.

Financing

While the proposal does a good job of identifying the different types of capital and the cost, it does not give any specific recommendation on the breakdown and use of each part of the “capital stack” that will need to be built. This makes it difficult to understand the proposal with any specificity. Like the Axiom Model, there will be an emphasis on state grant money being used and reducing the number of other types of capital needed to construct the system. However, they give you a chart of outstanding amounts for each category. On page six of the proposal, their chart introduces federal grant funding in the $15M-$25M and Municipal Revenue Bonds in the range of $25M-$50M. Altogether, the illustration represents:

$25M-$50M in federal grants
$30-$50M in debt of various kinds
$15K- $75K in existing resources available through SWCBC

The proposal enters a complicated financial analysis of how EC Fiber was able to effectively position itself to take advantage of lower-cost capital, even as additional capital is deployed. Over time, higher-cost debt is replaced with lower-cost debt as the project achieves a stronger balance sheet and better financials and credibility over the first few years of operation, and the BUD expands. The process is led by a trusted advisor/partner, Municipal Capital Markets Group.

One of the questions about the proposal is this statement in the financial section. “However, the buildout will be in phases, and there will be some association between phases and funding tranches.” The goal is to get service to all locations in each of the participating communities however it is not clear how long or what the vision is yet for a concrete schedule, as the proposal is flexible and GWI wants to take advantage of funding sources as they emerge over the next few years.

Proforma

The data compiled in the Proforma overview section does not match the information provided in the RFP. Home passes differs considerably. For example, the GWI Model claims 804 total premises in Montville, but the RFP lists 469 premises. Same with Route miles, 88 in the GWI proposal for Montville and 74 in the RFP.
Each of the town calculations seems to differ. This will need to be investigated more closely because these numbers can greatly affect construction costs (road miles) and revenue projections (number of premises).

In the GWI Model, the unserved and underserved areas will be constructed first, as Phase I and II, and once customers are signed up, the served areas (Phase III) will be built.

Project details:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Project (without make ready):</td>
<td>$13.4M</td>
</tr>
<tr>
<td>Revenue bonds (three stages):</td>
<td>$6.5M</td>
</tr>
<tr>
<td>This means grants and other $</td>
<td>$6.9M</td>
</tr>
<tr>
<td>$6.9M- however, in the proforma, they indicate grants of</td>
<td>$8.3M.</td>
</tr>
<tr>
<td>Breakeven point (3 yrs):</td>
<td>2025</td>
</tr>
</tbody>
</table>

Looking at the proforma spreadsheet, there are several areas to highlight:

- ARPU includes phones and seems to increase year over year significantly
  - Needs further investigation about how they view their blended rates
  - They indicate $70/per month for 125/125Mbps service, which would likely be the “standard offer provider” either GWI or some other chosen ISP
    - Other pricing is not clear for higher tiers
    - Additional charges for Router rental ($5) and WiFi Extenders ($7.50)
  - Voice is $14.95/month

- GWI would act as the ISP contractor and would collect fees that begin with:
  - $3/per month per passing
  - $20/per month per subscriber
    - This would total $23/per month per active subscriber
  - They would collect additional fees for various operational supports based on a transparent fee schedule
  - The ongoing fees of $23/per month would cover various operations, mostly network oversight and maintaining good documentation of all aspects of the network

- There are revenue lines for “installs,” but not clear what they would charge for these and what the cost to an alternative provider would be to operate on the network
  - When asked this question, they say they are negotiating with Pioneer (the potential constructor of the network) to determine if they would be an ISP serving customers on the network

Design and Construction

It appears that Pioneer and ValleyNet will be construction partners. Still, it appears that Pioneer will lead the construction and that GWI will act as general contractor overseeing the project construction for a fee which is included in the pro forma but is not broken out as a separate line item.

Operations and Maintenance

GWI would handle all operations and maintenance on a proposed per passing and per-subscriber basis. This starts with a $3/per passing/per month, regardless of the passed potential subscriber taking service. Once a potential subscriber takes service, the monthly fee increases by $20, resulting in a $23/per month fee to GWI.

There is a list of covered items for this fee that ISPs typically oversee in their own networks.

Open Access
GWI is committed to open access networks, and there is a section that demonstrates and explains how this would work for other providers—without providing any details on the cost to the potential ISP offering service. “Pricing will be dependent upon an agreement between SWCBC and the service provider.” What is clear is that GWI, as the network operator, would collect fees for constructing drops and installs at customer homes. Those fees do not seem clearly defined.

As part of this open access process, GWI describes a strategic path that would potentially have Consolidated Communications operate on the SWCBC network or other ways for CCI and SWCBC to work together to make regional offerings more equivalent.

**Standard Offer Provider**

Previously discussed, this provider, likely GWI, would guarantee service to all potential customers on a fixed term sheet negotiated between GWI and the SWCBC.

**Partner credentials and current experience**

All three partners (GWI, ValleyNet, and Pioneer) have long-standing, well-regarded business experience in the ISP marketplace and can deliver on this proposal.

**Assessment**

This is a complicated model in which all the details are not fully clear. However, GWI’s proposal clearly meets many of SWCBC’s goals.

**Positives**
- One-stop shop—they discuss all elements and have resources identified to assist at every level
- No Taxpayer dollars will be used—and more importantly—no risk to the towns
  - It does appear that some funds may be needed, but minimal
- Publicly owned/privately run—relieving the BUD of operational expertise
- GWI and their partners do have deep knowledge and understanding in operating networks
- GWI is community-minded
- GWI is concerned about the scale and has the vision to include all communities in Waldo County
- Operationally positive in 2024 according to proforma

This is a serious proposal which has not been implemented in Maine. There is some possibility that you could partner up with Midcoast Internet to bring significant scale to the project.

**Possible Concerns**

- There is a lot of money in the proposal that would be paid to GWI, some of which will need to be clarified in order to fully understand the scope of GWI’s operational costs
  - Fees for Project management, hooking up new customers, repairs
    - 3% for Project management—$400,000 approximately
    - 1% of funds raised for bonds—$10,000 per $1M in bonds
    - Time and Material for grant application—unknown cost
    - Time and Material for customer acquisition—unknown cost
    - Customer hookup and repair fees to GWI
    - Others

Understanding how these fees with GWI work and the cost could be critical to successful operations. These fees are separate from the $3/per pass and $20/per-subscriber fees to operate the network. It is not that GWI is trying to hide these costs, but they are spread throughout the proposal and hard to discern. At 1500
subscribers, the $23 monthly fee amounts to a $414,000 a year fee to oversee and manage all aspects of the network, and this is before other fees and charges are included.

- The proposal is clear that they want to operate the network as open access, inviting other ISPs; however, because this is a going to be used as a Layer 2 network, it is unclear how much it will cost for a provider to be attracted to provide service—service that is different than anywhere in Maine because of the type of network being proposed.
  - When I asked GWI how much it would cost an ISP, the answer was that we are working with Pioneer to come to some agreement—this seemed like it should already be worked out cost for ISPs to get onto the open-access network.

- Conflict of interest concerns
  - Because GWI is proposing not just to operate the network on behalf of SWCBC but also to be a preferred provider on the network delivering ISP services (either branded as SWCBC or as GWI, this might create a conflict of interest for other providers who might be reluctant to enter into the market (this was the case with Downeast Broadband Utility, where Pioneer is the constructor and operator, and the only ISP on the open-access network—2000 homes passed).
  - Also, giving a preferred provider a head start in providing service allows that provider to take all the early subscribers, the lower hanging fruit, leaving it harder to convince other ISPs to compete over.

- Cost to subscribers
  - GWI does not fully disclose the various tiers of service pricing, only stating that the lowest tier of 125/125Mbps would be $70.
Privately Owned

- Unitel
- Spectrum
- Consolidated Communication

One of the essential objectives of the committee is to assess the risk of a publicly owned BUD versus the comfort of a private project that would eliminate the digital divide while also reducing or eliminating the risk to the towns. The providers in this space have been delivering internet service for a long time, but each has a different approach. With Unitel being sold, it was unclear what response they would provide to SWCBC, but they were the only one of the three providers to send in a proposal by the deadline. Additional questions to Spectrum have gone unanswered as of this writing, and Consolidated has indicated they would like to submit a proposal but need more time— a change from their earlier position that they were not going to respond to. They have not indicated when a proposal would be forthcoming as of this writing.

Unitel/Direct Communications

Unitel’s approach is more traditional, where they would expand their current network footprint to serve the communities of SWCBC. They would own the network and would retain all rights to control pricing, service level agreements, and ongoing maintenance and support. There would be no risk to the Towns, nor would there be a need to form a BUD.

Direct Communications brings significant resources to Unitel, and their current footprint includes fiber across six states (including Maine), and we suspect additional balance sheet resources that will help Unitel enhance and expand the network.

Service to all

The proposal will serve all locations in the existing SWCBC towns, and it appears that drops will be included up to 1000’ feet. However, their proposal includes two costing options, one serving 90% of the communities; the second adding almost $1.9M to the projected cost for a total buildout cost of $8,691,230.

Cost Distribution

<table>
<thead>
<tr>
<th>Cost</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Construction</td>
<td>$8,691,230</td>
</tr>
<tr>
<td>Unitel Contribution</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Town minimum Contribution</td>
<td>$150,000</td>
</tr>
<tr>
<td>Grant or other fundraising</td>
<td>$7,041,230</td>
</tr>
</tbody>
</table>

To fund this amount with a state grant, you would be asking for an 80% grant.

Speed Packages

Simply put, speed packages are excellent, and latency is excellent. Being this competitive should attract customers and offering 1000/1000Mbps for $129.95 would allow all users access to top speeds by all potential subscribers. Unitel pricing is more aggressive than the GWI proposal.

Positives

- Strong, community-minded partner next door
  - Only made stronger by acquisition
- A significant commitment of funds to offset the cost of construction
- Aggressive pricing that will be very competitive- benefit community subscribers
No risk to the Towns; once project is built, all responsibility to Unitel- no oversight needed or required

Concerns

- The cost of Construction seems low in comparison to Axiom and GWI proposals; this requires further investigation
- Privately owned but requires a lot of public subsidies
  - It also requires town to use public dollars to subsidize a private company
- Not all cost for long drops is covered; anything over 1000’ requires homeowner cost participation- on the positive, 1000’ is very generous
- Their ConnectME grant proposal for Thorndike was not awarded
  - Grants for private companies will not be given additional points, like community-owned systems

Charter

The current Cable TV provider also provides internet and phone separately or in a bundle. Charter was contacted early on, and the committee was given a preliminary project cost and Town contribution required for expanding Spectrum service to those areas currently not covered by Spectrum. The only town currently with a franchise agreement with Spectrum is Palermo.

Spectrum was contacted and referred to their original proposal that they “had not heard back from the towns”. I followed up with a formal request to respond more thoroughly if they were inclined to further expand on their original proposal or if they were going to just stick to their initial proposal, with any information they wanted to provide needing to be sent by April 11th. I also asked if their expansion was for fiber or extending their coaxial cable and did not receive a response. Here is the original proposal as a reminder.

<table>
<thead>
<tr>
<th>Town</th>
<th>Miles</th>
<th>Passings</th>
<th>Est. Cost</th>
<th>Town Cost Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palermo</td>
<td>27.2</td>
<td>404</td>
<td>$1,242,920</td>
<td>$434,920</td>
</tr>
<tr>
<td>Freedom</td>
<td>29.58</td>
<td>340</td>
<td>$1,360,680</td>
<td>$680,680</td>
</tr>
<tr>
<td>Searsmont</td>
<td>48.01</td>
<td>784</td>
<td>$2,208,460</td>
<td>$640,460</td>
</tr>
<tr>
<td>Liberty</td>
<td>36.24</td>
<td>697</td>
<td>$1,667,040</td>
<td>$273,040</td>
</tr>
<tr>
<td>Montville</td>
<td>59.36</td>
<td>470</td>
<td>$2,730,560</td>
<td>$666,944</td>
</tr>
</tbody>
</table>

*I understand these were inaccurate numbers but illustrated the cost-share approach.

Positives

- Well known Maine provider with extensive networks throughout the state
- Have worked with communities to expand service and if engaged, would certainly come to the table
- Appears that build out cost include every home in every community
- For those with Spectrum service in the community already, evens the playing field for everybody in the Town- the remainder of the Town will all receive Spectrum Cable TV as well as internet and phone
- No risk to the towns, but significant cost share will need to be approved

Concerns

- Expands stale, outdated technology (cannot confirm if they would expand using fiber)
- Requires significant resources to match Spectrum commitment- would need to work with Spectrum to go apply for state grants
  - Spectrum has been a reluctant partner on state grants and withdrew all their grants in the Round I of ConnectME funding
- #1 complaint of Spectrum across the state is that it is expensive, and they are in the process of increasing costs again stating this month
- Towns would have little to know control franchise agreements should pay some amount back to the Towns, but not sure if they are still using that model in new builds

**Consolidated**

Last communications with Consolidated was April 7 in writing in which they indicated that they would “submit a proposal it’s just about resources and time” and requested a “few more weeks to respond.” This was after they had originally decided not to respond. They have a lot on their plate having just launched Fidium, the new marketing name for fiber to the home. They are building out fiber in Portland, have committed to a big project in Midcoast that includes Rockland, Rockport, Thomaston, Owl’s Head, South Thomaston... and I may be forgetting some areas. They also were just awarded $20M through NTIA to build out all the Blue Hill peninsula, Farmington area and Rangeley area. So... where you would stack up against all this activity is unknown. It is also unclear on what their approach would be, as their original public private partnership on Long Island, seems to have changed. Original proposal was for Long Island to own the trunk and for CCI to own the drops and customer equipment. Any money paid out by CCI would be collected in a per customer service charge of $10 per month/ per customer. Pricing was good and they were offering Gig service for under $100 a month.

Without seeing a firm proposal from Consolidated:

**Positives**
- Aggressive fiber expansion-totally overbuilding their DSL product
- Well known Maine company with resources to expand
- Have started to take advantage of federal (NTIA) and state (ConnectME) public money- and have been successful

**Concerns**
- There could be delays in building projects because they have so much on their plate
- This would be entirely privately owned and would require some public subsidy- how much is unknown
- I have asked them for something by June 1st, no confirmation that they would meet that deadline
- Ongoing discussions with providers who have met the submission deadline might make any submission by them beyond the time when SWCBC would want to wait on final decisions and move forward
Fixed Wireless

Red Zone

Red Zone has been making presentations in many communities presenting a new, improved wireless technology that effectively eliminates several previous difficulties with fixed wireless technology. In the case of SWCBC, a preliminary presentation was made to the communities in November of 2021. Axiom was asked to evaluate the technology to allow for a fair assessment by the committee. A proposal to the Town of Fayette indicates that Red Zone is asking for a 30% match from the town. The split would be $900,000 from Red Zone and $385,000 from Fayette. That proposal is still pending, and Fayette has not been acted upon. Litchfield has moved forward and signed a contract with Red Zone.

Red Zone is a Maine-based company and has deployed fixed wireless with great success in many urban and suburban areas. They are presenting new fixed wireless technology to several communities across Maine that they would like to deploy for a fraction of the cost of fiber to the home while still providing many of the claims of fiber. While not wholly tested, it appears to be a step forward that resolves many of the limitations of other fixed wireless technologies.

We expect that this technology will provide improved service compared to traditional wireless options and could significantly improve technical aspects such as wireless propagation in a noisy signal environment. In some areas, if the cost is right and the tradeoffs (less than complete coverage, escalating costs over time, limited ability to keep up with market demands for faster speeds at the home, etc.) are acceptable, this could be a viable consideration for some communities.

On the flip side, there is a reasonable concern that a Tarana deployment will disqualify your Town from seeking additional money in the future, as there may be a situation (as we saw until recently in areas served exclusively by DSL) where the bandwidth provided meets a government standard for Broadband, while still leaving your residents on the wrong side of the digital divide, unable to participate fully in the increasingly networked world of the future.

Test Case- Litchfield

Litchfield recently signed on to a Red Zone solution. According to a Red Zone spokesperson, service is expected to be available in June. The plan is for Red Zone to use four existing cell phone towers. These towers must go through a structural analysis to determine if the broadcast equipment can be installed on the tower safely- and, just as importantly- can it be installed at a height that would maximize coverage. This next step would be required in any location and would be the next step for any deployment in the SWCBC. In the case of Litchfield, Red Zone said that most of the uncertainty in delivering service in June is based on how quickly these structural analyses on the four towers are completed.

Litchfield has committed $375,000 from ARPA funds. This is similarly priced and cost-shared to Fayette’s proposal. $1.2M to build.

Introductory pricing:

- $50 for 100/20Mbps
- $75 for 100/100Mbps
- $99 for 500/100Mbps

Red Zone says these prices will be locked unless they decide to switch plans, in which case, they may be subject to price increases. $25 install fee.
This contrasts with a $3.5M build estimate for fiber that will cover 100% of homes. Litchfield is 2000 homes passed.

We would expect approximately the same subsidy requirements for any community partnering with Red Zone. Red Zone would own the infrastructure.

**Claims of the technology manufacturer: Tarana**

- The cost per “home-passed” is a fraction of the cost of GPON (Fiber) or 28GHz (5G)
- “Unprecedented” non-line-of-sight coverage
- “Massive” capacity to allow for more subscribers at higher bandwidth
- Industry-first “complete cancellation” of unlicensed band interference

**Cost**

Looking through the specs, the whole system, including the “bits & bobs,” as one of my guys likes to say, are proprietary. This means that small, common, inexpensive parts such as a POE injector will not work as part of the Tarana ecosystem of parts, materials, and equipment. There is also a mandatory support fee of approximately $50/year per sub and per-user capacity licenses required for speeds in excess of 50Mbps.

$11,600- $13,300 per base station. These base stations are advertised to support up to 256 homes but are highly directional and are unlikely to achieve that level of subscriber density given the typical terrain and housing density in the areas we serve.

$500 per base station at each home, plus about $200 per home in required ancillary parts.

**Assessment:**

We have significant concerns with the medium- and long-term viability of this solution. Spending money now on a less expensive system, only to have the system need upgrading, then perhaps need to be replaced, should be carefully considered. Furthermore, it is unclear how much savings could be achieved, as so much depends on factors like the number of customers served off a particular base, the need to construct new towers to serve hard-to-reach areas, how much fiber needs to be built to feed the bases, etc. This is important because, while less expensive, choosing these solutions will have significant tradeoffs compared to fiber. As such, answering the question *how much less expensive* will help communities evaluate whether it is worth the additional dollars required to build fiber and with it, to maintain control over their communities’ broadband future by providing a futureproof solution that is tested, been in the marketplace for many years and easily scalable.

One of the more concerning aspects of this system is how proprietary the Tarana equipment is. Unlike fiber, where the lines of cabling remain in service for many decades, powered by various flavors of head-end equipment as technology evolves over the years, the Tarana equipment only works as part of the Tarana wireless system. In the future, your ISP would be limited to Tarana equipment for their ability to upgrade the system. You would not be able to switch manufacturers for any part of the system and should Tarana go out of business or change their technology focus; your only option will be to conduct a “forklift upgrade” by replacing the whole system with something new, starting over again from scratch. This is the difference between choosing a mature open-standards solution versus choosing a cutting-edge proprietary solution that may or may not still be available some years from now.

With an investment of this size, procuring a system that is flexible, proven, durable, upgradable, and time-tested seems wise. On the other hand, you could spend less now for a system that may work great for several years, but 5-10 years down the road, as technology has evolved and consumer demands for bandwidth have likewise increased, you may well be right back where you are today. Right now, while the
volunteer resources, community focus, and funding opportunities are plentiful, it is the time to invest in fiber, so long as you can make the numbers work for your community.

**Non-line-of-sight:**

As a wireless provider currently operating in the marketplace and having deployed several “cutting edge” technologies over the years, all of which have claimed to penetrate trees and other obstacles, we are skeptical that the marketing claims will match the actual on-the-ground experience. The provided data sheets typically over-state performance because the testing is done in near-perfect environments, and those environments do not reflect the realities found in real-world rural deployments.

**Assessment:**

We think that penetration will be improved to lightly forested homes or located in dense subdivisions and that this equipment will likely perform better than other wireless solutions currently on the market. That said, do we believe that this technology will penetrate significant obstructions like hills or dense tree cover? No, not at all, hence the need to have more base stations on more towers and give up the idea of universal coverage for all residents in a service area, thus perpetuating the current “digital divide.” In the end, we expect this technology to serve 80% of a community, with the remainder needing additional attention to try and get service to them. We would fully expect that some homes would remain unreachable via any wireless system due to dense tree cover and geographic obstructions in most communities.

**Capacity:**

One of the biggest challenges in planning and deploying a wireless system is supplying appropriate bandwidth to each tower site. Backhaul is the total amount of bandwidth available to service the various subscriber packages that Red Zone plans to offer from each base station and is constrained by the total amount of bandwidth delivered to the tower site and the capacity of the base nodes deployed on the tower.

The Tarana system is limited to a maximum throughput of 2.4Gbps per base node, with up to four base nodes per tower. Obviously, to bring that amount of bandwidth to the radio equipment, the tower itself must be fiber-fed. Red Zone states this explicitly in their presentation materials. That amount of backhaul will allow the provider to offer higher packages. To justify the cost of the fiber backhaul (along with everything else required), the ISP will need to maximize the number of subscribers in that sector, and given the rural nature of these deployments and the terrain, this will be a hard row to hoe indeed.

Axiom is not in a position to comment on the viability of Red Zone’s business case that would justify bringing this amount of backhaul to a rural site, but it does appear technically achievable, and clearly, in Red Zone’s testing, they believe that they can offer higher packages- including symmetrical 100/100Mbps which would require significant backhaul availability.

**Assessment:**

This is an improvement over other wireless systems, and we believe it can deliver significantly larger packages to homes with a good signal from the tower. It will still require some oversubscription, which is why they say, “up to speeds.”

**Interference:**

This is less of an issue in rural environments but still can affect signal strength. Interference mitigation in unlicensed bands is an issue that wireless ISPs have had to deal with since the beginning of the industry. Tarana’s interference mitigation technology appears to be a game-changer if it works as well as promised.
because it allows an ISP to operate on essentially free spectrum airwaves and avoid the expense of purchasing licensed spectrum for them to use on.

**Assessment:**

Probably be an improvement and will help signal strength being broadcast, although the gains are likely less significant in a rural area versus a dense suburban deployment.

**Claims of Red Zone**

Looking through their PowerPoint presentation, RedZone makes several assertions about the superiority of a wireless solution over other technologies.

- **Speed** - The first customer hook up in 30 days- 6-9 months to complete the entire project
- **100% coverage guarantee**
- **Competitive pricing** - 100/100Mbps for $79.00
- **Backhaul of 2.4Gbps to start increasing to 3.2Gbps beginning in Q1 of this year**

**Speed of construction:**

There is no doubt that the wireless system can be constructed more quickly. Just the make ready for fiber can take 8-10 months or more before construction can start on a new fiber system. This is just the reality of fiber and utility pole licensing. If you want to move quickly, fiber construction is at some disadvantage. That said, there are several unanswered questions in the presentation that pertain to the speed of construction.

First, any new tower construction can take much longer than pole-licensing make ready. Site approvals, excavation, tower, and material acquisition, and fiber connectivity can all add significant time. If they believe they can use existing buildings for 100% of sites and that all of those towers are already fiber-fed, then their assumptions may hold. If that is not the case, building towers and getting fiber to them will take time. Additionally, the RedZone presentation states that they will need a varying number of repeaters in each town. Those repeaters' locations may need to be placed in or on public land that may require a town or state process to site.

**Assessment:**

While we believe that wireless would have an edge in speedy construction, there are many variables that make the speed claimed more optimistic than what we expect to occur.

**100% coverage guarantee:**

This point is typically very important to communities, and the costs of providing universal coverage to every home can be significant. RedZone’s proposal indicates that this 100% coverage can be achieved with the new Tarana technology. We are asked to believe that due to its ability to penetrate foliage better and with a handful of strategically placed repeaters that can serve all hard-to-reach locations in a community. Axiom is a long-time wireless expert, and we have never been able to promise 100% coverage in rural settings like Washington County. We expect it will continue to be very difficult to reach every home, regardless of how innovative this new radio equipment is.

From the Tarana website:
**Assessment:**

Our experience tells us that 100% coverage will be tough. One of Axiom’s network engineers with over ten years of experience in wireless believes that 80% coverage is achievable, with the remainder very difficult to reach. Our experience tells us that the terrain characteristics in rural Maine make it difficult to “guarantee” anything.

**Pricing:**

Pricing as proposed to the end-user is market competitive. That said, the 100/100Mbps pricing at $79/mo. is priced higher than the goals in the latest Maine grant program, which awards additional scoring points for every dollar a proposal is below $50 for 100/100Mbps. Furthermore, the RedZone PowerPoint states that the promotional pricing and new sign-ups will be subject to price increases. This could lead to neighbors having different pricing for precisely the same service, to say nothing of the general consumer dissatisfaction with being locked into service with ever-escalating pricing (e.g., Spectrum Cable). It would be good to have a contracted schedule of allowable price increases, or else subscriber fees are likely to become less competitive over time. Customer dissatisfaction will be especially high if service reliability is not achieved as described. Fixed wireless service is not as reliable as fiber. Period.

**Assessment:**

While less expensive to deploy, the individual subscriber will pay somewhat higher prices than the same speed package delivered over a fiber connection, with the prospects of the RedZone prices ratcheting up over time due to higher ongoing operating costs compared to fiber-optic service.

**Backhaul:**

As discussed in the Tarana section of this review, having sufficient backhaul to sell higher-speed packages to customers is a significant business expense. These higher speed packages are likely required to make this business model a viable one for RedZone. This is probably the case and having more backhaul internet available does allow a provider to offer higher bandwidth packages.
Assessment:

We agree that fiber-fed towers will be critical to increased backhaul end-user bandwidth, but we do not fully understand RedZone’s reasoning regarding the bandwidth numbers provided. Typically, once the fiber is in place at a tower, virtually unlimited bandwidth can be provided, so the distinction between 2.4Gbps and 3.2Gbps is purely a business decision, not a technical one. The key questions to ask regarding oversubscription (aggregate bandwidth packages sold vs. backhaul provided) and if RedZone will stand by their marketing claims and guarantee every subscriber will get the full speed they are paying for, even in times of heavy use.

Final Thoughts

Tarana's literature is focused on improved performance in urban and suburban areas. While they may well indeed have found ways to overcome specific challenges such as spectral density, interference mitigation, congestion issues, etc., nothing in their literature is about solving the problem of folks living miles from the nearest tower, penetrating Maine's forest, or getting past the rolling hills of Maine.

We remain skeptical that this equipment will work reliably for homes in rural, low density, high forest areas unless they want to pepper the landscape with towers. A ConnectME board member has requested the testing that shows 100/100Mbps can be achieved in real-world conditions in Maine and has yet to receive that information. Still, it appears that the deployment in Litchfield should help better understand the capabilities of this technology.

Positives

- Likely faster deployment than fiber
- Overall, less expensive- considerably- but requires equal or more local match than other proposals
- Deploying this technology in other towns
- No risk will be privately owned

Concerns

- Inferior technology to fiber
  - Will need to be replaced or enhanced in 10 years
- It will be difficult, near impossible to reach 100% of homes
- Engineering of potential towers and other feasibility would need to be completed
- Local match for privately owned system

QUESTIONS ABOUT THE REPORT?
Mark Ouellette, President & CEO of Axiom Technologies, a full-service internet service provider and professional services company based in Machias.
Please contact him on his mobile phone at (207)272-5617 or via email at mark@connectwithaxiom.com.
Appendices

Axiom Model
Individual Town Evaluations
Appendix A-E

Appendix F- GWI Proposal
Appendix G- UniTel Proposal
Axiom is operating or is set to operate several municipally owned or privately funded networks in Maine. The benefit of this model is that municipalities retain ownership and, therefore, operational oversight of the

Appendix A- Liberty

- No new taxes- system cost covered by subscribers
- A futureproof- system capable of 1G/1G
- Revenue surplus of $475,000 over the life of the project
- Municipally owned... or owned by Axiom
network. This feature allows a much more collaborative approach with the Internet Service Provider where the goals of the ISP and the community are aligned, and success is mutually beneficial. This model corrects the inequity that has been created by DSL technology by providing the same world-class connectivity and reliability to every home and business in the community. Because it is community-driven (owned by Town) and will have superior service to Consolidated or even Spectrum internet service, this model's formula can be very successful- and likely not raise taxes, paying for itself and producing surplus revenues in the future years. This should not be considered a full-blown analysis but rather a starting point for discussions.

The outline of this approach is contained in the primary RFP response. This document is intended to amplify our process and help all four communities understand how Axiom works with communities who want to own their network.

Cost of Construction before potential grants and savings:

- The objective is a project fully paid for by subscribers, not taxpayers.
- Because Axiom will generate subscriber fees and use a portion of those fees to pay back the bond, the project's initial cost is not the actual cost- it’s over 95% less.
- The belief is that grants or Rescue plan funds could cover any “gaps” in the cost from the town or the county.

Estimated construction cost: $2,501,250*

* Includes:
  - Make ready that may get partially eliminated
  - Pole replacement costs that are an estimate and get partially eliminated
  - Central Office budget may get reduced depending on location and reconfiguring- do we need a telco hut, or can we get away with standing enclosures or an existing room in a town-owned building
  - 10% contingency may not be needed

Cost breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Calculations</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole Licensing Application</td>
<td>$57,263</td>
<td>This is based on the number of poles and likely very close to the cost.</td>
<td></td>
</tr>
<tr>
<td>Make Ready</td>
<td>$270,900</td>
<td>Calc: 1204 poles x $225/pole= $270,900</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Pole Replacement</td>
<td>$180,000</td>
<td>Calc: 10% pole replacement- $1500/pole x 120 poles= $180,000</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Central Office (Utility Hut)</td>
<td>$300,000</td>
<td>Includes all equipment inside to light up the system and a telco hut</td>
<td>Different designs will depend on location- this is for discussion to get you a better number</td>
</tr>
<tr>
<td>CPE/Customer install (60%) 382 customers</td>
<td>$171,900</td>
<td>$200 for home equipment and $250 labor for install. Calc: $450 x 382 homes= $171,900</td>
<td>Does not include a router, which we lease for $7.50/month, or buy your own.</td>
</tr>
<tr>
<td><strong>Construction of the main system</strong></td>
<td>$1,322,771</td>
<td><strong>All-in cost from the contractor for main lines and drops to the home</strong></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------</td>
<td>-------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Contingency- 10%</strong></td>
<td>$132,277</td>
<td><strong>10% of construction cost</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Project Management (5%)</strong></td>
<td>$66,138</td>
<td><strong>Axiom fee for overseeing construction contractor, installing CO, as well as taking orders for service</strong></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$2,501,250</td>
<td><strong>Includes all Make Ready</strong></td>
<td></td>
</tr>
</tbody>
</table>

Potential Cost savings could be derived if you are municipally owned, but further cost savings could be derived depending on several factors:

- The condition of the utility poles (avoiding replacements)
- Construction cost approval and timing (avoiding the 10% contingency)
- Central Office location and placement in an existing building
- State funding for unserved locations
- Using local ARPA funds

<table>
<thead>
<tr>
<th>Total construction cost estimate</th>
<th>$2,501,250</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduced by:</strong></td>
<td></td>
</tr>
<tr>
<td>Reduced # of pole replacements</td>
<td>$90,000</td>
</tr>
<tr>
<td>Construction cost contingency</td>
<td>$132,277</td>
</tr>
<tr>
<td>Central Office changes</td>
<td>$25,000</td>
</tr>
<tr>
<td>State funding for unserved areas</td>
<td>$1,125,562 (45%)</td>
</tr>
<tr>
<td><strong>Total potential savings</strong></td>
<td>$1,372,839</td>
</tr>
<tr>
<td><strong>Project cost to model</strong></td>
<td>$1,128,411</td>
</tr>
</tbody>
</table>

Assumptions

- Pole replacements could be reduced in ½- or less depending on the condition of the poles
- Drops to the home cost are determined at a 60% take rate- approximately 382 customers.
- You are eligible for a ConnectMaine grant that will reduce this estimate substantially- we have modeled a 45% grant in the amount of $1,125,562 reducing the cost of the bond to $1,128,411
- **Borrow $1,128,411 for 20 years**

**Revenue and Expense Modeling**

Be aware that the Revenue and Expense modeling is just one set of assumptions based on our experience with over 25 planning processes and deployments of FTTH. Each ISP would have its own internal modeling and calculations.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of Homes Served</th>
<th>Revenue</th>
<th>ISP Expenses - includes payment to Town</th>
<th>Town payment from ISP - $20.00 per sub/per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>321</td>
<td>$253,794</td>
<td>$215,487</td>
<td>$77,520</td>
</tr>
<tr>
<td>#2</td>
<td>347</td>
<td>$273,915</td>
<td>$226,792</td>
<td>$83,520</td>
</tr>
<tr>
<td>#3</td>
<td>378</td>
<td>$296,862</td>
<td>$240,340</td>
<td>$90,720</td>
</tr>
<tr>
<td>#4</td>
<td>409</td>
<td>$322,367</td>
<td>$254,968</td>
<td>$98,400</td>
</tr>
<tr>
<td>#5</td>
<td>440</td>
<td>$346,028</td>
<td>$268,156</td>
<td>$105,600</td>
</tr>
</tbody>
</table>

Take rate Assumptions:

<table>
<thead>
<tr>
<th>Year</th>
<th>Take rate- Year Round</th>
<th>Take rate- Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>50%</td>
<td>55%</td>
</tr>
<tr>
<td>#2</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>#3</td>
<td>60%</td>
<td>65%</td>
</tr>
<tr>
<td>#4</td>
<td>65%</td>
<td>70%</td>
</tr>
<tr>
<td>#5</td>
<td>70%</td>
<td>75%</td>
</tr>
</tbody>
</table>

Subscriber rates:

<table>
<thead>
<tr>
<th>Rate</th>
<th>Monthly- Year-round</th>
<th>Monthly- Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/50Mbps</td>
<td>$59.99</td>
<td>$50.99</td>
</tr>
<tr>
<td>100/100Mbps</td>
<td>$64.99</td>
<td>$55.99</td>
</tr>
<tr>
<td>250/250Mbps</td>
<td>$109.99</td>
<td>$93.49</td>
</tr>
</tbody>
</table>

Using the figure of $1,128,411, I calculated the payments for 20 years using the Municipal Bond Bank calculator. There are several ways to finance this amount of borrowing, but the bond bank has the lowest interest rates and flexible terms.

The payment is $74,118/year for 20 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Payment</th>
<th>Revenue Return</th>
<th>Surplus/Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction year</td>
<td>$74,118</td>
<td>$0</td>
<td>($74,118)</td>
</tr>
<tr>
<td>YEAR 1 of service</td>
<td>$74,118</td>
<td>$77,520</td>
<td>$3,402</td>
</tr>
<tr>
<td>YEAR 2 of service</td>
<td>$74,118</td>
<td>$83,520</td>
<td>$9,402</td>
</tr>
<tr>
<td>YEAR 3 of service</td>
<td>$74,118</td>
<td>$90,720</td>
<td>$16,602</td>
</tr>
<tr>
<td>YEAR 4 of service</td>
<td>$74,118</td>
<td>$98,640</td>
<td>$24,522</td>
</tr>
<tr>
<td>YEAR 5 of service</td>
<td>$74,118</td>
<td>$105,600</td>
<td>$31,482</td>
</tr>
</tbody>
</table>

Over the first five years of operations, there is surplus revenue of $11,292. Over the following 15 years, the surplus adds an additional $31,482/per year, adding over $472,230 in revenue surplus.

These funds could be used to create an Affordability Fund, pay for equipment replacement and insurance, supplement a public utility or go back into general funds.

In essence, the system pays for itself after Year 2, and significant revenue is starting to be derived by subscribers- AND surplus revenue starts to be derived beyond the bond repayment.
Repayment Structure

Our repayment structure, which is operational in other projects, provides quarterly payments for year-round subscribers.

In this way, the town can expect a check from us in the following month of the Quarter for the previous three months of revenue collected.

We would provide a list of customers, if requested, to match up the revenue return calculation and to check our work to ensure the Town is receiving full payment.

Applicant for Grants

Because our model advocates for being municipally owned, we urge you to submit grants in the owner’s name- Town of Liberty. However, suppose the committee/Town is more comfortable with Axiom owning the system. In that case, we are good with that- but we would still strongly suggest bonding- as it’s by far the lowest cost of borrowing and is one of the critical elements that help the project not have any direct taxpayer cost.

Of course, Axiom would identify and support grant opportunities as they become available.

Repair Obligation

All repairs will be the responsibility of Axiom to coordinate and oversee. Axiom will repair all drops (lines from the utility pole to each home) and the customer premise equipment with no pass-thru cost to the Town.

For catastrophic repairs of the main trunk line, those issues are typically expensive and could trigger an insurance claim; whoever is holding this insurance would be responsible for the co-pay. As I stated in the section above, it may be cheaper for Axiom to insure the system, but the responsibility of any claim would be on the owner. So, any co-pays (typically $1500) would be passed on to the Town, or if Axiom owned the system, there is no liability to the Town. However, surplus revenues will easily cover any insurance claim. If you would like Axiom to insure the system, we would need to work with you to determine the cost of that and where the responsibility for the co-pay/deductible would be. Indeed, with a bit of discussion, I believe we can come to a reasonable solution for both parties. The liability here is relatively small ($1500 per claim).

Time to Install

Here is a general timeline of when money is received to construct the system.

- Pole licensing and make ready- 8 to 10 months
- Construction- 3-4 months
- Home connections- 2-3 months

**Total time once money is secured- 14 months to 16 months for all subscribers to be hooked up and service is operational.**

Examples of other installs

Operational for 3 years: Cranberry Isles- 220 subscribers across three unbridged islands.
Operational for 2 years: Cliff Island- 85 subscribers
Expected this year: Monhegan Island- 135 pre-subscribers waiting for construction to begin.
Expected this year: Georgetown- 425 pre-subscribers, $1M in construction material ordered.
Expected this year: Southport- 125 pre-subscribers, $800,000 in construction materials ordered

We also use the model proposed here in several other builds, including Leeds, Arrowsic, Roque Bluffs, Somerville, Washington, Isle au Haut, and Chebeague Island.

**Expected Speeds of Service**

Axiom would build a world-class fiber system that would bring best-in-class reliability and deliver unrivaled bandwidth to your community. Axiom would guarantee that each subscriber would receive their total bandwidth purchased- even in the heaviest usage times in the summer months when the community population swells to include the many seasonal residents. This would not be an “up to” or “best-effort” service. If you subscribe to receive 100/100Mbps- you will be able to test that and always receive your bandwidth, day or night, summer or winter.

The system will be built to deliver symmetrical service to each home, meaning we are offering symmetrical (same speeds uploading and downloading) at no additional cost to the subscriber. Each subscriber will be capable of receiving a 1Gig/1Gig (1000/1000Mbps) from day one.

**Assistance with Grants**

Axiom has vast experience working with communities to identify, apply for, and be awarded grants at the local, state, and federal levels.

Axiom has been integral in writing and supporting winning grants with NTIA, USDA, EDA, Northern Border Commission, CARES Act, ConnectMaine planning and infrastructure funds, Island Institute, Microsoft Airband Initiative, and the Maine Community Foundation.

We obviously cannot “promise” success, but we have an outstanding track record. Our assumptions suggest that this project would have an excellent opportunity to attract a good amount of the total cost in funding. I believe you have all the ingredients to be successful. Axiom will stand side by side and heavily support any applications that would reduce the build cost or support ongoing operations.

**Final Thoughts**

In summary, Axiom is committed to small, rural towns and being a solid partner with the community. We are committed to municipally-owned networks because we believe networks controlled by the community produce better consumer experiences and force the contracted ISP to be more responsive to issues. My desire is to bring better connectivity than Portland or New York City. If owning the asset is not your cup of tea, we would be happy to take ownership and reduce that risk to the town.

- No increase in taxes
- Substantial opportunity for grant funding to reduce the cost
- Competitive pricing for subscribers
- A community-minded partner that cares deeply about the communities we serve
Appendix B - Freedom

- No new taxes- system cost covered by subscribers
- Futureproof- system capable of 1G/1G
- Revenue surplus over the life of the project
- Municipally owned... or owned by Axiom

Axiom is operating or is set to operate several municipally owned or privately funded networks in Maine. The benefit of this model is that municipalities retain ownership and therefore operational oversight of the network. This feature allows a much more collaborative approach with the Internet Service Provider where the goals of the ISP and the community are aligned, and success is mutually beneficial. This model corrects the inequity that has been created by DSL technology by providing the same world class connectivity and reliability to every home and business in the community. Because it is community driven (owned by Town)
and will have superior service to Consolidated or even Spectrum internet service, the formula that this model offers can be very successful and likely not raise taxes, paying for itself and producing surplus revenues in the future years. This should not be considered a full-blown analysis, but rather a starting point for discussions.

The outline of this approach are contained in the main RFP response. This document is intended to amplify our approach and help all four communities understand how Axiom works with communities who want to own their own network.

Cost of Construction before potential grants and savings:

- The objective is a project fully paid for by subscribers, not taxpayers
- Because Axiom will generate subscriber fees and use a portion of those fees to pay back the bond - the initial cost of the project is not the true cost – it’s over 95% less
- The belief is that any “gaps” in the cost could be covered by grants or Rescue plan funds from the town or the county.

Estimated construction cost: $1,674,575*

* Includes:
  - Make ready that may get partially eliminated
  - Pole replacement costs that are an estimate and get partially eliminated
  - Central Office budget, may get reduced depending on location and reconfigure- do we need a telco hut or can we get away with standing enclosures or an existing room in a town owned building
  - 10% contingency may not be needed

Cost breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Calculations</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole Licensing Application</td>
<td>$33,333</td>
<td>This is based on the number of poles and likely very close to the cost.</td>
<td></td>
</tr>
<tr>
<td>Make Ready</td>
<td>$177,750</td>
<td>Calc: 790 poles x $225/pole = $177,750</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Pole Replacement</td>
<td>$59,250</td>
<td>Calc: 5% pole replacement - $1500/pole x 39 poles= $59,250</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Central Office (Utility Hut)</td>
<td>$250,000</td>
<td>Includes all equipment inside to light up the system and a telco hut</td>
<td>Different designs will depend on location- this is for discussion to get you a better number</td>
</tr>
<tr>
<td>CPE/Customer install (50%)</td>
<td>$76,500</td>
<td>$200 for home equipment and $250 labor for install. Calc: $450 x 170 homes= $76,500</td>
<td>Does not include a router, which we lease for $7.50/month, or buy your own.</td>
</tr>
<tr>
<td>Construction of the main system</td>
<td>$937,168</td>
<td>All-in cost from the contractor for main lines and drops to the home</td>
<td>Labor and Materials- this would need to be verified with the construction contractor</td>
</tr>
<tr>
<td>Description</td>
<td>Amount</td>
<td>Reason</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------</td>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Contingency - 10%</td>
<td>$93,716</td>
<td>10% of construction cost</td>
<td></td>
</tr>
<tr>
<td>Project Management (5%)</td>
<td>$46,858</td>
<td>Axiom fee for overseeing construction contractor, installing CO, as well as taking orders for service</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>$1,674,575</strong></td>
<td>Includes all Make Ready</td>
<td></td>
</tr>
</tbody>
</table>

Potential Cost saving could be derived if you are municipally owned, but further cost savings could be derived depending on several factors:

- The condition of the utility poles (avoiding replacements)
- Construction cost approval and timing (avoiding the 10% contingency)
- Central Office location and placement in an existing building
- State funding for unserved locations
- Using local ARPA funds

| Total construction cost estimate          | **$1,674,575** |
| Reduced by:                               |               |
| Reduced # of pole replacements            | $29,625       |
| Construction cost contingency            | $93,716       |
| Central Office changes                   | $25,000       |
| State funding for unserved areas         | $837,287 (50%) |
| Total potential savings                  | **$985,628**  |

Project cost to model: **$688,974**

Assumptions

- Pole replacements could be reduced in ½- or less depending on condition of poles
- Drops to the home cost are determined at a 50% take rate- approximately 170 customers
- You are eligible for a ConnectMaine grant that will reduce this estimate substantially- we have modeled a 50% grant in the amount of $837,287 reducing the cost of the bond to $688,974
- **Borrow $688,974 for 20 years**

Revenue and Expense Modeling

Be aware that the Revenue and Expense modeling is just one set of assumptions based on our experience with over 25 planning processes and deployments of FTTH. Each ISP would have its own internal modeling and calculations.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of Homes Served</th>
<th>Revenue</th>
<th>ISP Expenses- includes payment to Town</th>
<th>Town payment from ISP- $20.00 per sub/per month</th>
</tr>
</thead>
</table>

39
Take rate Assumptions:

<table>
<thead>
<tr>
<th>Year</th>
<th>Take rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>50%</td>
</tr>
<tr>
<td>#2</td>
<td>55%</td>
</tr>
<tr>
<td>#3</td>
<td>60%</td>
</tr>
<tr>
<td>#4</td>
<td>65%</td>
</tr>
<tr>
<td>#5</td>
<td>70%</td>
</tr>
</tbody>
</table>

Using the figure of $688,974, I calculated the payments for 20 years using the Municipal Bond Bank calculator. There are several ways to finance this amount of borrowing, but the bond bank has the lowest interest rates and flexible terms.

The payment is $46,810/year for 20 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Payment</th>
<th>Revenue Return</th>
<th>Surplus/Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction year</td>
<td>$45,253</td>
<td>$0</td>
<td>($45,253)</td>
</tr>
<tr>
<td>YEAR 1 of service</td>
<td>$45,253</td>
<td>$40,800</td>
<td>($4,452)</td>
</tr>
<tr>
<td>YEAR 2 of service</td>
<td>$45,253</td>
<td>$44,160</td>
<td>($1,093)</td>
</tr>
<tr>
<td>YEAR 3 of service</td>
<td>$45,253</td>
<td>$48,000</td>
<td>$2,747</td>
</tr>
<tr>
<td>YEAR 4 of service</td>
<td>$45,253</td>
<td>$52,080</td>
<td>$6,827</td>
</tr>
<tr>
<td>YEAR 5 of service</td>
<td>$45,253</td>
<td>$56,160</td>
<td>$10,907</td>
</tr>
</tbody>
</table>

This is a challenging situation that requires two elements to change. First, reduce the amount of borrowing by getting a larger share of grant funds. Second, obtain a higher take rate (60%) in year one. Both are achievable, but it is more your control to up the take rates earlier with good marketing.

Repayment Structure

Our repayment structure, which is operational in other projects, provides quarterly payments for year-round subscribers.

In this way, the town can expect a check from us in the following month of the Quarter for the previous three months of revenue collected.

We would provide a list of customers, if requested, to match up the revenue return calculation and to check our work to ensure the Town is receiving full payment.

Applicant for Grants

Because our model advocates for being municipally owned, we urge you to submit grants in the Town’s name. However, suppose the committee/Town is more comfortable with Axiom owning the system. In that
case, we are good with that- but we would still strongly suggest bonding- as it’s by far the lowest cost of borrowing and is one of the critical elements that help the project not have any direct taxpayer cost.

Of course, Axiom would identify and support grant opportunities as they become available.

**Repair Obligation**

All repairs will be the responsibility of Axiom to coordinate and oversee. Axiom will repair all drops (lines from the utility pole to each home) and the customer premise equipment with no pass-thru cost to the Town.

For catastrophic repairs of the main trunk line, those issues are typically expensive and could trigger an insurance claim; whoever is holding this insurance would be responsible for the co-pay. As I stated in the section above, it may be cheaper for Axiom to insure the system, but the responsibility of any claim would be on the owner. So, any co-pays (typically $1500) would be passed on to the Town, or if Axiom owned the system, no liability to the Town. However, surplus revenues will easily cover any insurance claim. If you would like Axiom to insure the system, we would need to work with you to determine the cost of that and where the responsibility for the co-pay/deductible would be. Indeed, with a bit of discussion, I believe we can come to a reasonable solution for both parties. The liability here is relatively small ($1500 per claim).

**Customer Service Offering**

Our revenue modeling is based on these subscriber rates:

<table>
<thead>
<tr>
<th>Year Round</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50/50Mbps</td>
<td>$59.99</td>
</tr>
<tr>
<td>100/100Mbps</td>
<td>$64.99</td>
</tr>
<tr>
<td>250/250Mbps</td>
<td>$109.99</td>
</tr>
</tbody>
</table>

**Time to Install**

Here is a general timeline from when money is received to construct the system.

- Pole licensing and make ready- 8 to 10 months
- Construction- 3-4 months
- Home connections- 2-3 months

**Total time once money is secured- 14 months to 16 months for all subscribers to be hooked up and service is operational.**

**Examples of other installs**

Operational for 3 years: Cranberry Isles- 200 subscribers across three unbridged islands.
Operational for 2 years: Cliff Island- 85 subscribers

Expected this year: Monhegan Island- 135 pre-subscribers waiting for construction to begin.
Expected this year: Georgetown- 410 pre-subscribers, $1M in construction material ordered.
Expected this year: Southport- 120 pre-subscribers, $800,000 in construction materials ordered

We also use the model proposed here in several other builds, including Leeds, Arrowsic, Roque Bluffs, Somerville, Washington, Isle au Haut, and Chebeague Island.
**Expected Speeds of Service**

Axiom would build a world-class fiber system that would bring best-in-class reliability and deliver unrivaled bandwidth to your community. Axiom would guarantee that each subscriber would receive their total bandwidth purchased— even in the heaviest usage times in the summer months when the community population swells to include the many seasonal residents. This would not be an “up to” or “best effort” service. If you subscribe to receive 100/100Mbps- you will be able to test that and always receive your bandwidth, day or night, summer, or winter.

The system will be built to deliver symmetrical service to each home, meaning we are offering symmetrical (same speeds uploading and downloading) at no additional cost to the subscriber. Each subscriber will be capable of receiving a 1Gig/1Gig (1000/1000Mbps) from day one.

**Assistance with Grants**

Axiom has vast experience working with communities to identify, apply for, and be awarded grants at the local, state, and federal level.

Axiom has been integral in writing and supporting winning grants with NTIA, USDA, EDA, Northern Border Commission, CARES Act, ConnectMaine planning and infrastructure funds, Island Institute, Microsoft Airband Initiative, and the Maine Community Foundation.

We obviously cannot “promise” success, but we have an excellent track record. Our assumptions suggest that this project would have an opportunity to attract a good amount of the total cost in funding. I believe you have all the ingredients to be successful. Axiom will stand side by side and heavily support any applications that would reduce the build cost or support ongoing operations.

**Final Thoughts**

In summary, Axiom is committed to small, rural towns and being a solid partner with the community. We are committed to municipally-owned networks because we believe networks controlled by the community produce better consumer experiences and force the contracted ISP to be more responsive to issues. My desire is to bring better connectivity than Portland or New York City. If owning the asset is not your cup of tea, we would be happy to take ownership and reduce that risk to the town.

- No increase in taxes
- Substantial opportunity for grant funding to reduce the cost
- Competitive pricing for subscribers
- A community-minded partner that cares deeply about the towns we serve
Appendix C - Montville

- No new taxes - system cost covered by subscribers
- A futureproof - system capable of 1G/1G
- Revenue surplus of $500,000 over the life of the project
- Municipally owned... or owned by Axiom

Axiom is operating or is set to operate several municipally owned or privately funded networks in Maine. The benefit of this model is that municipalities retain ownership and, therefore operational oversight of the network. This feature allows a much more collaborative approach with the Internet Service Provider where the goals of the ISP and the community are aligned, and success is mutually beneficial. This model corrects the inequity that has been created by DSL technology by providing the same world-class connectivity and
reliability to every home and business in the community. Because it is community-driven (owned by Town) and will have superior service to Consolidated or even Spectrum internet service, this model's formula can be very successful- and likely not raise taxes, paying for itself and producing surplus revenues in the future years. This should not be considered a full-blown analysis but rather a starting point for discussions.

The outline of this approach is contained in the primary RFP response. This document is intended to amplify our process and help all four communities understand how Axiom works with communities who want to own their network.

Cost of Construction before potential grants and savings:

- The objective is a project fully paid for by subscribers, not taxpayers.
- Because Axiom will generate subscriber fees and use a portion of those fees to pay back the bond-the initial cost of the project is not the true cost- it's over 95% less.
- The belief is that grants or Rescue plan funds could cover any “gaps” in the cost from the town or the county.

Estimated construction cost: $2,374,193*

* Includes:
  - Make ready that may get partially eliminated
  - Pole replacement costs that are an estimate and get partially eliminated
  - Central Office budget may get reduced depending on location and reconfigure- do we need a telco hut, or can we get away with standing enclosures or an existing room in a town-owned building
  - 10% contingency may not be needed

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Calculations</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole Licensing Application</td>
<td>$52,056</td>
<td>This is based on the number of poles and likely very close to the cost.</td>
<td></td>
</tr>
<tr>
<td>Make Ready</td>
<td>$265,275</td>
<td>Calc: 1179 poles x $225/pole= $265,275</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Pole Replacement</td>
<td>$88,500</td>
<td>Calc: 5% pole replacement- $1500/pole x 59 poles= $88,500</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Central Office (Utility Hut)</td>
<td>$250,000</td>
<td>Includes all equipment inside to light up the system and a telco hut</td>
<td>Different designs will depend on location- this is for discussion to get you a better number</td>
</tr>
<tr>
<td>CPE/Customer install (70%)</td>
<td>$147,600</td>
<td>$200 for home equipment and $250 labor for install. Calc: $450 x 328 homes= $147,600</td>
<td>Does not include a router, which we lease for $7.50/month, or buy your own.</td>
</tr>
<tr>
<td>Construction of the main system</td>
<td>$1,365,945</td>
<td>All-in cost from the contractor for main lines and drops to the home</td>
<td>Labor and Materials- this would need to be verified with the construction contractor</td>
</tr>
</tbody>
</table>
Potential Cost saving could be derived if you are municipally owned, but further cost savings could be derived depending on several factors:

- The condition of the utility poles (avoiding replacements)
- Construction cost approval and timing (avoiding the 10% contingency)
- Central Office location and placement in an existing building
- State funding for unserved locations
- Using local ARPA funds

<table>
<thead>
<tr>
<th>Total construction cost estimate</th>
<th>$2,374,194</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced by:</td>
<td></td>
</tr>
<tr>
<td>Reduced # of pole replacements</td>
<td>$44,212</td>
</tr>
<tr>
<td>Construction cost contingency</td>
<td>$136,594</td>
</tr>
<tr>
<td>Central Office changes</td>
<td>$25,000</td>
</tr>
<tr>
<td>State funding for unserved areas</td>
<td>$1,187,096 (50%)</td>
</tr>
<tr>
<td>Total potential savings</td>
<td>$1,392,902</td>
</tr>
<tr>
<td>Project cost to model</td>
<td>$981,292</td>
</tr>
</tbody>
</table>

Assumptions

- Pole replacements could be reduced in ½- or less depending on condition of poles
- Drops to the home cost are determined at a 70% take rate- approximately 328 customers
- You are eligible for a ConnectMaine grant that will reduce this estimate substantially- we have modeled a 50% grant in the amount of $1,187,096 reducing the cost of the bond to $981,292
- **Borrow $981,292 for 20 years**

**Revenue and Expense Modeling**

Be aware that the Revenue and Expense modeling is just one set of assumptions based on our experience with over 25 planning processes and deployments of FTTH. Each ISP would have its own internal modeling and calculations.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of Homes Served</th>
<th>Revenue</th>
<th>ISP Expenses- includes payment to Town</th>
<th>Town payment from ISP- $25.00 per sub/per month</th>
</tr>
</thead>
</table>


Take rate Assumptions:

<table>
<thead>
<tr>
<th>Year</th>
<th>Take rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>50%</td>
</tr>
<tr>
<td>#2</td>
<td>55%</td>
</tr>
<tr>
<td>#3</td>
<td>60%</td>
</tr>
<tr>
<td>#4</td>
<td>65%</td>
</tr>
<tr>
<td>#5</td>
<td>70%</td>
</tr>
</tbody>
</table>

Using the figure of $981,282, I calculated the payments for 20 years using the Municipal Bond Bank calculator. There are a number of ways to finance this amount of borrowing, but the bond bank has the lowest interest rates and flexible terms.

The payment is $60,680/year for 20 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Payment</th>
<th>Revenue Return</th>
<th>Surplus/Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction year</td>
<td>$64,454</td>
<td>$0</td>
<td>($64,454)</td>
</tr>
<tr>
<td>YEAR 1 of service</td>
<td>$64,454</td>
<td>$70,500</td>
<td>$6046</td>
</tr>
<tr>
<td>YEAR 2 of service</td>
<td>$64,454</td>
<td>$75,900</td>
<td>$11,446</td>
</tr>
<tr>
<td>YEAR 3 of service</td>
<td>$64,484</td>
<td>$82,800</td>
<td>$18,346</td>
</tr>
<tr>
<td>YEAR 4 of service</td>
<td>$64,484</td>
<td>$89,700</td>
<td>$25,216</td>
</tr>
<tr>
<td>YEAR 5 of service</td>
<td>$64,484</td>
<td>$96,600</td>
<td>$32,116</td>
</tr>
</tbody>
</table>

Over the first 5 years of operations, there is surplus revenue of $28,716. Over the following 15 years, the surplus adds an additional $32,116/per year adding over $480,000 in revenue surplus.

These are the funds that could be used to create an Affordability Fund, pay for equipment replacement and insurance, supplement a public utility or go back into general funds.

In essence, the system pays for itself after Year 2 and significant revenue is starting to be derived by subscribers- AND surplus revenue starts to be derived beyond the bond repayment.

Repayment Structure

Our repayment structure, which is in place and operational in other projects, provides for quarterly payments for year-round subscribers.

In this way, the town can expect a check from us in the following month of the Quarter for the previous 3 months of revenue collected.

We would provide a list of customers, if requested, to match up the revenue return calculation and to check our work to ensure full payment is being received by the Town.
Applicant for Grants

Because our model advocates for being municipally owned, we would urge you to submit grants in the Town’s name. However, if the committee/Town is more comfortable with Axiom owning the system, we are good with that- but we would still strongly suggest bonding- as it’s by far the lowest cost of borrowing and is one of the key elements that helps the project not have any direct taxpayer cost.

Of course, Axiom would identify and support grant opportunities as they become available.

Repair Obligation

All repairs will be the responsibility of Axiom to coordinate and oversee. Axiom will repair all drops (lines from the utility pole to each home) and the customer premise equipment with no pass-thru cost to the Town.

For catastrophic repairs of the main trunk line, those types of issues are typically expensive and could trigger an insurance claim, whoever is holding this insurance would be responsible for the co-pay. As I stated in the section above, it may be cheaper for Axiom to insure the system, but the responsibility of any claim would be on the owner. So, any co-pays (typically $1500) would be passed on to the Town or if Axiom owned the system, no liability to the Town. However, surplus revenues will easily cover any insurance claim. If you would like Axiom to insure the system, we would need to work with you to determine the cost of that and where the responsibility for the co-pay/deductible would be. Certainly, with a little discussion, I believe we can come to a reasonable solution for both parties. The liability here is relatively small ($1500 per claim).

Customer Service Offering

Our revenue modeling is based on these subscriber rates:

<table>
<thead>
<tr>
<th>Year Round</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50/50Mbps</td>
<td>$59.99</td>
</tr>
<tr>
<td>100/100Mbps</td>
<td>$64.99</td>
</tr>
<tr>
<td>250/250Mbps</td>
<td>$109.99</td>
</tr>
</tbody>
</table>

Time to Install

Here is a general timeline from when money is received to construct the system.

- Pole licensing and make ready- 8 to 10 months
- Construction- 3-4 months
- Home connections- 2-3 months

Total time once money is secured- 14 months to 16 months for all subscribers to be hooked up and service is operational.

Examples of other installs

Operational for 3 years: Cranberry Isles- 200 subscribers across three unbridged islands.
Operational for 2 years: Cliff Island- 85 subscribers

Expected this year: Monhegan Island- 135 pre-subscribers waiting for construction to begin.
Expected this year: Georgetown- 410 pre-subscribers, $1M in construction material ordered
Expected this year: Southport- 120 pre-subscribers, $800,000 in construction materials ordered
We are also using the model proposed here in several other builds including Leeds, Arrowsic, Roque Bluffs, Somerville, Washington, Isle au Haut and Chebeague Island.

**Expected Speeds of Service**

Axiom would build a world class fiber system that would bring best-in-class reliability and deliver unrivaled bandwidth to your community. Axiom would guarantee that each subscriber would receive their total bandwidth purchased- even in the heaviest usage times in the summer months when the community population swells to include the many seasonal residents. This would not be an “up to” or “best effort” service. If you subscribe to receive 100/100Mbps- you will be able to test that and always receive your bandwidth, day or night, summer, or winter.

The system will be built to deliver symmetrical service to each home, meaning we are offering symmetrical (same speeds uploading and downloading) at no additional cost to the subscriber and each subscriber will be capable of receiving a 1Gig/1Gig (1000/1000Mbps) from day one.

**Assistance with Grants**

Axiom has vast experience working with communities to identify, apply for and be awarded grants at the local, state, and federal level.

Axiom has been integral in writing and supporting winning grants with NTIA, USDA, EDA, Northern Border Commission, CARES Act, ConnectMaine planning and infrastructure funds, Island Institute, Microsoft Airband Initiative, and the Maine Community Foundation.

We obviously cannot “promise” success, but we have a very good track record. In our assumptions, we suggest that this project would have a good opportunity to attract a good amount of the total cost in funding. I believe you have all the ingredients to be successful and Axiom will stand side by side and heavily support any applications that would reduce the cost of the build or support ongoing operations.

**Final Thoughts**

In summary, Axiom is very much committed to small, rural towns and being a strong partner with the community. We are committed to municipally owned networks because we believe networks that are controlled by the community, produces better consumer experiences and forces the contracted ISP to be more responsive to issues. My desire is to bring better connectivity that Portland or New York City. If owning the asset is not your cup of tea, we would be happy to take ownership and reduce that risk to the town.

- No increase in taxes
- Strong opportunity for grant funding to reduce the cost
- Competitive pricing for subscribers
- A community minded partner that cares deeply about the towns we serve
Appendix D - Palermo

- System cost covered by subscribers
- A futureproof system capable of 1G/1G
- Revenue surplus of over $275,000 over the life of the project
- Municipally owned... or owned by Axiom
Axiom is operating or is set to operate several municipally owned or privately funded networks in Maine. The benefit of this model is that municipalities retain ownership and, therefore, operational oversight of the network. This feature allows a much more collaborative approach with the Internet Service Provider where the goals of the ISP and the community are aligned, and success is mutually beneficial. This model corrects the inequity that has been created by DSL technology by providing the same world-class connectivity and reliability to every home and business in the community. Because it is community-driven (owned by Town) and will have superior service to Consolidated or even Spectrum internet service, this model’s formula can be very successful and likely not raise taxes, paying for itself and producing surplus revenues in the future years. This should not be considered a full-blown analysis but rather a starting point for discussions.

This document is intended to amplify our approach and help all four communities understand how Axiom works with communities who want to own their network.

**Cost of Construction before potential grants and savings:**

- The objective is a project fully paid for by subscribers, not taxpayers.
- Because Axiom will generate subscriber fees and use a portion of those fees to pay back the bond, the project's initial cost is not the true cost - it's over 95% less.
- The belief is that grants or Rescue plan funds could cover any “gaps” in the cost from the town or the county.

**Estimated construction cost:** $3,355,526*

* Includes:
  - Pole replacement costs that are an estimate and get partially eliminated
  - Central Office budget may get reduced depending on location and reconfiguring - do we need a telco hut, or can we get away with standing enclosures or an existing room in a town-owned building
  - 10% contingency may not be needed

**Cost breakdown**

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Calculations</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole Licensing Application</td>
<td>$76,504</td>
<td>This is based on the number of poles and likely very close to the cost.</td>
<td></td>
</tr>
<tr>
<td>Make Ready</td>
<td>$647,600</td>
<td>Calc: 1619 poles x $400/pole = $647,600</td>
<td>ESTIMATE - to be discussed</td>
</tr>
<tr>
<td>Pole Replacement</td>
<td>$253,500</td>
<td>Calc: 10% pole replacement - $1500/pole x 169 poles = $253,500</td>
<td>ESTIMATE - to be discussed</td>
</tr>
<tr>
<td>Central Office (Utility Hut)</td>
<td>$325,000</td>
<td>Includes all equipment inside to light up the system and a telco hut</td>
<td>Different designs will depend on location - this is for discussion to get you a better number</td>
</tr>
<tr>
<td>CPE/Customer install (40%) 304 customers</td>
<td>$136,800</td>
<td>$200 for home equipment and $250 labor for install. Calc: $450 x 304 homes = $136,800</td>
<td>Does not include a router, which we lease for $7.50/month, or buy your own.</td>
</tr>
</tbody>
</table>
Potential Cost savings could be derived if you are municipally owned, but further cost savings could be derived depending on several factors:

- The condition of the utility poles (avoiding replacements)
- Construction cost approval and timing (avoiding the 10% contingency)
- Central Office location and placement in an existing building
- State funding for unserved locations
- Using local ARPA funds

<table>
<thead>
<tr>
<th>Total construction cost estimate</th>
<th>$3,355,526</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced by:</td>
<td></td>
</tr>
<tr>
<td>Reduced # of pole replacements</td>
<td>$126,750</td>
</tr>
<tr>
<td>Construction cost contingency</td>
<td>$160,010</td>
</tr>
<tr>
<td>Central Office changes</td>
<td>$25,000</td>
</tr>
<tr>
<td>State funding for unserved areas</td>
<td>$836,219 (25%)</td>
</tr>
<tr>
<td>Total potential savings</td>
<td>$1,147,979</td>
</tr>
<tr>
<td>Project cost to model</td>
<td>$2,207,547</td>
</tr>
</tbody>
</table>

Assumptions

- Pole replacements could be reduced in ½- or less depending on the condition of the poles.
- Drops to the home cost are determined at a 40% take rate- approximately 304 customers.
- You are eligible for a ConnectMaine grant that will reduce this estimate considerably- we have modeled a 30% grant in the amount of $836,219, reducing the cost of the bond to $2,196,898
- Borrow $2,207,547 for 20 years

Revenue and Expense Modeling

Be aware that the Revenue and Expense modeling is just one set of assumptions based on our experience with over 25 planning processes and deployments of FTTH. Each ISP would have its own internal modeling and calculations.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of Homes Served</th>
<th>Revenue</th>
<th>ISP Expenses- includes payment to Town</th>
<th>Town payment from ISP-$30.00 per sub/per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>369</td>
<td>$289,483</td>
<td>$242,802</td>
<td>$132,840</td>
</tr>
<tr>
<td>#2</td>
<td>413</td>
<td>$324,419</td>
<td>$262,543</td>
<td>$148,680</td>
</tr>
<tr>
<td>#3</td>
<td>427</td>
<td>$334,839</td>
<td>$268,824</td>
<td>$153,720</td>
</tr>
<tr>
<td>#4</td>
<td>449</td>
<td>$352,198</td>
<td>$279,054</td>
<td>$162,000</td>
</tr>
<tr>
<td>#5</td>
<td>473</td>
<td>$370,597</td>
<td>$289,462</td>
<td>$170,280</td>
</tr>
</tbody>
</table>

Take rate Assumptions:

<table>
<thead>
<tr>
<th>Year</th>
<th>Take rate- Residential</th>
<th>Take rate- Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>#2</td>
<td>40%</td>
<td>45%</td>
</tr>
<tr>
<td>#3</td>
<td>41%</td>
<td>50%</td>
</tr>
<tr>
<td>#4</td>
<td>43%</td>
<td>55%</td>
</tr>
<tr>
<td>#5</td>
<td>45%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Rate Groups:

<table>
<thead>
<tr>
<th>Speeds</th>
<th>Monthly cost for residents</th>
<th>Monthly cost for seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/50Mbps</td>
<td>$59.99</td>
<td>$50.99</td>
</tr>
<tr>
<td>100/100Mbps</td>
<td>$64.99</td>
<td>$55.99</td>
</tr>
<tr>
<td>250/250Mbps</td>
<td>$109.99</td>
<td>$93.99</td>
</tr>
</tbody>
</table>

Using the figure of $2,207,547, I calculated the payments for 20 years using the Municipal Bond Bank calculator. There are several ways to finance this amount of borrowing, but the bond bank has the lowest interest rates and flexible terms.

The payment is $144,999/year for 20 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Payment</th>
<th>Revenue Return</th>
<th>Surplus/Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction year</td>
<td>$144,999</td>
<td>$0</td>
<td>($144,999)</td>
</tr>
<tr>
<td>YEAR 1 of service</td>
<td>$144,999</td>
<td>$132,840</td>
<td>($12,159)</td>
</tr>
<tr>
<td>YEAR 2 of service</td>
<td>$144,999</td>
<td>$148,680</td>
<td>$3,681</td>
</tr>
<tr>
<td>YEAR 3 of service</td>
<td>$144,999</td>
<td>$153,720</td>
<td>$8,721</td>
</tr>
<tr>
<td>YEAR 4 of service</td>
<td>$144,999</td>
<td>$162,000</td>
<td>$17,001</td>
</tr>
<tr>
<td>YEAR 5 of service</td>
<td>$144,999</td>
<td>$170,280</td>
<td>$25,281</td>
</tr>
</tbody>
</table>

Over the first five years of operations, there is a revenue deficit ($102,474) that will need a subsidy from the town. However, over the following 15 years, the surplus adds $25,281/per year, adding over $379,215 in revenue surplus. This makes the project tax-neutral over the life of the bond.

These funds could be used to pay for equipment replacement and insurance, create an Affordability Fund, supplement a public utility, or go back into general funds.

Simply put, the system pays for itself.
Repayment Structure

Our repayment structure, operational in other projects, provides quarterly payments for year-round subscribers.

In this way, the town can expect a check from us in the following month of the Quarter for the previous three months of revenue collected.

We would provide a list of customers, if requested, to match up the revenue return calculation and to check our work to ensure the Town is receiving full payment.

Applicant for Grants

Because our model advocates for being municipally owned, we urge you to submit grants in the Town’s name. However, suppose the committee/Town is more comfortable with Axiom owning the system. In that case, we are good with that- but we would still strongly suggest bonding- as it’s by far the lowest cost of borrowing and is one of the critical elements that help the project not have any direct taxpayer cost.

Of course, Axiom would identify and support grant opportunities as they become available.

Repair Obligation

All repairs will be the responsibility of Axiom to coordinate and oversee. Axiom will repair all drops (lines from the utility pole to each home) and the customer premise equipment with no pass-thru cost to the Town.

For catastrophic repairs of the main trunk line, those issues are typically expensive and could trigger an insurance claim; whoever is holding this insurance would be responsible for the co-pay. As I stated in the section above, it may be cheaper for Axiom to insure the system, but the responsibility of any claim would be on the owner. So, any co-pays (typically $1500) would be passed on to the Town, or if Axiom owned the system, there is no liability to the Town. However, surplus revenues will easily cover any insurance claim. If you would like Axiom to insure the system, we would need to work with you to determine the cost of that and where the responsibility for the co-pay/deductible would be. Indeed, with a bit of discussion, I believe we can come to a reasonable solution for both parties. The liability here is relatively small ($1500 per claim).

Time to Install

Here is a general timeline of when money is received to construct the system.

- Pole licensing and make ready- 8 to 10 months
- Construction- 3-4 months
- Home connections- 2-3 months

Total time once money is secured- 14 months to 16 months for all subscribers to be hooked up and service is operational.

Examples of other installs

Operational for 3 years: Cranberry Isles- 220 subscribers across three unbridged islands.
Operational for 2 years: Cliff Island- 85 subscribers

Expected this year: Monhegan Island- 135 pre-subscribers waiting for construction to begin.
Expected this year: Georgetown- 425 pre-subscribers, $1M in construction material ordered.
Expected this year: Southport - 125 pre-subscribers, $800,000 in construction materials ordered.

We also use the model proposed in several other builds, including Leeds, Arrowsic, Roque Bluffs, Somerville, Washington, Isle au Haut, and Chebeague Island.

**Expected Speeds of Service**

Axiom would build a world-class fiber system that would bring best-in-class reliability and deliver unrivaled bandwidth to your community. Axiom would guarantee that each subscriber would receive their total bandwidth purchased- even in the heaviest usage times in the summer months when the community population swells to include the many seasonal residents. This would not be an “up to” or “best-effort” service. If you subscribe to receive 100/100Mbps- you will be able to test that and always receive your bandwidth, day or night, summer or winter.

The system will be built to deliver symmetrical service to each home, meaning we are offering symmetrical (same speeds uploading and downloading) at no additional cost to the subscriber. Each subscriber will be capable of receiving a 1Gig/1Gig (1000/1000Mbps) from day one.

**Assistance with Grants**

Axiom has vast experience working with communities to identify, apply for, and be awarded grants at the local, state, and federal levels.

Axiom has been integral in writing and supporting winning grants with NTIA, USDA, EDA, Northern Border Commission, CARES Act, ConnectMaine planning and infrastructure funds, Island Institute, Microsoft Airband Initiative, and the Maine Community Foundation.

We obviously cannot “promise” success, but we have an excellent track record. Our assumptions suggest that this project would have an opportunity to attract a good amount of the total cost in funding. I believe you have all the ingredients to be successful. Axiom will stand side by side and heavily support any applications that would reduce the build cost or support ongoing operations.

**Final Thoughts**

In summary, Axiom is committed to small, rural towns and being a solid partner with the community. We are committed to municipally-owned networks because we believe networks controlled by the community produce better consumer experiences and force the contracted ISP to be more responsive to issues. Axiom desires to bring better connectivity than Portland or New York City. If owning the asset is not viable in your community, we would be happy to take ownership and reduce that risk to the town.

- No increase in taxes
- Substantial opportunity for grant funding to reduce the cost
- Competitive pricing for subscribers
- A community-minded partner that cares deeply about the towns we serve

**Additional issue**

There is a small section of the community that we did not price out because it is not reachable from roads within the Town and can only be accessed from the adjoining community. This area is south of Jones Corner. We will need to discuss how a provider might get service here or determine these homes are too complicated/expensive to serve and will need an alternative solution. Ten plus homes.
Appendix E- Searsmont

- No new taxes- system cost covered by subscribers
- A futureproof- system capable of 1G/1G
- Revenue surplus of over $425,000 over the life of the project
- Municipally owned... or owned by Axiom

Axiom is operating or is set to operate several municipally owned or privately funded networks in Maine. The benefit of this model is that municipalities retain ownership and, therefore, operational oversight of the network. This feature allows a much more collaborative approach with the Internet Service Provider where the goals of the ISP and the community are aligned, and success is mutually beneficial. This model corrects the inequity that has been created by DSL technology by providing the same world-class connectivity and reliability to every home and business in the community. Because it is community-driven (owned by Town) and will have superior service to Consolidated or even Spectrum internet service, this model’s formula can be very successful- and likely not raise taxes, paying for itself and producing surplus revenues in the future years. This should not be considered a full-blown analysis but rather a starting point for discussions.
This document is intended to amplify our approach and help all four communities understand how Axiom works with communities who want to own their network.

Cost of Construction before potential grants and savings:

- The objective is a project fully paid for by subscribers, not taxpayers.
- Because Axiom will generate subscriber fees and use a portion of those fees to pay back the bond, the project's initial cost is not the true cost- it's over 95% less.
- The belief is that grants or Rescue plan funds could cover any “gaps” in the cost from the town or the county.

Estimated construction cost: $2,331,294*

* Includes:
  - Pole replacement costs that are an estimate and get partially eliminated
  - Central Office budget may get reduced depending on location and reconfigure- do we need a telco hut, or can we get away with standing enclosures or an existing room in a town-owned building
  - 10% contingency may not be needed

Cost breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Calculations</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole Licensing Application</td>
<td>$58,174</td>
<td>This is based on the number of poles and likely very close to the cost.</td>
<td></td>
</tr>
<tr>
<td>Make Ready</td>
<td>$281,250</td>
<td>Calc: 1250 poles x $225/pole= $281,250</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Pole Replacement</td>
<td>$94,500</td>
<td>Calc: 5% pole replacement- $1500/pole x 63 poles= $94,500</td>
<td>ESTIMATE- to be discussed</td>
</tr>
<tr>
<td>Central Office (Utility Hut)</td>
<td>$250,000</td>
<td>Includes all equipment inside to light up the system and a telco hut</td>
<td>Different designs will depend on location- this is for discussion to get you a better number</td>
</tr>
<tr>
<td>CPE/Customer install (50%) 371 customers</td>
<td>$166,950</td>
<td>$200 for home equipment and $250 labor for install. Calc: $450 x 371 homes= $166,950</td>
<td>Does not include a router, which we lease for $7.50/month, or buy your own.</td>
</tr>
<tr>
<td>Construction of the main system</td>
<td>$1,287,322</td>
<td>All-in cost from the contractor for main lines and drops to the home</td>
<td>Labor and Materials- this would need to be verified with the construction contractor</td>
</tr>
<tr>
<td>Contingency- 10%</td>
<td>$128,732</td>
<td>10% of construction cost</td>
<td>Pricing of materials rising-as is labor cost</td>
</tr>
<tr>
<td>Project Management (5%)</td>
<td>$64,366</td>
<td>Axiom fee for overseeing construction contractor, installing CO, as well as taking orders for service</td>
<td>5% of overall project cost</td>
</tr>
</tbody>
</table>
Potential Cost saving could be derived if you are municipally owned, but further cost savings could be derived depending on several factors:

- The condition of the utility poles (avoiding replacements)
- Construction cost approval and timing (avoiding the 10% contingency)
- Central Office location and placement in an existing building
- State funding for unserved locations
- Using local ARPA funds

<table>
<thead>
<tr>
<th>Total construction cost estimate</th>
<th>$2,331,294</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced by:</td>
<td></td>
</tr>
<tr>
<td>Reduced # of pole replacements</td>
<td>$29,087</td>
</tr>
<tr>
<td>Construction cost contingency</td>
<td>$128,732</td>
</tr>
<tr>
<td>Central Office changes</td>
<td>$25,000</td>
</tr>
<tr>
<td>State funding for unserved areas</td>
<td>$1,165,647 (50%)</td>
</tr>
<tr>
<td>Total potential savings</td>
<td>$1,348,466</td>
</tr>
</tbody>
</table>

| Project cost to model           | $982,828   |

Assumptions

- Pole replacements could be reduced in ½- or less depending on the condition of the poles.
- Drops to the home cost are determined at a 40% take rate - approximately 304 customers.
- You are eligible for a ConnectMaine grant that will reduce this estimate considerably - we have modeled a 30% grant in the amount of $1,348,466, reducing the cost of the bond to $982,828
- Borrow $982,828 for 20 years

**Revenue and Expense Modeling**

Be aware that the Revenue and Expense modeling is just one set of assumptions based on our experience with over 25 planning processes and deployments of FTTH. Each ISP would have its own internal modeling and calculations.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total # of Homes Served</th>
<th>Revenue</th>
<th>ISP Expenses- includes payment to Town</th>
<th>Town payment from ISP- $15.00 per sub/per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>382</td>
<td>$310,492</td>
<td>$203,816</td>
<td>$71,280</td>
</tr>
<tr>
<td>#2</td>
<td>401</td>
<td>$335,937</td>
<td>$214,004</td>
<td>$76,860</td>
</tr>
<tr>
<td>#3</td>
<td>436</td>
<td>$365,372</td>
<td>$226,493</td>
<td>$83,700</td>
</tr>
<tr>
<td>#4</td>
<td>473</td>
<td>$394,230</td>
<td>$238,324</td>
<td>$90,180</td>
</tr>
<tr>
<td>#5</td>
<td>509</td>
<td>$403,058</td>
<td>$241,762</td>
<td>$92,160</td>
</tr>
</tbody>
</table>
Take rate Assumptions:

<table>
<thead>
<tr>
<th>Year</th>
<th>Take rate- Residential</th>
<th>Take rate- Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>50%</td>
<td>55%</td>
</tr>
<tr>
<td>#2</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>#3</td>
<td>60%</td>
<td>65%</td>
</tr>
<tr>
<td>#4</td>
<td>65%</td>
<td>67%</td>
</tr>
<tr>
<td>#5</td>
<td>66%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Using the figure of $982,828, I calculated the payments for 20 years using the Municipal Bond Bank calculator. There are several ways to finance this amount of borrowing, but the bond bank has the lowest interest rates and flexible terms.

The payment is $64,555/year for 20 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Payment</th>
<th>Revenue Return</th>
<th>Surplus/Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction year</td>
<td>$64,555</td>
<td>$0</td>
<td>($64,555)</td>
</tr>
<tr>
<td>YEAR 1 of service</td>
<td>$64,555</td>
<td>$71,280</td>
<td>$6,725</td>
</tr>
<tr>
<td>YEAR 2 of service</td>
<td>$64,555</td>
<td>$76,860</td>
<td>$12,305</td>
</tr>
<tr>
<td>YEAR 3 of service</td>
<td>$64,555</td>
<td>$83,700</td>
<td>$19,145</td>
</tr>
<tr>
<td>YEAR 4 of service</td>
<td>$64,555</td>
<td>$90,180</td>
<td>$25,625</td>
</tr>
<tr>
<td>YEAR 5 of service</td>
<td>$64,555</td>
<td>$92,160</td>
<td>$27,605</td>
</tr>
</tbody>
</table>

Over the first five years of operations, there is surplus revenue of $14,545. Over the following 15 years, the surplus adds $57,605/per year, adding over $414,075 in revenue surplus.

These funds could be used to create an Affordability Fund, pay for equipment replacement and insurance, supplement a public utility, or go back into general funds.

Simply put, the system quickly pays for itself.

**Repayment Structure**

Our repayment structure, operational in other projects, provides quarterly payments for year-round subscribers.

In this way, the town can expect a check from us in the following month of the Quarter for the previous three months of revenue collected.

We would provide a list of customers, if requested, to match up the revenue return calculation and to check our work to ensure the Town is receiving full payment.

**Applicant for Grants**

Because our model advocates for being municipally owned, we urge you to submit grants in the Town’s name. However, suppose the committee/Town is more comfortable with Axiom owning the system. In that case, we are good with that— but we would still strongly suggest bonding— as it’s by far the lowest cost of borrowing and is one of the critical elements that help the project not have any direct taxpayer cost.

Of course, Axiom would identify and support grant opportunities as they become available.
Repair Obligation

All repairs will be the responsibility of Axiom to coordinate and oversee. Axiom will repair all drops (lines from the utility pole to each home) and the customer premise equipment with no pass-thru cost to the Town.

Those issues are typically expensive for catastrophic repairs of the main trunk line and could trigger an insurance claim; whoever is holding this insurance would be responsible for the co-pay. As I stated in the section above, it may be cheaper for Axiom to insure the system, but the responsibility of any claim would be on the owner. So, any co-pays (typically $1500) would be passed on to the Town, or if Axiom owned the system, no liability to the Town. However, surplus revenues will easily cover any insurance claim. If you would like Axiom to insure the system, we would need to work with you to determine the cost of that and where the responsibility for the co-pay/deductible would be. Indeed, with a bit of discussion, I believe we can come to a reasonable solution for both parties. The liability here is relatively small ($1500 per claim).

Customer Service Offering

Our revenue modeling is based on these subscriber rates:

<table>
<thead>
<tr>
<th>Year Round</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50/50Mbps</td>
<td>$59.99</td>
</tr>
<tr>
<td>100/100Mbps</td>
<td>$64.99</td>
</tr>
<tr>
<td>250/250Mbps</td>
<td>$109.99</td>
</tr>
</tbody>
</table>

Time to Install

Here is a general timeline from when money is received to construct the system.

- Pole licensing and make ready- 8 to 10 months
- Construction- 3-4 months
- Home connections- 2-3 months

Total time once money is secured- 14 months to 16 months for all subscribers to be hooked up and service is operational.

Examples of other installs

Operational for 3 years: Cranberry Isles- 220 subscribers across three unbridged islands.
Operational for 2 years: Cliff Island- 85 subscribers

Expected this year: Monhegan Island- 135 pre-subscribers waiting for construction to begin.
Expected this year: Georgetown- 410 pre-subscribers, $1M in construction material ordered.
Expected this year: Southport- 120 pre-subscribers, $800,000 in construction materials ordered.

We also use the model proposed in several other builds, including Leeds, Arrowsic, Roque Bluffs, Somerville, Washington, Isle au Haut, and Chebeague Island.

Expected Speeds of Service

Axiom would build a world-class fiber system that would bring best-in-class reliability and deliver unrivaled bandwidth to your community. Axiom would guarantee that each subscriber would receive their total bandwidth purchased- even in the heaviest usage times in the summer months when the community population swells to include the many seasonal residents. This would not be an “up to” or “best-effort”
service. If you subscribe to receive 100/100Mbps- you will be able to test that and always receive your bandwidth, day or night, summer, or winter.

The system will be built to deliver symmetrical service to each home, meaning we are offering symmetrical (same speeds uploading and downloading) at no additional cost to the subscriber. Each subscriber will be capable of receiving a 1Gig/1Gig (1000/1000Mbps) from day one.

Assistance with Grants

Axiom has vast experience working with communities to identify, apply for, and be awarded grants at the local, state, and federal level.

Axiom has been integral in writing and supporting winning grants with NTIA, USDA, EDA, Northern Border Commission, CARES Act, ConnectMaine planning and infrastructure funds, Island Institute, Microsoft Airband Initiative, and the Maine Community Foundation.

We obviously cannot “promise” success, but we have an excellent track record. Our assumptions suggest that this project would have an opportunity to attract a good amount of the total cost in funding. I believe you have all the ingredients to be successful. Axiom will stand side by side and heavily support any applications that would reduce the build cost or support ongoing operations.

Final Thoughts

In summary, Axiom is committed to small, rural towns and being a solid partner with the community. We are committed to municipally-owned networks because we believe networks controlled by the community produce better consumer experiences and force the contracted ISP to be more responsive to issues. Axiom desires to bring better connectivity than Portland or New York City. If owning the asset is not your cup of tea, we would be happy to take ownership and reduce that risk to the town.

- No increase in taxes
- Substantial opportunity for grant funding to reduce the cost
- Competitive pricing for subscribers
- A community-minded partner that cares deeply about the towns we serve
Appendix F - GWI Proposal
Southwestern Waldo County Broadband Coalition Utility District

GWI Proposal
43 Landry Street, Biddeford, ME 04005

Date: April 11, 2022
Table of Contents

Introduction  ..... Page 3

Proposal  ..... Page 4
  Task 1: BUD Establishment and Organization  ..... Page 5
  Task 2: Developing BUD Financing  ..... Page 6
  Task 3: Design and Manage Fiber Construction  ..... Page 13
  Task 4: Operation of Open Access Network  ..... Page 24
  Task 5: Leasing Existing Capacity  ..... Page 27
  Task 6: Act as a standard offer provider  ..... Page 28

Potential Timeline  ..... Page 29

Team Members and How We Work Together  ..... Page 30

Current Experience of GWI to Build County-wide Infrastructure  ..... Page 32

Overview Municipal Broadband Model  ..... Page 33

Conclusion  ..... Page 35

Addendum 1 - FAQ Regarding Utility District  ..... Page 36

Addendum 2 - Additional Information on Areas  ..... Page 39

Addendum 3 - Overview of Bernstein Shur  ..... Page 42

Addendum 4 - Municipal Make Ready Exemption  ..... Page 47
Introduction

We appreciate Southwestern Waldo County Broadband Coalition Utility District (SWCBC Region Broadband) interest in a proposal for providing broadband throughout the county. A team led by GWI proposes to create a regional Broadband Utility District (BUD) for the constituent towns of SWCBC Region Broadband, then fund, develop, and operate a universally available fiber optic network for that BUD. The team members -- GWI, ValleyNet, Pioneer Broadband -- jointly have decades of experience financing, designing, constructing, operating fiber networks both for private investors and for regional utility districts formed by municipalities. The team partners have worked together for many years. We know how to establish successful municipal Utility Districts (UD)\(^1\) and have worked in these capacities with over 60 towns in Maine and Vermont.\(^2\) Additionally, we recommend Bernstein Shur as a Maine law firm with experience in all the legal tasks involved in establishing a Maine BUD. Over the years, GWI has retained Bernstein Shur for unrelated matters and had good experiences. Bernstein Shur would not represent GWI in any matters pertaining to this BUD.

The SWCBC Region Broadband UD will be funded by a capital stack consisting of some or all of the following elements: federal and state grants, subordinated debt, and revenue bonds. **While the constituent towns will control the BUD through its board which will consist of one representative per town, the towns will take on no liability nor debt obligations.** All obligations, liability and assets will reside with the BUD as a corporation. As a quasi-municipal entity, the cost of capital will be very low because it is advantaged in terms of tax status and government funding. **Throughout this proposal we will talk of “municipal debt/bonds”. The term is used to refer to the tax treatment of the debt, not to the status of the borrower. The “municipal debt” is owed by the BUD not the towns controlling the BUD (there are no tax obligations on the citizens or towns).**

For over 25 years, GWI has been an industry leader in providing reliable and affordable internet and telecommunications services throughout the State of Maine with an emphasis on building and retaining community relationships. The Company was founded on the belief that the internet is an essential right for all Americans and must be available to everyone, regardless of location or income status. GWI feels that it is their human obligation to offer the best quality of service to its customers while holding strong to the principles of net neutrality, open access, and data privacy.

We are a company that builds 21st century infrastructure which communities depend on to conduct their lives and grow their economy. Our networks are infused with our DNA of network neutrality, privacy, and security. These networks are vital for everyone; digital inclusion is a fundamental goal. Every day we measure our performance not just on profit but on the positive impact our network has on the communities we passionately serve.

We are taking a leading role in defining what it means to be a company in the 21st century and executing on plans that will have a generational impact on our society at large. GWI is the first Broadband Carrier in the nation to achieve B Corporation certification. The certification also requires that employees, community, environment, vendors and shareholders be the drivers for every decision made at the corporate level and tracked via governance metrics, processes and controls.

---

\(^1\) In Maine, under statute broadband municipal utility districts are called Broadband Utility Districts. In Vermont under statute they are called Communications Union Districts. We refer to both as Utility Districts.

\(^2\) And one community in New Hampshire.
Proposal

The team will provide universal fiber, symmetric, gigabit broadband throughout a very large scale utility district in SWCBC Region Broadband. On behalf of the towns, we will:

1. Establish and organize a Broadband Utility District (BUD);
2. Develop financing for the BUD;
3. Design and manage fiber construction;
4. Operate the district’s network as “lit service” (Ethernet) open access network;
5. Where there is an existing gigabit symmetric network available on reasonable terms, lease existing capacity instead of overbuilding;
6. Act as a “standard offer” provider.

Each of these tasks will be described in detail below. Please note that GWI is prepared to submit a very comprehensive documentation set (about 100 pages) with detailed FAQ’s, sample business model, sample contracts, municipal bond offering documents, deeper network topology overview, sales and marketing approaches etc. if this submitted proposal is selected for further conversation and consideration.
Task 1: BUD Establishment and Organization

Sub-tasks:
1. Interlocal agreement between first towns;
2. Draft warrant articles for town meetings to approve interlocal agreements
3. BUD bylaws and initial consent resolutions.
4. Establishment of corporation and filing with the State.

The first step will be to establish interlocal agreements among the initial two or more towns to join. As they have done for other Maine BUDs and interlocal agreements, Bernstein Shur would be responsible for coming up with draft agreements which then might be reviewed by the town’s outside counsel. The town councils would then draft warrants for the spring/summer town meetings. This task would not take long, but needs to be started in the next few months. Otherwise, the deadline of town meeting will not be met in time for key federal funding windows.

The interlocal agreement would set out the terms of the services to be provided and the mechanism to do so (i.e. to set up a separate BUD entity). Maine law allows for the creation of a municipal utility district that will either provide or through public-private partnerships, to support or promote broadband or internet services. The formation documents (i.e. the interlocal agreement and/or the district formation documents) would outline specifics of board appointments, etc. Each member (i.e political subdivision3) typically is allowed to appoint their own members).

The BUD bylaws would be drafted, the corporation would be established after a determination of what type of corporation it would be and registered with the State. Officers would be appointed.

The standard trajectory is that other towns join later. The vast majority of UDs we have seen have started with 2-5 towns. Most have grown to the 25-35 town range with some as few as 12 and one of over 55 towns.

There will need to be a convener/organizer and each town will need one or more committed volunteers who are willing to devote some time each week for at least six months in order to get the organization off the ground and then act as board members/officers. If necessary, GWI will act as convener/organizer. However, the optimal result for the towns would be for Maine West or some other existing regional organization with strong ties to the community to act as convener with GWI as an advisor and aid. This would lower cost, accelerate progress, and probably result in a better outcome. Please see Addendum 1 below for additional information.

The legal work on behalf of the BUD will be done by Bernstein Shur (please see Addendum 3 for additional information). While the legal fees will be determined by how easily towns reach agreement, the initial legal fees to establish other UDs have been less than $10,000.

ValleyNet convened, organized and established ECFiber. GWI is working with DVFiber on the same tasks which are essentially completed. GWI has worked closely with the Town of Islesboro and Rockport and the Cities of Ellsworth, South Portland, and Sanford on many of these tasks. Bernstein Shur did the legal work to establish one of the first regional BUDs in Maine, Midcoast Internet Development Corporation (MIDC).

3 The term “political subdivisions” include municipalities, plantations, counties, quasi-municipal corporations and special purpose districts (including but not limited to water districts, sanitary districts, hospital districts, municipal transportation and distribution utility and school administrative units). In order for unorganized territories to participate it would likely require agreement by the relevant County to participate in the interlocal agreement.
**Task 2: Developing BUD Financing**

With the demonstrated success of UDrs in other states, the advent of significant federal funding, and the strong interest by private investors in financing fiber infrastructure, financing BUDs is a much easier task than in the past. A key tool is using multiple funding sources should be used building a “capital stack”, with each capital source used for a task for which it is best suited. There is great strength in a diversity of funding sources. See table 1 below (cost of capital is historically low and is for illustrative purposes only. Future capital costs may vary).

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Permitted use</th>
<th>Funding criteria</th>
<th>Cost of Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal and State Grants</td>
<td>Unserved and underserved areas</td>
<td>Meet federal procurement and reporting requirements; security interest in grant funded portion, 0-25% match</td>
<td>No interest nor principle on grant amount</td>
</tr>
<tr>
<td>Municipal revenue bonds</td>
<td>Little restriction other than tax code</td>
<td>Demonstrable ability to repay; secured by revenue stream</td>
<td>Principal; interest at Fed 10y + 3%-4%</td>
</tr>
<tr>
<td>Municipal subordinated debt</td>
<td>Little restriction other than tax code</td>
<td>Demonstrable ability to repay</td>
<td>Principal; interest at Fed 10y + 4%-8%</td>
</tr>
<tr>
<td>Private subordinated debt</td>
<td>No restriction</td>
<td>Demonstrable ability to repay</td>
<td>Principal; interest at Fed 10y + 6% - 8%</td>
</tr>
</tbody>
</table>

Until federal service maps and federal funding guidelines are completed, it is not possible to come up with an exact capital stack prediction, but a likely scenario for SWCBC Region Broadband universal service is to build a capital stack described in table 2 below. Amounts are estimates. Interest rates are the spread above 10y Federal Treasuries and based on historical spreads.

<table>
<thead>
<tr>
<th>Use of funds</th>
<th>Source of funds</th>
<th>Amount</th>
<th>Cost of capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bootstrap</td>
<td>Existing resources and grant</td>
<td>$15,000-$75,000</td>
<td>$0-$75,000</td>
</tr>
<tr>
<td>unserved</td>
<td>Federal grants</td>
<td>$15-$25M</td>
<td>$0</td>
</tr>
<tr>
<td>Matching funds</td>
<td>Municipal subordinated debt</td>
<td>$3.75-6.25M</td>
<td>Principal + interest 5%-7%</td>
</tr>
<tr>
<td>Served areas</td>
<td>Municipal revenue bonds</td>
<td>$25-50M</td>
<td>Principal + interest 3%-4%</td>
</tr>
<tr>
<td>Retiring sub debt</td>
<td>Municipal revenue bonds</td>
<td>$2.5-5.5M</td>
<td>Principal + interest 3%-4%</td>
</tr>
</tbody>
</table>
The second tranche of municipal revenue bonds is to retire higher interest subordinated debt. Naturally this will result in an overall lower cost of capital.

An example of how this funding has worked is ECFiber of Vermont. EC Fiber is a CUD comprising 31 rural towns in East Central, Vermont. ECFiber has no employees; ValleyNet is a non-profit that provided bootstrap financing for ECFiber’s network and has since developed financing for, constructed, and operated ECFiber’s network under contract from ECFiber; effectively all of ECFiber’s employees work for ValleyNet. By 2016, ECFiber had bootstrapped itself into a position to access the municipal revenue bond market. See table 3 below.

<table>
<thead>
<tr>
<th>Series</th>
<th>Closing Date</th>
<th>Principal ($M)</th>
<th>Average Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>4/28/2016</td>
<td>$9.23</td>
<td>5.04%</td>
</tr>
<tr>
<td>2017</td>
<td>5/3/2017</td>
<td>$14.58</td>
<td>6.09%</td>
</tr>
<tr>
<td>2018</td>
<td>8/22/2018</td>
<td>$8.50</td>
<td>5.57%</td>
</tr>
<tr>
<td>2019</td>
<td>12/31/2019</td>
<td>$10.00</td>
<td>4.83%</td>
</tr>
<tr>
<td>2020</td>
<td>12/31/2020</td>
<td>$12.00</td>
<td>4.40%</td>
</tr>
<tr>
<td>2021</td>
<td>12/31/2021</td>
<td>$9.00</td>
<td>4.48%</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>$63.31</td>
<td></td>
</tr>
</tbody>
</table>

Anticipated Future Offerings

<table>
<thead>
<tr>
<th>Series</th>
<th>Closing Date</th>
<th>Principal ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>12/1/2022</td>
<td>$5.00</td>
</tr>
<tr>
<td>2023</td>
<td>12/1/2023</td>
<td>$7.00</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>$75.31</td>
</tr>
</tbody>
</table>

The ECFiber bond prospectus from the successful 2020 flotation is attached to this proposal as an addendum. ECFiber’s universal fiber network is significantly completed and will be totally completed over the next few years.

Municipal Capital Markets Group (MCMG) has acted as bond underwriters for all ECFiber flotations. Over the years, ValleyNet has built a strong relationship with MCMG. GWI developed a relationship with MCMG and we trust them. We have discussed the SWCBC Region Broadband project in concept with MCMG and they have expressed interest in potentially acting as underwriters.

Federal and State funding

Federal and state grant funding is key, not just because the funding makes possible a network in uneconomical areas, but also because it provides risk reduction and pump priming to enable additional debt funding. As with ECFiber, this debt funding with favorable terms can be the greater share of capital raised. For revenue bond funding, it is a way to establish the revenue that secures debt. For subordinated debt used as matching funds, it gives the lender confidence that risk levels are tolerable: it
is much easier to have a viable project when 75% of the capital is free. The federal funds will be disbursed by the Maine Connectivity Authority\(^4\) and it has started to post its current progress on its website; it is estimated in the next 4-6 months it will determine rules and eligibility guidelines.

All team members have significant experience obtaining state and federal grants. GWI directly won the NTIA grant for Maine’s Three Ring Binder, USDA awards, and ConnectMaine funding and has helped DVFiber win Vermont and ARPA funding. ValleyNet on the behalf of ECFiber has won many Vermont state grants, ARPA funding, and RDOF funding via the FCC. Pioneer has won many ConnectMaine grants and Rural Digital Opportunity Fund (RDOF) funding. To some extent, our success is built on the fact that at both the federal and state levels we have significant resources for shaping legislation and rules regarding funding programs and understanding the nuances of programs. We are justifiably confident that our applications get the visibility they deserve.

For all funding sources, there are common Funding sub-tasks:

1. Development of a high level technical plan;
2. Development of a business plan;
3. Development of a funding plan including build phases and funding tranches and sources.
4. Development of grant applications, bond prospectuses, investor packages and other fund-raising collateral.
5. Deal negotiations and legal work for funding tranches.

There will be an overarching goal that all premises of all constituent towns will be served and the job is not completed until all are served. However, the buildout will be in phases and there will be some association between phases and funding tranches. Funding will be an iterative process as conditions change between tranches. Over the last five years, the environment for funding rural fiber networks has continuously improved and it makes sense to flexibly adapt to current conditions.

With consultation and review by our team members and the BUD members, GWI will develop the high level technical plan, business plan and funding plan. In the same manner take the lead in developing grant applications and/or investor packages. We will work with MCMG or another underwriter and Bernstein Shur to develop bond prospectuses. Deal negotiations and legal work will be done by GWI, the BUD members, and Bernstein Shur.

\(^4\) https://www.maineconnectivity.org/
**Proforma Overview**

A preliminary pro forma has been created; please note that this analysis is preliminary and subject to change as a function of high-level and detailed level design activities which would be completed as part of the project.

Totals for the entire build GWI would undertake:

<table>
<thead>
<tr>
<th></th>
<th>No of unserved premises</th>
<th>No of underserved premises</th>
<th>No of served premises</th>
<th>Unserved - Fiber Route Miles</th>
<th>Underserved - Fiber route miles</th>
<th>Served - Fiber route miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Searsmont</td>
<td>635</td>
<td>0</td>
<td>125</td>
<td>68.3</td>
<td>0</td>
<td>13.4</td>
</tr>
<tr>
<td>Palermo</td>
<td>296</td>
<td>431</td>
<td>0</td>
<td>40.3</td>
<td>58.7</td>
<td>0</td>
</tr>
<tr>
<td>Freedom</td>
<td>306</td>
<td>54</td>
<td>13</td>
<td>38.3</td>
<td>6.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Liberty</td>
<td>522</td>
<td>80</td>
<td>2</td>
<td>60.8</td>
<td>9.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Montville</td>
<td>803</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>0.1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>No of premise passings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unserved</td>
<td>2562</td>
</tr>
<tr>
<td>Underserved</td>
<td>566</td>
</tr>
<tr>
<td>Served</td>
<td>140</td>
</tr>
<tr>
<td>Total residential premises (assumed)</td>
<td>3105</td>
</tr>
<tr>
<td>Total business premises (assumed)</td>
<td>163</td>
</tr>
<tr>
<td>Total Fiber Route Miles</td>
<td>340</td>
</tr>
</tbody>
</table>

Fiber Route Miles - **Unserved** [grant funded]; using GIS data collated by SWCBC 295.7

Fiber Route Miles - **Underserved** [grant funded]; using GIS data collated by SWCBC 74.9

Fiber Route Miles - **Served** [municipal revenue bond funded]; using GIS data collated by SWCBC 15.3
Please see Addendum 2 for additional information regarding served, underserved and unserved areas.

An important note about the organization of the project itself: The project sequencing we will implement is not in the order of regions as pointed out in the County report but as a function of the following priority:

- Unserved and underserved areas are constructed first; this is the first stage of the project (identified as Phase I and II in the proforma; conducted in parallel and together).
- As soon as the first customers from Phase I and II (conducted in parallel and together) of the project are signed up, the second stage construction addressing the served areas (identified as Phase III in the proforma) is started.

The above implementation is most efficient as it utilizes the availability of the grant funds immediately and sets the stage for the municipal revenue bonds issued by the BUD. The BUD is solely responsible for bond repayment; the constituent towns have no obligation or liability so the taxpayer is not at risk.

Below are the series of assumptions made in the generation of the proforma; these assumptions are based on the current large scale builds we are doing in VT and other projects we have started in Maine:

- Construction costs approximate ($34,000/mile for unserved; $35,000/mile for underserved areas) are based on current figures with inflationary pressures included.
- Drop, Customer premise equipment (CPE) and labor costs approximate ($800/sub) are based on current figures.
- Lead time for all material and electronics is based on current assessments given to use by vendors.
- Take rate assumptions for unserved and underserved (residential) areas are:
  - Year 1: 20%
  - Year 2: 35%
  - Year 3: 45%
  - Year 4: 55%
- Take rate assumption for served areas (residential) are:
  - Year 1: 10%
  - Year 2: 20%
  - Year 3: 30%
  - Year 4: 35%
- Take rate assumption for all areas for business are:
  - Year 1: 5%
  - Year 2: 10%
  - Year 3: 12.5%
  - Year 4: 15%
- Average revenue per unit (ARPU) for residential premises is (inclusive of voice and wifi): $72.75
- Average revenue per unit (ARPU) for business premises (inclusive of voice) is: $401.25
- Grant funding is accessed for 100% of all unserved premises, 30% of all underserved premises and 0% of all served premises. Per the current Treasury guidelines 25% is required; this match is obtained from municipal revenue bonds. The municipal revenue bond also includes enough capital to fund its own debt servicing.
- 14 month timeline from construction to first subscribers receiving service.
● Municipal revenue bonds are raised to complete the construction of the served areas.
● Based on our experience and assessment, we have assumed municipal revenue bonds to be a 23 year term at 5.5% interest. Interest only for the first three years of each bond issuance.
● Total of 28 months to complete Phase 1 and Phase 2 of the project to all the premises.
● We have not included the additional positive impact of wholesale and open access; that is a further complex exercise we will complete once we are awarded the project.

A snapshot of the proforma is shown below (GWI would appreciate the opportunity to walk through the detailed proforma together) highlights:

1. Total cost of the project is $13.4MM.
2. $6.5MM revenue bonds are needed; we have recommended them in three stages.
3. SWCBC Region Broadband BUD will generate significant cash flow. By 2025 cash excess of operations and debt service will be generated. At “steady state”, customer base of 1,640, reached in 2028, the BUD is generating $1.62MM in revenue and can fulfill its annual debt service of approximately $515K and have excess annual cash flows of approximately $162K. This excess cash can be used to lower user fees, pay off debt early, add new technology and features, or any other purpose the board and governing law allow.

It is really important to note that the costs do not include make ready costs because Maine law allows municipalities and municipal utility districts to be exempt; please see Addendum 4 for a detailed explanation and overview. This is a very attractive advantage of being a utility district.

Proforma is shown below.
<table>
<thead>
<tr>
<th>Projections - GWI as operator and ISP</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
<th>2029</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I &amp; II------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Miles</td>
<td>371</td>
<td>386</td>
<td>386</td>
<td>386</td>
<td>386</td>
<td>386</td>
<td>386</td>
<td>386</td>
<td>386</td>
</tr>
<tr>
<td>Customers</td>
<td>399</td>
<td>885</td>
<td>1,234</td>
<td>1,517</td>
<td>1,616</td>
<td>1,616</td>
<td>1,616</td>
<td>1,616</td>
<td>1,616</td>
</tr>
<tr>
<td>per mile</td>
<td>1.1</td>
<td>2.1</td>
<td>3.2</td>
<td>4.0</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>penetration</td>
<td>12.8%</td>
<td>21.2%</td>
<td>17.8%</td>
<td>17.8%</td>
<td>17.8%</td>
<td>17.8%</td>
<td>17.8%</td>
<td>17.8%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Revenue - Recurring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue - Installation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBITDA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rev bonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants</td>
<td>8,304,744</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principal rev bonds less debt reserve &amp; issue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capex including project mgt for build</td>
<td>(929,485)</td>
<td>(10,701,829)</td>
<td>(1,205,077)</td>
<td>(304,865)</td>
<td>(166,150)</td>
<td>(54,400)</td>
<td>(2,200)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative capex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash flow</td>
<td>7,375,259</td>
<td>(9,915,774)</td>
<td>247,799</td>
<td>(418,531)</td>
<td>(151,141)</td>
<td>134,273</td>
<td>162,910</td>
<td>162,699</td>
<td>158,298</td>
</tr>
<tr>
<td>Cash balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue Bond issuance</td>
<td>4,500,000</td>
<td>2,000,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINANCINGS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants - total</td>
<td>8,304,744</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rev Bond Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 yrs interest only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Debt</td>
<td>4,500,000</td>
<td>6,500,000</td>
<td>6,500,000</td>
<td>6,384,088</td>
<td>6,219,136</td>
<td>6,040,809</td>
<td>5,849,108</td>
<td>5,641,804</td>
<td></td>
</tr>
<tr>
<td>Debt Service Revenue Bonds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBITDA Coverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARPU Base</td>
<td></td>
<td>42.23</td>
<td>69.41</td>
<td>76.93</td>
<td>77.88</td>
<td>82.47</td>
<td>82.36</td>
<td>82.36</td>
<td>82.36</td>
</tr>
<tr>
<td>ARPU Revenues</td>
<td></td>
<td>-</td>
<td>179.97</td>
<td>712.79</td>
<td>1,122,293</td>
<td>1,421,066</td>
<td>1,615,442</td>
<td>1,620,936</td>
<td>1,620,936</td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td>-</td>
<td>22.20</td>
<td>24.30</td>
<td>17.09</td>
<td>14.90</td>
<td>3.60</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total ARPU Revenues</td>
<td></td>
<td>-</td>
<td>202.17</td>
<td>737.09</td>
<td>1,149,389</td>
<td>1,435,902</td>
<td>1,615,042</td>
<td>1,620,936</td>
<td>1,620,936</td>
</tr>
<tr>
<td>UDI Revenues</td>
<td></td>
<td>-</td>
<td>88.10</td>
<td>161,920</td>
<td>261,300</td>
<td>335,160</td>
<td>388,760</td>
<td>393,320</td>
<td>393,600</td>
</tr>
<tr>
<td>Operator Fees - O&amp;M fee per passing</td>
<td></td>
<td>-</td>
<td>19,400</td>
<td>23,550</td>
<td>16,900</td>
<td>14,650</td>
<td>4,900</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Customer Acquisition Costs</td>
<td></td>
<td>-</td>
<td>51,600</td>
<td>96,200</td>
<td>88,800</td>
<td>76,900</td>
<td>3,300</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Network insurance</td>
<td></td>
<td>-</td>
<td>5,559</td>
<td>11,344</td>
<td>11,577</td>
<td>11,577</td>
<td>11,577</td>
<td>11,577</td>
<td>11,577</td>
</tr>
<tr>
<td>Network maintenance</td>
<td></td>
<td>-</td>
<td>37,000</td>
<td>75,650</td>
<td>77,180</td>
<td>77,180</td>
<td>77,180</td>
<td>77,180</td>
<td>77,180</td>
</tr>
<tr>
<td>Electricity/rent/utilities</td>
<td></td>
<td>-</td>
<td>7,500</td>
<td>17,500</td>
<td>25,000</td>
<td>30,000</td>
<td>42,500</td>
<td>47,500</td>
<td>47,500</td>
</tr>
<tr>
<td>Regulatory to state</td>
<td></td>
<td>-</td>
<td>1,015</td>
<td>3,683</td>
<td>5,695</td>
<td>7,180</td>
<td>8,035</td>
<td>8,105</td>
<td>8,105</td>
</tr>
<tr>
<td>Total UDI Expenses</td>
<td></td>
<td>-</td>
<td>359,021</td>
<td>796,724</td>
<td>891,369</td>
<td>913,920</td>
<td>943,365</td>
<td>945,255</td>
<td>945,035</td>
</tr>
<tr>
<td>UDI EBITDA</td>
<td></td>
<td>-</td>
<td>(151,445)</td>
<td>(49,624)</td>
<td>245,834</td>
<td>482,046</td>
<td>675,677</td>
<td>675,681</td>
<td>675,901</td>
</tr>
</tbody>
</table>
Task 3: Design and Manage Fiber Construction

Fiber Design, Construction and Construction Management

ValleyNet, GWI, and Pioneer Broadband all have significant experience designing and building rural fiber optic networks with thousands of miles built and thousands of customers connected. Working closely with Pioneer, GWI will design the network and act as construction manager for the fiber plant, other physical plant such as fiber hubs, and electronic equipment. Actual fiber and physical plant construction will be bid out to fiber and other construction companies.

While GWI will take primary responsibility for ensuring all of the above tasks are completed successfully, our valued team members include ValleyNet and Municipal Capital Management. One of our valued team members is also a Maine ISP who will take part in building an open access network infrastructure throughout the county.

Areas The Team Will Build

The proposed project is a large-scale project in SWCBC Region Broadband. Careful coordination and collaboration will be conducted to allow for the respective networks to co-exist and appropriate fiber leasing arrangements established.

GWI is interested and focused on building a FTTx network in the following areas (data for total premises, fiber route files (unserved and served) and construction cost (inclusive of electronics and drops at an assumed take rate) are preliminary estimates currently below.

The towns that are in the SWCBC Region Broadband Utility District would be:

1. Searsmont,
2. Palermo,
3. Freedom,
4. Montville,
5. Liberty
It is interesting and valuable to note that the magnitude of this project is identical to both that is being successfully led by GWI at the current time (see “Current Experience of GWI to Build County-wide Infrastructure” below) and the ECFiber project led by ValleyNet.

Cost breakdown of construction vs contract to run and maintain the network

Detailed cost breakdown is provided in the financial pro forma (see above).

Construction

It is important to understand the various elements that can constitute the overall cost assessments. In the design and construction “budget”, where the cost ranges from approximately $34,000/mile for unserved and underserved areas to $46,000/mile for served areas, below are the various discrete cost items:

- Detail engineering & design
- Pole & premise data collection
- Pole applications
- Pole owner survey (ride out)
- Purchase construction materials
- Purchase network equipment (transport)
- Purchase fiber drops
- Purchase all other access & CPE (customer premise equipment)
- Telephone companies make ready
- Power company make ready
- Third party make ready complete
- Fiber construction labor
- Police detail & flagging
- Installation labor

Each of the above cost items has unit costs (e.g. per mile, or per subscriber); GWI is happy to do a walk through the detailed proforma for the above.

Operations and Maintenance

GWI is proposing a per passing and per subscriber pricing model to be effective upon execution of a Service Agreement which would determine the obligations GWI has to start providing O&M (operations and maintenance) services to SWCBC Region Broadband BUD. As new passings are added from the extension of the fiber network, the additional passings will be invoiced at $3.00 per passing per month. A passing is a unique serviceable residential or business address. As new subscribers are added, the subscribers will be invoiced at $20.00 per subscriber per month.
The table below details what is included under the Network Operator Passing and Subscriber Fee as a function of specific cost elements (and contractual obligations):

<table>
<thead>
<tr>
<th>Description of Cost</th>
<th>Cost to SWCBC Region Broadband Broadband Utility District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passing Fee per serviceable address per month.</td>
<td>$3.00 per month per passing</td>
</tr>
<tr>
<td>Subscriber Fee per active user per month. Changes as Subscribers are added.</td>
<td>$20.00 per month per subscriber (see volume discount schedule above)</td>
</tr>
<tr>
<td>GWI Network Operator Passing and Subscriber Support Fee - total cost to SWCBC Region Broadband BUD per active subscriber per month. This is a combination of the Passing Fee and Subscriber Fee.</td>
<td>$23.00 per month per active subscriber</td>
</tr>
</tbody>
</table>

### Provider Functions

<table>
<thead>
<tr>
<th>Provider Functions</th>
<th>Cost to SWCBC Region Broadband Broadband Utility District</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWI will assume administrative responsibility for the Affordable Connectivity Program and ETC obligations.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>GWI will have existing Operation Support Systems/Business Support Systems in place and strong experience turning up, onboarding and managing greenfield networks.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee.</td>
</tr>
<tr>
<td>SWCBC Region Broadband BUD is seeking white label services from GWI who is committed to the partnership with SWCBC Region Broadband BUD and to serving rural broadband customers. SWCBC Region Broadband BUD and GWI will provide consistent branding across all lines of operation, communication and contact with customers, including any and all subcontractors who may be used.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>GWI will provide an overview of the KPI targets for Customer Service Call Centers they currently manage.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>SWCBC Region Broadband BUD will determine existing service pricing, subscriber credit and fee structures in place and will set all prices for services moving forward together with GWI. Service pricing may change for a variety of reasons including overall market conditions, competition and increases in costs within the operation.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
</tbody>
</table>

<p>| Outside Plant Repair Costs | Variable Pass Through |
| Network Equipment Maintenance/Repair | Variable Pass Through |</p>
<table>
<thead>
<tr>
<th>SLA Parameters</th>
<th>Cost to SWCBC Region Broadband Broadband Utility District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jitter</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>Latency</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>Network Availability - Expressed as a percentage (in the form of ##.###%)</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>Trouble Response Time - Expressed in terms of initial trouble report response time in minutes and on-site response time in hours.</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>Historical MTTR’s for subscriber issues and network outages.</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>Planned Network Maintenance - GWI provides standard notification to customers for planned network maintenance. GWI will perform to the metrics set for the standard network maintenance window.</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>GWI’s Escalation Procedures.</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
<tr>
<td>Security Incidents: GWI has programs and procedures in place specifically for monitoring and resolving security incidents.</td>
<td>Comprehensive SLA metrics are available for review and approval prior to inclusion as part of contractual obligations.</td>
</tr>
</tbody>
</table>

### Service Provider Scope of Services Parameters

**Cost to SWCBC Region Broadband Broadband Utility District**

| Sales and marketing activity to sell services to subscribers. All sales and marketing plans will be approved by SWCBC Region Broadband BUD prior to launch. | Budget $100 to 300 per subscriber one time for customers added; it is $100 per subscriber on the first 20% residential take rate, thereafter it is $300 per sub. This covers marketing and sales activities. |

Internet Bandwidth

Field Team Support/Installation - GWI hires/trains/manages a field team dedicated to SWCBC Region Broadband BUD.

GWI will provide the provisioning, installation and repair of voice services.

Included in Network Operator Passing and Subscriber Support Fee
If SWCBC Region Broadband BUD is selling under their brand name and GWI is acquiring customers on SWCBC Region Broadband BUD's behalf, SWCBC Region Broadband BUD would bear the full cost. If GWI is the brand, we bear the cost.

<p>| Billing, collection and payment of all monthly recurring charges to include Federal and State taxes, surcharges and assessments. | Included In Subscriber Support Fee. |
| Support of Emergency Broadband Benefit Program. | Included In Network Operator Passing and Subscriber Support Fee. |
| Track, monitor and forecast installations and repairs to ensure appropriate resources and equipment are available to meet installation and repair goals regardless of time of year. | Included In Network Operator Passing and Subscriber Support Fee. |
| Reporting of all state and federal reports required (I.E., 477 data) | Included In Network Operator Passing and Subscriber Support Fee. |
| Provide a dashboard that presents key installation, repair, revenue and network statistics and metrics for review by SWCBC Region Broadband BUD. | Included In Network Operator Passing and Subscriber Support Fee. |
| <strong>Customer Service Parameters</strong> | <strong>Cost to SWCBC Region Broadband Broadband Utility District</strong> |
| Enter &amp; maintain customer service records in a database. | Included In Network Operator Passing and Subscriber Support Fee. |
| Adherence to all state and federal customer privacy and security regulations. | Included In Network Operator Passing and Subscriber Support Fee. |
| Receive inbound communications from customers for service-related questions, changes or troubles/issues. | Included In Network Operator Passing and Subscriber Support Fee. |
| Provide Auto Attendants and ACD Queues to effectively manage internal and external communications with customers. | Included In Network Operator Passing and Subscriber Support Fee. |
| Provide regular reporting of key call center statistics. | Included In Network Operator Passing and Subscriber Support Fee. |
| Sign up new customers and upgrade a customer's services. | Included In Network Operator Passing and Subscriber Support Fee. |
| Provision of access and core network components to facilitate turn up of new subscriber services. | Included In Network Operator Passing and Subscriber Support Fee. |
| Provide detailed installation information to the customer and installer. | Included In Network Operator Passing and Subscriber Support Fee. |</p>
<table>
<thead>
<tr>
<th><strong>Technical Support Help Desk</strong></th>
<th><strong>Cost to SWCBC Region Broadband Broadband Utility District</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss/issue subscriber credits when necessary.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Track and report Customer Service-related performance data.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>GWI has a Network Operations Center (NOC) or Technical Support call center to take calls from subscribers with service issues.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Work to resolve all subscriber service troubles.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Provide technical skills necessary to troubleshoot voice and data service issues.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Provide access to FAQs and other self-help end user troubleshooting tools</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Provide escalation procedures to subscribers.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Enter and update trouble tickets.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Provide updates to the end customer.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Triage complex troubles and work with associated vendors and partners to resolve complex troubles as necessary.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Provide a process for trouble escalations.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Track and report Trouble Ticket related performance data to SWCBC Region Broadband BUD</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Monitoring Parameters</strong></th>
<th><strong>Cost to SWCBC Region Broadband Broadband Utility District</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor network elements on a 24x7x365 basis with a monitoring system that intelligently and automatically alerts appropriate personnel or teams when monitoring thresholds have been exceeded and has automated escalation capabilities inherent in the system.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Actively monitor and report on real time and historical usage of the network, capacity of transport and upstream segments as well as processing and uplink capacity of all core and access systems.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Security Parameters</td>
<td>Cost to SWCBC Region Broadband Broadband Utility District</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Monitoring of IP address resource utilization.</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Monitoring of network and equipment capacity available for new customer services</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>Make all network monitoring data and statistics available to SWCBC Region Broadband</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>BUD either through reporting or portal access.</td>
<td></td>
</tr>
<tr>
<td>GWI is responsible for and shall maintain overall network security and report</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>potential and actual security breaches to SWCBC Region Broadband BUD as soon as</td>
<td></td>
</tr>
<tr>
<td>practicable and not later than seven (7) business days after the breach.</td>
<td></td>
</tr>
<tr>
<td>GWI shall take all necessary measures to prevent security threats in its systems or</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>in the network, including capability to detect, mitigate, and report hostile activity</td>
<td></td>
</tr>
<tr>
<td>such as DDOS attacks to or from subscribers.</td>
<td></td>
</tr>
<tr>
<td>Provide evidence of security controls in place for employees, systems and internal</td>
<td>Included In Network Operator Passing and Subscriber Support Fee</td>
</tr>
<tr>
<td>processes.</td>
<td></td>
</tr>
</tbody>
</table>
A snapshot of what GWI can provide as a network operator is also provided below:

<table>
<thead>
<tr>
<th>Network Operator Characteristics</th>
<th>GWI Capabilities and Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Maintenance and Outage Restorations</td>
<td>Yes</td>
</tr>
<tr>
<td>Incident Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Case Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Problem Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Reporting and Monitoring</td>
<td>Yes</td>
</tr>
<tr>
<td>Change Control</td>
<td>Yes</td>
</tr>
<tr>
<td>Fulfillment Requests and Access Control</td>
<td>Yes</td>
</tr>
<tr>
<td>Improvements and Upgrades</td>
<td>Yes</td>
</tr>
<tr>
<td>Technical assistance</td>
<td>Yes</td>
</tr>
<tr>
<td>Other (spares, PoP, etc.)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

A snapshot of the reporting GWI can provide:

| Number of subscriber calls, emails and average time to resolve |
| Number of subscriber complaints for throughput or connectivity issues |
| Number of subscriber service escalations and average time to resolve |
| Number of single subscriber outages and average time to resolve |
| Number of dispatches and time used |
| Number of multi-subscriber outages and average time to resolve |
| Number and type of cases: maintenance, PoP failure, dispatches, etc |
| Characteristics and capacity utilization ratio of network uplink traffic (i.e. a graph of capacity utilization with peak usage stats including information regarding dropped packets, and other relevant trends and abnormal events, etc.) |
Service plan speed and pricing

In the residential market, the BUD will have a product that is significantly superior to its competitors in terms of guaranteed speed and reliability. Speeds will be orders of magnitude faster than comparative offerings and fiber networks are more reliable than DSL or cable networks. GWI together with the SWCBC Region Broadband BUD will offer a strong local brand.

We (SWCBC Region Broadband BUD and GWI) sell a superior product and we do intend to sell our services for a price that is comparable to our competitors, but not lower (limited promotions may vary). GWI’s current business is in areas where we compete directly, and successfully, with cable for the last two decades.

In the business market we will be competing with DSL and cable, but in some areas, we will be competing with business fiber connections. In our current business we compete successfully against providers who also have fiber networks and we will occasionally compete on price but have a strict floor on margins of profit.

GWI pursues a hyper-local approach wherein its customer understanding, outreach efforts, technical products, and services focus on efficient fiber to the premise network deployment on a street-by-street neighborhood-by-neighborhood level, for both residential and business customer acquisition. This entire strategic thrust is only enabled by a high level of automation and integration of customer service. The end-focus is to establish a brand of “the platform of trust” that will enable additional revenue and margin on the fundamental network of speed, reliability and security.

Our close relationship with communities as well as individual customers revolves around the “Band Together” brand. We engage with community leaders, local educational institutions, healthcare, economic development officers, and business groups in order to understand each community’s individual needs and goals; then jointly come up with effective solutions to fill those needs and reach those goals. Community engagement reinforces our hyper-local marketing, gives us a deeper understanding of potential customers, is another high value/low cost information/marketing channel, reinforces our “local” brand image, and underpins the platform of trust.

We are different than our competitors because:

- GWI is the first broadband carrier in the nation to achieve B Corporation certification. B Corps meet the highest verified standards of social and environmental performance, transparency, and accountability to all of their stakeholders tracked via governance metrics, processes and controls. B Corps are legally required to consider the impact of their decisions on all stakeholders: customers, workers, communities, and the environment.
- Fiber networks are faster and more reliable than copper and hybrid fiber/coax networks.
- People trust us. GWI has a strong brand built on trust and customer service, systems and a corporate culture that reinforces and builds that brand. Brand trust reinforced by our seeing and engaging customers not only individual consumers and businesses but as entire communities.
- We are in the business of selling solutions to customer’s needs that use those data pipes.
- Leveraging strength in software systems and engagement with communities, we conduct deep analysis to understand demand on a hyper local level, treat customers with a high degree of personalization, identify and respond quickly to problems, and produce guaranteed service.
- We are aggressively pro-net neutrality, pro-data privacy and pro-price transparency; these are part of our DNA and our brand.
For those customers who are not interested in a traditional video service, we have a team dedicated to helping customers navigate the complicated eco-system of over the top video via a concierge service called the “Stream Team”.

We believe introducing choice into a monopoly dominated market with a superior network is a golden competitive opportunity. On a less basic, more subtle level: what we are trying to do is create a world without monopolies and then do the best job at competing on a level playing field. To do a good job of competing we want to: a) do the best job of understanding what the customers want, b) produce the most value from the network, and c) create a "brand of trust". A "brand of trust" means our customers and potential customers believe we will treat them fairly. We think of it as being "the anti-cable company".

Serving all the community is central to GWI’s mission. GWI on behalf of the BUD (see Task 6; this is one option) will maintain a simple and transparent pricing scheme to ensure that all residents, regardless of income, are able to have equitable access to the network at a price they can afford. We modeled pricing at $70 per month for 125/125 mb as a starting point (and this value will adjust lower as SWCBC Region Broadband BUD generates revenue covering debt service). We participate in the federal ACP program which offers a $30 per month for qualified low income households leading to a price of $25 per month. GWI will continue to pursue other federal, state, and local subsidies for qualified low income residents.

Tiers that will be offered by GWI on behalf of the BUD (see task 6 for further details):

- 250/250 MB
- 500/500 MB
- 900/900 MB
- Add on options
  - WiFi Home Gateway = $5.00 per month
  - WiFi Extenders = $7.50 per month per extender

Over the lifetime of the project we expect speeds to increase. We conduct routine evaluations of service tiers using third party focus groups and marketing data. At the time of this response we are in fact conducting an evaluation of increasing speeds for our residential services. We expect that speeds will increase. And we are as susceptible to cost increases due to inflation as any other business.

Our approach is not to “bundle" the services but offer them a la carte with full transparency. Currently, all of our residential pricing is posted in plain view on our website and will remain completely transparent.

- Voice Services (unlimited nation-wide and Canada) are currently offered for $14.95 per line.
- International calls are billed per minute at the current international rates per country.

Our business services are contracted and vary from customer to customer based on the portfolio of services required and their contract term.

- Fiber Optic internet, symmetric at a variety of speeds to satisfy unique business requirements.
- Static IP addresses are available for business customers for an additional fee depending on the quantity required.
- Ethernet Services – EPL, EVPL, ELAN, EVLAN (Wide Area Network). Whether one location or many, we are able to connect all locations.
Phone Services – GWI offers the full suite of voice services, including our Voice Over IP Hosted PBX service, using our Class 5 Metaswitch collocated in our secure data center in Portland. We support PRI, SIP, digital lines for voice, alarms, elevators and faxing. All of these are managed by a simple web portal where customers can control their phone operations easily.
Task 4: Operation of Open Access Network

The SWCBC Region Broadband Fiber network would be open access and owned by SWCBC Region Broadband Utility District.

Open Access Pricing

GWI is proposing a model where other service providers can deliver their services (data and voice) over the network using the industry standard of Network to Network Interfaces (NNIs) or by leasing Dark Fiber. In brief, this model will allow any other organization to establish a connection point with SWCBC Region Broadband Fiber. GWI (on behalf of SWCBC Region Broadband Fiber) will construct the drop (lateral into the customer premises) and provide the installation and ONT.

Pricing for these services will be dependent upon the agreement between SWCBC Region Broadband Fiber and the service provider(s). These agreements generally have length of contract and or volume commitments. Should a provider or private customer wish to lease dark fiber, those agreements are also based on mileage commitments and specific use criteria.

In either case, use of an NNI or dark fiber lease, SWCBC Region Broadband Fiber’s pricing model needs to be consistent with the current prevailing industry rate structures. SWCBC Region Broadband Fiber would need to be non-discriminatory in leasing dark fiber or providing NNI connections to alternate providers.

Open Access Model and Network Topology

SWCBC Region Broadband Fiber (with GWI operating the network after its design and construction; GWI will be paid by SWCBC Region Broadband Fiber on a per passing/month basis) will fulfill its commitment to open access networks by implementing an ENNI with any provider wishing to deliver services over the network.

A network-to-network interface (NNI) is an interface that is dedicated to exchanging information between two networks. An NNI circuit can be used for the interconnection of signaling (e.g., SS7), Internet Protocol (IP) (e.g., MPLS), and Layer 2 Ethernet services (e.g., VLAN).

The External Network-to-Network Interface (ENNI) is a reference point representing the boundary between two Carrier Ethernet Networks (CENs) that are operated as separate administrative domains.
From the figure above it can be seen that there are two service providers utilizing an ENNI to offer connectivity to subscribers using the Carrier Ethernet Network (CEN). In this model, SWCBC Region Broadband Fiber owns the CEN fiber optic drop cables and the ONT (Optical Network Terminal). Service providers are effectively “renting” access to customers via the fiber delivery system and electronics with the cost of maintaining the drops and electronics falling upon SWCBC Region Broadband Fiber. SWCBC Region Broadband Fiber would have a long term contract with GWI for the Operations and Maintenance, and also have an arrangement wherein GWI provides ISP services (branded as SWCBC Region Broadband Fiber) on behalf of SWCBC Region Broadband Fiber as standard offer provider (or alternatively, SWCBC Region Broadband Fiber wholesale leases to GWI who would provide services under its own brand); GWI will be paid on per lit customer/month basis. All expenses are covered by the revenues the network generates from its subscribers.

**How it works for other providers**

Using the industry accepted model, the Carrier Ethernet Network (CEN) effectively extends the reach of all Service Providers that have an established ENNI. Each Service Provider may order Ethernet services from at an established rate and for a standard cost.

Service Providers will establish an ENNI with SWCBC Region Broadband Fiber and pay a monthly fee for maintenance of the circuit in addition to an installation fee. Services that are ordered are delivered to the ENNI of the Service Provider and the Service Provider is responsible for the support and delivery of advanced services, Internet, phone, WAN. More than one Service Provider may deliver services to a single subscriber (i.e.: a subscriber may have internet services from ISP #1 and voice services from ISP #2). There can be various other nuanced approaches based on the implemented financial model (which itself is a function of the capital stack).

GWI, as operator of the network, would maintain a database of buildings that have fiber equipment available for immediate use called “Lit buildings”. Buildings that do not contain fiber equipment and are close to the fiber backbone are considered “Near Net Buildings”. If a Service Provider would like service
established to a Near Net building, a fiber optic drop will need to be placed and electronics installed to convert the building to a “Lit Building”. GWI as operator of the network would maintain a list of these buildings and make them available to service providers as needed.

GWI as operator of SWCBC Region Broadband Fiber network would be responsible for provisioning the service requests and working with service providers to establish ENNIs. There is a need to analyze the appropriate ways SWCBC Region Broadband Fiber can bill and gather revenue (in order to maintain its tax status as a utility district in order to take advantage of municipal revenue bonds at a later date); GWI aims to lead that effort as part of the ongoing conversations (should the County decide to proceed with GWI and its team members).

Regarding Dark Fiber operator fee, as the operator of the network, GWI would be responsible for ensuring the integrity of the fiber network. Functions include but are not limited to: processing make ready requests, DOT moves, sales inquiry responses, managing outage repair, maintenance and outage notifications, fiber circuit moves/adds/changes/deletes, and fiber map maintenance. When an ISP utilizes the network, this fee is applied to fiber strands that are assigned for their dedicated use. This fee is based on each fiber strand assigned multiplied by the route miles.
Task 5: Leasing Existing Capacity

The SWCBC Region Broadband BUD will have as a goal providing high quality, affordable gigabit broadband throughout its project area. In some small parts of the SWCBC Region, fiber is already being funded and built by Consolidated as a function of their RDOF (Rural Development Opportunity Fund) award. Overbuilding existing fiber, if the service is high quality and affordable, does not make sense.

One way to address this issue is to work with Consolidated to coordinate programs to ensure service levels are equivalent. For example, grant applications regarding digital literacy and inclusion might be joint applications. Another potential solution is the BUD could lease its network capacity to Consolidated (open access network) giving Consolidated the ability to serve the SWCBCh Region. In return Consolidated could lease access on its smaller network to the SWCBC Region Broadband BUD.

The stick here is the long term potential for the SWCBC Region Broadband BUD to overbuild Consolidated built fiber areas funded by revenue bonds or retained earnings. That scenario is not the best scenario for any party.

GWI would work closely with the BUD to try to develop a good working relationship with Consolidated (CCI); we have a 20 year relationship with CCI, we currently purchase services from them and are in regular contact with their teams on various fronts.
**Task 6: Standard Offer Provider**

We believe the greatest public benefit will come from an open access network with a “standard offer provider”. In this model, service is available from multiple ISPs, but there is one ISP that guarantees it will offer service to all potential customers accessible via the network on defined terms and conditions.

The standard offer provider model can be implemented in two ways. First, the UD can contract with an ISP such as GWI to be the standard offer provider. Second, the UD itself can be the standard offer provider under its own brand and outsource all of the components of offering service: sales, marketing, technical support, customer service, and billing. In this circumstance, it is probably better for the UD to contract with an ISP, but we are willing to execute both models.
**Potential Timeline**

The most important question regarding feasibility of this model is the level of interest in the constituent communities. We recommend starting to gauge interest as quickly as possible (in May/June at the latest) as there are a number of deadlines to be met. First, while all communities do not have to join initially, it is necessary to get the first group of towns to have warrants prepared for spring/summer annual town meetings. It appears many town meetings are in the first week of June. Interest needs to be gauged, committed volunteers to act as the first board and officers of the BUD need to be identified and the group needs to be convened. Maine Broadband Coalition, ConnectMaine resources or your efforts would be the best agent to bootstrap this initial step because of the deep existing relationship with the communities. GWI is willing to do this work on a contingent basis if it is necessary, if we have available staff at the time (several other projects are starting). If current staff is not available, then we will need to charge on a current basis to retain more staff. Realistically this initial work needs to be completed in the June-July 2022 timeframe.

Next bylaws and interlocal agreements need to be drafted. We recommend Bernstein Shur as the most efficient and effective way to complete this work. Town attorneys will need to be involved in review and negotiation. Select boards will need to be engaged to write town meeting warrants. Sample warrants are available.

Once formed, the BUD can be an applicant for funding. Current thinking is that the most significant federal funding will not happen until 2023 (delays in FCC mapping), but there will be important immediate opportunities to apply for initial funding starting in fall 2022 so spooling up of the BUD immediately is an important milestone. Again, GWI is willing to help develop grant applications on contingency based on staff availability.

One last note on timeline: there may be a good conversation to be had by the Southwestern Waldo County Broadband Coalition and the Midcoast Internet Development Corporation (who is also considering several proposals) in terms of coordination and collaboration. GWI encourages such communication because each project can potentially leverage each other by adding scale to their respective projects; even if no action is resultant, just knowing where each community is in their planning details has much value (especially to the funding mechanisms that are going to open up).
**Team Members and How We Work Together**

GWI will ultimately be responsible for, and counterparty for contracts for the following work:

- Coordinating all activities for the creation of a statewide broadband utility district
- Coordinating all activities related to the financing of the entire network
- Network design
- Network construction
- Operating the network
- Being the standard offer provider of the products and services on the network on behalf of the broadband utility district.

For these tasks, we will be the “one throat to throttle” if things are not going well.

We recommend Bernstein Shur be the BUD’s law firm. Bernstein Shur would have an independent relationship with the SWCBC Region Broadband BUD.

While maintaining responsibility, we plan work closely and outsource significant portions of the work to Pioneer Broadband and use ValleyNet as advisors throughout.

GWI team members listed below will have the following roles:

<table>
<thead>
<tr>
<th>Team Members</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>ValleyNet</td>
<td>UD establishment and organization expertise; Municipal bond financing expertise</td>
</tr>
<tr>
<td>Pioneer</td>
<td>Collaboration with open access network design, constructing the open access network, potentially being one of the ISPs together with GWI on the network</td>
</tr>
</tbody>
</table>

**ValleyNet**

ValleyNet enhances the lives of those it serves by advocating for universal and effective Internet access, and providing services to facilitate Internet use and increase citizen community engagement. ValleyNet, a non-profit organization, serves the Upper Valley of New Hampshire and Vermont.

ValleyNet was formed in 1994 to provide local dial up service in the Upper Valley using excess modems provided by Dartmouth College. In 2006 it sold these accounts and embarked on a project to provide universal fiber-to-the-home Internet service in 23 VT towns – i.e., the East Central VT Telecommunications District d.b.a. ECFiber (www.ecfiber.net). ECFiber owns the network assets and finances the project and ValleyNet operates the network under contract.

This model has served as the basis for VT’s plan to provide universal broadband to every household in VT and nearly every town in VT has joined a District. See this document [here](#).

In 2018, ValleyNet began to build Lyme, NH to provide service to all of Lyme, NH under contract to LymeFiber (lymefiber.net) and has achieved nearly 60% penetration.
**Pioneer**

Pioneer Broadband is an industry leading provider of fiber optic services to communities across Northern and Eastern Maine. Pioneer operates access distribution facilities in several communities throughout Aroostook, Washington, and Penobscot counties in Maine, delivering residential and business connectivity solutions. The company offers innovative and affordable fiber connectivity solutions coupled with local technical support and service staff.

Fiber broadband delivery to rural Maine is a core business strategy for Pioneer, serving rural Maine since its inception in 2001. The company has been involved in municipal broadband since 2016 and has built several community-wide fiber networks, some of which were privately funded and some publicly funded. Pioneer was the designer and construction contractor for the Downeast Broadband Utility (DBU) in Calais and Baileyville. To date, Pioneer has built fiber throughout the following rural communities: Big Lake Township, Houlton, Hodgdon, Calais, Baileyville, Presque Isle, Oxbow, Sherman, and Stacyville.

At a County level, Pioneer has the following network footprint:

- Aroostook: 250 miles of fiber, pass 9,000 homes, and have about 3,000 fiber customers
- Washington: 85 miles of fiber, pass 1,700 homes, and about 500 fiber customers.
- Penobscot: 6 miles, pass 180 homes, and have 40 fiber customers.

Pioneer is most recently a winner of FCC RDOF Auction 904 for 1,638 extremely rural service locations throughout Maine. When completed, within the next six years, the build will consist of approximately 280 miles of new fiber optic cable construction providing Gigabit Internet access for those 1,638 premises.

With in-house line construction and splicing crews, and the ability to contract with our peers in the industry, Pioneer is capable of deploying and servicing fiber optics anywhere in Maine. Pioneer has in-house Technical Support available 7 days a week, and multiple diverse upstream Internet providers, including one Canadian connection into Moncton, New Brunswick.

Headquartered in Houlton, Maine, Pioneer Broadband is a privately owned, local Maine company; for more information see, [www.PioneerBroadband.net](http://www.PioneerBroadband.net).

**Bernstein Shur**

We recommend Bernstein Shur as a law firm to represent the SWCBC Region Broadband BUD. Bernstein Shur would not be part of our team but instead in these matters solely represent the BUD (In the past, Bernstein Shur has advised GWI on matters of corporate structure and financing.) With respect to the broadband utility district Bernstein Shur recently conducted work for the creation of broadband districts for a group of towns in one of the Midcoast counties, for a smaller town in Cumberland County and one for a larger municipality in Southern Maine. The team includes Phil Saucier as the lead municipal attorney and then several of Bernstein Shur’s tax, real estate and construction attorneys who assisted with interlocal agreements and various municipal governance matters, formation of the associated non-profit corporation, and related real estate and contractual matters involved with the projects.
Current Experience of GWI in Building Regional Infrastructure

ECFiber Overview:
Website: https://www.ecfiber.net/


Fiber route miles: Approximately 2000 miles
Number of passings: Approximately 31,407

ValleyNet Responsibilities: ValleyNet is the responsible party, and provides all operational functions for ECFiber including technical, financial, and organizational. ValleyNet has deep expertise in municipal revenue bond financing (bond financier, is MCM). Nearly $63M (currently) raised for buildout to the entire communication union district.

GWI Responsibilities: GWI is a subcontractor of ValleyNet. GWI has a contract with ValleyNet providing voice services, network engineering service, marketing expertise and advising on best practices for IT and Operations functions. ECFiber’s network is open access. GWI is helping ValleyNet improve their services to “utility grade”. When that point is reached, GWI will offer business voice and data services via the ECFiber network. As 2022 progresses, the parties expect an increasingly close relationship.

DVFiber Overview:
Website: https://dvfiber.net/


Fiber route miles: Approximately 1500 miles
Number of passings: Approximately 30,000

GWI Responsibilities: GWI is the responsible party with ValleyNet as sub-contractor. Designing, building, operating and providing services under an exclusive long term contract; work has already started as of Oct 2021. Network is open-access and GWI will provide ISP services on behalf of DVFiber as a standard offer provider.

GWI Team Member: ValleyNet; organizational and revenue bond funding expertise; providing operational support (truck rolls) to GWI for customer support, assistance with drop and equipment installs and routine maintenance.
Overview Municipal Broadband Model

Advantages

Municipal broadband done at the scale of SWCBC Region Broadband has an obvious advantage of providing high quality ubiquitous broadband access to all citizens by avoiding commercial “cherry picking” of only profitable locations. However, there are many more subtle but just as important advantages. The goal of for-profit providers is to maximize the profit from the network to the company. The goal of municipal broadband is to maximize the value of the network to the community.

A network that is available to all students is of much greater utility to school districts than one that only serves some households. It is natural for a municipal network to work closely with the school systems to ensure all students have access to and equipment to use gigabit broadband and all school premises are well connected.

Likewise it is natural for a municipal network to work to ensure access for seniors and disadvantaged populations and related premises such as assisted living, low income housing, and municipal facilities are well connected. As with schools, digital literacy and inclusion is vital. A municipally controlled network has strong motivation to solve these problems and municipal networks serve as a trusted recipient of nonprofit, state, and federal funding for inclusion and literacy. In general, lower cost funding from governments and nonprofits is harder for for-profit companies to obtain.

For decades to come, the region’s fiber network will be vital infrastructure on which the community depends for economic vitality, quality of life, and civic engagement. Networks generate revenue. Businesses have as their primary motivation the increase of profit and a business will charge the maximum amount possible for use of the network and minimize investment as much as possible in the network. Municipalities do not have a profit motive. Not only do their user fees not need to recover a profit at all, but they can choose to reinvest revenues, reduce fees or subsidize related public goods such as digital inclusion or digital literacy.

Municipalities could decide to run an open access network. Such a network would allow competitive choice to their citizens.

Disadvantages

Two disadvantages of the municipal broadband model are: potential lack of economies of scale and lack of ability to oversee and innovate a technical project. The model we are proposing takes steps to mitigate both of these potential disadvantages.

In terms of economies of scale, the first step is to create a regional district aimed at including all towns in the County instead of working on a town by town basis. A second is to create a strong and vibrant Maine equivalent of the Vermont Communications Union Districts Association (VCUDA). GWI and Pioneer Broadband both have: strong ties to other Maine BUDs such as MIDC and Downeast Broadband Utility (DBU) and both companies have decades of experience working together to build a strong internet community in Maine. Both companies participated in the lobbying and legislative process that led to the founding of the ConnectMe Authority in 2007, we worked together on the successful grant application for the Three Ring Binder and both were founding members of the Maine Broadband Coalition (MBC).
The third step is to legally organize the BUD in a manner that at a later date, it could merge without issue with other UDs. This would be a decision made by the leadership of the SWCBC Region Broadband BUD, we would only advise and then carry out the BUD’s decision.

Finally, we would also recommend the BUD operate an “open access network”. Open access would allow scalability by allowing multiple ISPs, some large, to lease the BUD’s facilities to provide services.

GWI, ValleyNet, and Pioneer Broadband have many years of experience working with UDs to ensure the UDs are built and operated to the highest technical standards. If we work with SWCBC Region Broadband, you can count on us also ensuring your network will be of the same high standards.
Conclusion

There are three items we want to call your attention to. First, the State of Maine and the broader broadband community has rallied around Broadband Utility Districts (BUD) as the best tool to bring universally available, quality broadband to rural Maine communities. Second, the BUD model allows the money to be raised without the towns and taxpayers incurring any obligation or liability. Third, as shown in the pro forma, the BUD generates large amounts of cash for the BUD and ultimately the community. In 2024, the model shows that cash starts being generated in excess of the cost of operation and debt service. After 2027 approximately $162 thousand annually in excess cash is generated. If this was a private business, the cash would be profit. To a large extent, this is a result of the grant funding. We did not include in the model any use of the excess because we didn’t know what purpose the towns would want to put it. It could be used to lower user fees, pay off debt early, add additional technology or services, or any other purpose the governing board directs and is allowed under law.

SWCBC Region Broadband is at the cusp of a generationally meaningful effort wherein countywide affordable, accessible, competition rich symmetrical gigabit level high speed broadband network will be implemented. Using the principles of open access, net neutrality, data privacy and a network that is reliable and redundant, all dimensions of society (education, government, remote working, telehealth, job creation, business growth, entrepreneurship, et al) will be positively impacted. We believe the above proposal conjoins the best of all worlds wherein publicly owned assets funded by public monies are stood up with private operational and technical expertise; the path elucidated is proven and has been shown to be successful. No doubt a significant amount of cooperation, collaboration and excellence in execution is required, but we believe that together with our team members and SWCBC Region Broadband, the goal of a countywide gigabit fiber to the premise project, that has enormous public benefit, can be accomplished.

In her State of the State Governor Mills stated “With this new Authority up and running, and with the support of American Rescue funds, I pledge to you tonight that every person in Maine who wants to connect to high-speed internet will be able to do so by 2024 – just two years from now. ” Our commitment to supporting the State of Maine and SWCBC Region Broadband in achieving that goal is resolute and a matter of public record. If SWCBC Region Broadband acts promptly, the SWCBC Region Broadband UD would be in a position to successfully apply for funds in both the “ARPA” and “BEAD” rounds of Federal funding administered by the State agencies which are promoting the BUD model. We very much look forward to standing-up the SWCBC Region Broadband UD and rapidly executing the plan of action.

---

5 [https://www.maine.gov/connectme/communities-resources/BUDs](https://www.maine.gov/connectme/communities-resources/BUDs) is a good starting point.
Addendum 1
Additional FAQ Regarding Utility District

What is the contract length and terms to run the network?
Contracts for developing the funding and construction are task specific and last for the time period of the task. GWI contracts with municipalities to operate networks have ranged from five to ten years. For situations where we take on the organizational burden of start-up, such as this, they have been for ten years. The contracts can be canceled by the districts if GWI fails to meet specified performance metrics or other failures to perform. The contracts can be canceled by GWI if the district fails to perform.

Copies of existing contracts between GWI and Utility Districts are available as samples.

All charges and fees are built into the pro forma. With the exception of legal fees, GWI will be the only team member billing SWCBC Region Broadband BUD; other partners will be subcontractors. GWI will charge:
1. Time and materials during the organizational and grant application phases,
2. 1% of funds raised for bonds,
3. 3% of capitalized costs for construction management and oversight (inclusive of testing, etc),
4. Time and materials for customer acquisition,
5. For operating and maintaining the network, see section on costing below.
We have included sufficient costs to cover organizational activities and customer acquisition. Those costs would be reduced if the community takes on those activities. The towns getting the word out could significantly lower customer acquisition costs. We can discuss this point.

Governance and operating details to form the BUD
ConnectMaine and MCA have developed and are continuing to develop a wide range of resources to support the formation, governance, and operation of BUDs. Nonprofits such as AARP and the Maine Broadband Coalition (MBC) are also making resources available. New BUDs are being formed in Maine with regularity and BUDs have a history of helping each other. You will get a lot of help.

These are the steps in approximate order they need to happen:
1. Select board needs to decide to proceed and memorialize with a vote. Examples of motions are available.
2. Town meeting warrant needs to be written and approved by the select board. Templates and other resources are available.
3. Develop community buy in. Resources to help with this are available from the State and nonprofits such as AARP and MBC.
4. A town meeting needs to be held to approve the warrant. It may be best to do this at the spring annual town meeting, but some towns such as Sedgwick and Brooklin have recently scheduled a special town meeting and successfully passed BUD formation warrants.
5. Creation of BUD corporation. Bernstein Shur will handle this.
6. Bylaws need to be written. Templates are available and Bernstein Shur can help.
7. Development of a Governing Board. There needs to be at least one member from every town.
8. Interlocal agreement. This is a contract between the towns governing how they will work together. Templates are available from the State. Each town should probably have its own legal review.
9. Development of policies and procedures. There are many templates and examples available and GWI will guide the board through the process.
10. Establishment of corporation and filing with the State.
11. Application to PUC for pole attachment license. GWI will handle this.

If a town does not join, will that area still be served?
For the practical reasons described below and except in the circumstances described below, we would recommend against serving communities who are not members of the UD.

The basic issue is that the governing board represents the communities of the UD and will be responsible to their public, while nonmember towns have no representation. In the early construction stages of the network, resources will be allocated. Our experience is that it is almost impossible to avoid the appearance of some areas getting service and resources before others, even if this is not the case. Inevitably, this creates unnecessary friction and time-consuming conversations. Adding in communities that are not members to the mix will create more conflict.

After construction, the system starts developing significant cash flows beyond what is required to operate and service the debt. Effectively, this is a cash transfer from nonmember towns to member towns, not a situation that makes for good neighbors. Further, this is an historic opportunity for federal funding that is unlikely to be seen again. By serving nonmember towns, you would block those towns from obtaining funding themselves. The inequality could last for generations.

What does work well is for a core group of member towns to initiate a UD and then the UD be joined by nearby towns (which don’t necessarily need to be contiguous.) This is by far the most common pattern. ECFiber started as 14 towns which then grew in a number of tranches with the last tranche being eight towns that joined to make a total of 31 towns. What we would recommend is starting with the most forward-leaning towns, establish the UD and then work on getting other towns to join.

While serving entire nonmember towns is not prudent, it does make sense to build across a nonmember town to reach areas of a member town when that is the best path. Likewise, sometimes it makes financial sense to build limited areas of a nonmember town that are on the border of a member town.

Should each town plan on committing some funds to join?
The only absolute financial requirement for a town is that they sufficiently review the interlocal agreement to join the district. The interlocal agreement can be based on a template minimizing legal cost.

Amount of local match needed (county and/or town)
With the model we have presented, all the local match comes from revenue bonds raised by the newly formed SWCBC Region Broadband Broadband Utility District.

What will be needed is money to cover initial legal fees to set up the UD and any organizational costs in the event the community does not organize itself. Those costs are modeled in case of that eventuality.

If additional local match is supplied by the county or towns, it will lower the financing costs considerably and accelerate the schedule. Let us know the amount envisioned and we will model it for you.

Specific timeframe of forming the BUD in order for the County to receive a Technical Assistance grant
Technical assistance for forming BUDs is available now and more is becoming available every week. The State of Maine has thrown its support behind the BUD model. ConnectMaine and the MCA have developed and are developing a rich set of technical assistance resources for communities organizing and financing BUDs. Nonprofits such as AARP and MBC (Maine Broadband Coalition) are making resources available. What is not available now is any funding for communities to buy their own technical resources, instead a common pool has been developed.

It is GWI's responsibility to help the towns and County access all the above resources and others; we are willing and able to help with 100% of the effort. The model presented funds all the technical resources necessary.
Addendum 2
Additional Information Regarding Served, Underserved and Unserved Areas

It is prudent to consider ConnectMaine rules when assessing this question because the “standards” have evolved since the County report was generated. The relevant current ConnectMaine rules (all in italics below) states:

“§ 5 DESIGNATION OF BROADBAND SERVICE AND ELIGIBLE AREAS

A. Broadband Service. In determining performance standards for Broadband Service, the Authority must base its criteria on the state of the market, the percentage of households with access to broadband service within a municipality or other appropriate geographic area, as well as the performance necessary to meet the current broadband needs of Common Applications and Network Service in use in the State. The Authority defines adequate Broadband Service as 100mbps download and 100mbps upload.

1. Criteria Governing Performance. To determine minimum performance criteria, the Authority may consider:
   a. Minimum sustained bandwidth for both upstream and downstream transmission in Common Applications and Network Service;
   b. Maximum monthly throughput on a flat rate service offering; and
   c. Any other performance criteria necessary for the use of Common Applications and Network Service.

B. Unserved Areas. In determining an unserved designation, the Authority shall consider data collected pursuant to §3 of this Chapter, the percentage of households with access to broadband service within a municipality or other appropriate geographic area, as well as other data sources that the Authority deems credible and appropriate to help make this determination.

1. Broadband Unserved Areas. In designating an unserved area, the Authority must find the following criteria:
   a. Unserved areas are any geographic area that the Authority has determined is to have service available of at least 50Mbps download and 10Mbps upload pursuant to criteria governing performance set forth in section 5 A sub 1 of this Chapter.

C. Underserved Areas. In determining an underserved designation, the Authority shall consider data collected pursuant to §3 of this Chapter, the percentage of households with access to broadband service within a municipality or other appropriate geographic area, as well as other data sources that the Authority deems credible and appropriate to help make this determination. The Authority shall designate any geographic area as an underserved area and, therefore, eligible for a grant.
1. Underserved areas of the state are areas that have service available at greater than 50mbps download and 10mbps upload, but less than 100mbps download and 100mbps upload pursuant to Criteria Governing Performance set forth in section 5 A sub 1 of this Chapter.

D. Opportunity to Review Proposed Designation of Unserved and Underserved Areas

1. The Authority will publish a publicly available web-based map that identifies geographic areas based on the most recent data submitted under §3 or other credible data sources utilized by the Authority.
2. The Authority shall allow 30 days for data to be submitted from any existing provider, grant applicant or other credible data sources, utilized by the Authority to confirm the availability, or lack thereof, of Broadband Service. The Authority may allow this additional data to be provided biannually.

Several comments can be made regarding the current known situation when it comes to definitions of areas, availability of maps that determine decision making and the interplay with what ConnectMaine has for rule and the oncoming Maine Connectivity Authority (MCA) guidelines for eligibility regarding the dissemination of federal/state funds:

1. The importance of unserved locations is important because it renders that given area eminently qualified for fed/state grant funding.
2. Per the current ConnectMaine rules (which we can currently use as a reference guide for the MCA until the MCA publishes its guidelines), underserved areas get priority after unserved areas; but given the amount of fed/state funds that are going to be available, it is highly possible that underserved areas will also qualify for grant funds for those areas. We have modeled that 50% of the underserved areas will be eligible for grant funding based on our current assessment of the situation.
3. Unserved locations are most likely inclusive of total unserved premises in the given area, though the newly introduced concept of “least served” by ConnectMaine in its latest round of funding remains to be evaluated.
4. Please observe the chart provided in the proforma section below; the determination of unserved, underserved and served locations is based on the current ConnectMaine maps (which we do not know how much will be used and/or integrated to the MCA rules, thought one would reasonably believe that it should) which by all objective accounts is still a dynamic and fluid situation. You will observe that these numbers are different than the previous SWCBC Region Broadband Broadband Report for the following reasons:
   a. Data layers and information utilized by ConnectMaine for premise identification is different; we have also discovered that data layers in GIS systems are also not identical to ConnectMaine. There needs to be data reconciliation. The proforma is a best high level approximation of data “blending”; in order to get the most accurate numbers notonly does there need to be a review of the data but a statistical random analysis of actual counts. It is important to keep in mind that the MCA will determine the authoritative data source for its decision-making (and possibly provide a challenge process as warranted).
b. Determination of service levels in the given areas is very much a work in progress (not just by GWI, ConnectMaine, MCA and Casco Bay Advisors) and it is best to make an assessment at very regular intervals.

c. There is a risk that given the rapid acceleration in the rate of construction of fiber networks nationwide and general inflationary pressures, the cost of materials and skilled labor will rise significantly or the project will be delayed due to scarcity of materials and labor. Until funding is in hand, it is difficult to mitigate this risk. Once funding is in hand, the most current costing will be at hand and entering into contractual obligations with vendors and subcontractors allows for significant risk mitigation.

Our recommendation would be to use the proforma we have developed as a starting guide; iteration will be necessary as more information becomes available. The analysis clearly shows that with the propensity of the grant funding, this entire project can be brought to full fruition.
Addendum 3
Overview of Bernstein Shur

We recommend Bernstein Shur as the law firm to represent the SWCBC Region Broadband BUD. Bernstein Shur would not be part of the GWI team but instead, in these matters, solely represent the BUD. Bernstein Shur has advised GWI on matters of corporate structure and financing.

Bernstein Shur has broad experience in each of the legal areas involved with establishing and funding a BUD. Bernstein Shur recently has been involved in the creation of broadband districts and related interlocal agreements for a group of towns in one of the Midcoast counties, for a smaller town in Cumberland County and one for a larger municipality in Southern Maine. A summary profile of Bernstein Shur is also below.

The Bernstein Shur team includes Phil Saucier as the lead municipal attorney (see bio below) and several of his colleagues who have assisted with interlocal agreements and various municipal governance matters, formation of the associated non-profit corporation, and related real estate and contractual matters involved with the projects. The core team members are identified in the attached profiles.

- Bernstein Shur has also provided the following summary of services and fee estimates for this contemplated BUD project for the County.
- Municipal/General Counsel Work - $6,000 estimated for interlocal agreement and nonprofit formation.
- PUC Formation - $10,000 as an initial estimate. The first task would involve confirming research regarding regulatory authority matters; the scope of work may be less and any excess would carry over into the broader regulatory action plan.
- Contract Review - $6,000 to $10,000 estimate; range is tied to the complexity of contractual issues and number of contracts.
- County Bond Work – Cost to be determined based on the size and nature of the bond.

Bernstein Shur is happy to provide further information and/or references upon request.
1. Bernstein Shur Overview

Established in 1915, Bernstein Shur provides legal services to a diverse group of public and private clients throughout New England and around the world. Our firm’s attorneys share a commitment to excellence and an unwavering dedication to client success. Our core values communicate who we are as a firm and as individual attorneys:

- We put our clients’ interests first
- We are practical, innovative, and entrepreneurial
- We strive to achieve the highest level of professional excellence
- We believe in diversity, respect, and collegiality
- We are committed to service to the community and the legal system

Bernstein Shur is one of northern New England’s largest law firms, with more than 125 attorneys in Portland and Augusta, Maine, and Manchester, New Hampshire.

Legal services are provided by the firm’s practice groups:

- Asset Management & Securities
- Business
- Business Restructuring & Insolvency
- Commercial & Governmental Finance
- Construction
- Corporate Governance
- Crisis Management & Public Relations
- Education
- Energy
- Financial Regulation & Compliance
- Fund & Investment Product Formation
- Government & Politics
- Government Relations
- Health Care
- Intellectual Property
- International Business
- Labor & Employment
- Land Use & Environmental
- Litigation & Dispute Resolution
- Mergers & Acquisitions
- Municipal & Governmental Services
- Political Campaigns & Consulting
- Private Capital
- Real Estate
- Succession Planning
- Tax
- Technology, Outsourcing & Data Security
• Title Insurance & Closing Services
• Trusts & Estates

Clients turn to Bernstein Shur for intelligent, cost-effective, and practical counsel in a wide variety of industries including education, banking, health and social services, municipal government, construction, real estate development, technology, manufacturing, distribution, and retail. The firm’s international practice includes representation relating to cross-border transactions and matters in Latin America, Canada, Europe, the Caribbean, India, Australia, and Asia.

Bernstein Shur subscribes to Lexis, Westlaw, and several other online research services, as well as relevant publications from the State and Local Government Law Section of the American Bar Association and from the International Municipal Lawyers Association. Many of the firm’s attorneys also receive daily “newswire” legal updates on topics related to their areas of practice. The firm employs a full-time legal librarian who maintains the firm’s comprehensive collection of paper and electronic research materials.

2. Public Finance Practice Group

Our public finance team has deep experience as bond, borrower, and underwriter counsel as well as local counsel. We routinely work on behalf of parties involved in a large governmental entity borrowing, as well as business owners and developers seeking, comparing, and negotiating financing options. Because we know the law well, we’re able to complete deals efficiently and in a cost-effective manner.

Members of our public finance group have been recognized in Best Lawyers in America®, Martindale-Hubbell®, and New England Super Lawyers®. We are also active in the National Association of Bond Lawyers.

3. Municipal & Governmental Services Practice Group

Bernstein Shur’s Municipal & Governmental Services Practice Group is one of Maine’s longest serving and largest municipal law practice groups. U.S. News Best Lawyers® recently ranked the group as tier-one in the Portland metropolitan market. The firm also serves as general counsel to the Maine Municipal Association and has a long-recognized record of specialized knowledge and breadth of experience in municipal law and land use law.

The Municipal & Governmental Services Practice Group has represented Maine cities, towns, and other municipal organizations for more than 50 years. The firm currently serves as general counsel to more than 50 Maine municipalities and districts and has served as special counsel to more than 100 Maine municipalities, counties, and districts. In addition, the firm provides legal services to many other governmental entities including:

• Quasi-governmental entities created by statute
• Utility Districts
• School districts
• Water districts
• Sanitary and sewer districts
• Regional planning commissions
• Councils of governments
• Regional waste disposal groups

Our breadth of experience enables us to represent public entities effectively and efficiently in a variety of specialty areas. We routinely provide assistance to municipal clients in:

• American Rescue Plan Act (ARPA) and federal grant compliance
• Land use permitting matters
• Ad valorem property tax valuation disputes
• Designating or amending tax increment financing districts
• Qualifying for economic development programs
• Issuing municipal bonds
• Legislative matters

4. Bond Counsel Experience

Our public finance group regularly counsels clients on private activity bonds and other tax-exempt bond issues. We act as bond, borrower, and underwriter counsel on 501(c)(3) and other private activity bond transactions, including "bank qualified" transactions and deals with a combination of tax-exempt and taxable bonds. The firm’s public finance work includes expertise and advice regarding applicable state law and authorization issues, as well as tax law and securities law matters.

Shana Cook Mueller is a senior shareholder in the Municipal & Governmental Services Practice Group. She focuses on public finance, economic development, and tax increment financing. Shana is AV-Preeminent rated by Martindale-Hubbell® and holds the highest peer review rating in the areas of public finance, municipal law, and zoning, planning and land use. She has been recognized as a New England Super Lawyers® Rising Star for government/cities/municipalities and is listed as eligible bond counsel in the nationwide directory of municipal bond attorneys published by The Bond Buyer.

Shana also serves as co-chair of the Regional Organization of Municipal Attorneys and attends National Association of Bond Lawyers annual workshops and periodic trainings throughout the year. In addition to her J.D., Shana also holds a master’s degree in Public Administration with a focus on finance from the University of Connecticut.

Shana has closed approximately 60 tax-exempt bond transactions in the last few years, including: general obligation bonds, revenue bonds, tax anticipation notes, grant anticipation notes, bond anticipation notes, refusings, advance refundings, and more. Shana routinely has extensive experience with:

• Bonds that are sold directly to local banks
• Various programs of the Maine Municipal Bond Bank, including the General Resolution pooled issues as well as its numerous revolving loan fund programs
• United States Department of Agriculture financing programs
• Public sales where issuers utilize the services of a financial advisor to bring an offering to market
• 501(c)(3) issues through the Maine Health and Higher Educational Facilities Authority and the Finance Authority of Maine
Meet Phil, planning and land use devotee, and counselor of municipalities.

Having worked as an urban planner, as chair of the Portland Zoning Board, and inside state government, Phil is well acquainted with municipal and land use law. That experience, combined with his legal expertise, makes him extremely adept at counseling municipal officials and boards and obtaining land use approvals at local, state, and federal levels for real estate developers and property owners. And he’s just as equipped to help clients with legislative issues: he helped draft and pass health care legislation during his time as a senior legal advisor in the Governor’s office.

Whether he’s drafting legislation or helping clients solve seemingly intractable issues, Phil keeps his calm and level-headedness, and delivers efficient, thoughtful solutions.

pseucier@bernsteinshur.com
207 228-7160 direct
207 774-1200 main
207 774-1127 facsimile

AREAS OF EXPERTISE
- Ongoing general counsel to municipal officials and boards
- Working with both municipalities and developers on TIF districts
- Advising clients on campaign compliance election law
- Securing land use permitting and contract zone agreements

OUR APPROACH
We genuinely care about our clients; when they lose sleep, so do we. That’s why, whether we’re fighting to help you win in court or finding a smart, business-savvy way to keep you out of it, we always put your interests above our own.

Our honest, aggressive approach helps us represent clients effectively, and we work around the clock and around the country, providing smart, sophisticated counsel for a wide array of clients.

bernsteinshur.com/philip-saucier/
Addendum 4
Municipal Make-ready Exemption and Why it Matters

For utility poles that are located in the public right of way, the term “municipal space” refers to a section of the utility pole reserved for municipal use. When municipalities first allowed utility poles to be set in the public rights of way over 120 years ago, part of the agreement was that in return for using public space, the pole owner would make space on the pole available to the town. In the early days the municipal space was used mostly for fire alarm circuits and other internal municipal needs. As those needs diminished, the municipal space was used less or not at all.

As the Internet became more important, municipalities came to see Internet infrastructure as a vital necessity and also became frustrated with the lack of private investment. As a result, some municipalities started to see the potential of using the municipal space to locate fiber-optic cables to provide municipal broadband service. There were two problems with this municipal use. First, in many locations where the municipality was not using the municipal space over time pole pole owners had located other attachments in that space. Recovering that municipal space would require costly “make-ready” work, including in some cases taller poles. Second, because the municipal space dated back over a century, it was not clearly defined in law. In places where the poles are owned by the incumbent telephone company, the telephone company objected to the use of the municipal space by a municipally owned potential competitor.

In an effort to stop these arguments and to promote broadband infrastructure where it was lacking, in 2019 the Maine legislature passed “An Act To Establish Municipal Access to Utility Poles Located in Municipal Rights of Way,” P.L. 2019, Ch. 127. That act amended M.R.S.A. Ch. 35-A, Section 2524 to state that it was the pole owners’ and current attachers’ responsibility to do make-ready at their expense to permit the municipal space to be used “... for a government purpose consistent with the police power of the municipality; or for the purpose of providing broadband service to an unserved or underserved area.”

In November 2019, the Maine PUC updated Chapter 880 of its rules to reflect the new law. The language from the law can be found in Section 5: “Separate Charges”.

An important point about the law is that it only applies to areas that are underserved or underserved (as defined by the ConnectMaine Agency of the State of Maine). This reflects an elegant compromise which made the passage of the law smoother. Telephone company pole owners objected to the ability of municipalities to compete against their existing service by providing broadband via the municipal space. By restricting the law to only areas that are “unserved or underserved” this issue was avoided because by definition there was either no broadband or insufficient broadband service in those areas. Also, in those areas lack of broadband implies less wires on the poles so it was likely there was existing space for the municipality without necessitating significant make-ready.

Finally, there is universal agreement that broadband infrastructure is vital to communities. One of the lessons of the past two years is the critical importance of broadband to the heath, welfare, educational, and economic needs of Maine’s citizens. It is unconvincing for private companies to argue that in areas

---

they are not willing to invest, the municipality can’t help itself by making the infrastructure investment on its own behalf.

This law is important because it is another way of steering government funding, in this case municipal funding, towards areas that are unserved and underserved. It also makes what funding is available stretch further. If we look back over the last decade, in the beginning make-ready was making up close to 30% of the cost of a fiber network project in Maine. After several reforms over that decade in Maine’s pole attachment regime, the cost is more like 17%-20% of a project. For municipalities and municipal utility districts in unserved areas this law drops that percentage to zero allowing up to 20% more coverage.
Appendix F- UniTel Proposal
Proposal for
Southwestern Waldo County Broadband Coalition

Our Vision:

We are builders and pioneers, with a vision to improve the communications infrastructure in rural communities by delivering improved services via our state-of-the-art fiber optic network.

UniTel Company Information:

UniTel, Inc., located in Unity, Maine was founded in 1902 and provides telecom services to customers in the towns of Albion, Burnham, Dixmont, Knox, Newburgh, Thorndike, Troy, Unity, and other surrounding areas, and most recently entered into an agreement with the Town of Waldoto engineer a fiber build in that town.

UniTel is nationally recognized as a Certified Gig-Capable provider and received A Smart Rural Community Award by the NTCA – The Rural Broadband Association. UniTel, Inc., was awarded this designation because of our extraordinary achievements in promoting rural broadband networks and its applications in rural communities. We achieved this prestigious award after constructing over one hundred miles of Fiber-To-The Home (FTTH) network in our service area. UniTel has been a leader in promoting and sponsoring free digital literacy training in the areas it serves. UniTel was one of just eleven companies to receive the award nationally, and the first Maine-based company to receive it. UniTel has 118 years of experience delivering a wide variety of telecommunications services, including broadband to rural sparsely populated areas and a strong commitment to expanding broadband service.

For over a decade, UniTel has expanded its offerings and has invested over ten million dollars expanding our broadband network throughout the most rural sections of our service territory. In spite of our efforts, the story remains similar – national providers have been reluctant to bring broadband internet to rural America. This has led to a digital divide. Our commitment is to bridge that divide through continuous investment in superior fiber technologies, rapid and responsive expansion of our fiber network and an absolute commitment to personal customer service and technical support – right here in Central Maine.

UniTel Joins Direct Communications

UniTel was recently acquired by Direct Communications, a family-owned broadband provider. Direct Communications is a newcomer to the landscape of broadband in Maine, but not to providing rural broadband. Located in Rockland, Idaho we are a locally owned Idaho fiber broadband company. A family-owned, Idaho based business since 1954, we are builders and pioneers, with a vision to improve the communications infrastructure throughout all of our service areas by connecting businesses, anchor institutions, and towns by delivering improved services via our state-of-the-art fiber optic network.
Direct Communications believes in continuous investment in superior, more reliable fiber technology, rapid and responsive expansion of our fiber networks, with an absolute commitment to personal customer service. Direct Communications was the first to: provide high-speed FTTH in Southeast Idaho, implement a digital switch in Idaho, use fiber optic cable in telephone communications network in Southeast Idaho, provide high-speed Internet to rural Southeast Idaho, install an IP Soft Switch in Southeast Idaho, and offer satellite in Southeast Idaho. Direct Communications also helped build the first and only state-wide fiber optic cable ring network in Idaho.

Direct Communications continues to expand its vision. Seeking to improve the communications infrastructure of rural America. We have been awarded and are currently working on four different federal broadband projects. These projects total more than $50M of investment to service roughly seven thousand locations. With broadband services located in a half dozen states we are well situated to help in bridging the digital divide across rural America.

It is with excitement that Direct Communications provides UniTel with the resources for world class broadband service across rural Maine. Presently, Direct Communications provides telephone, high-speed internet, and cable television service to customers across the states of, Idaho, Louisiana, Colorado, Utah, and Maine. Direct Communications has sister companies with businesses in Oregon, Washington, Missouri, and Arkansas. These sister companies are utilized to leverage buying power, share technologies, and experience.

The synergies between the two companies’ beliefs regarding the benefit of bringing Broadband to rural communities makes the business merger, between UniTel and Direct Communications, cohesive and ensures that the future of improving communications infrastructure stays paramount in the region.

Public-Private Partnerships:
Both UniTel and Direct Communications have a history of developing Public-Private Partnerships (PPP) and collaborating with local communities to ensure residents have access to the fastest, most cost efficient and reliable broadband technology available. UniTel is currently collaborating with communities in and around their service territories to create PPPs designed to expand fiber optic broadband.

In the past two years, Direct Communications has worked with two dozen municipalities across multiple areas to deploy high speed-fiber optic broadband service to 5,400 locations. This construction has created equality in the digital divide with the availability of broadband services as well as generated opportunities consisting of but not limited to tele-medicine, tele-education, and work-from-home.

UniTel/Direct Communication’s preferred method of partnering with communities is through a PPP, maintenance of the fiber network facilities, and provides FTTH service to the towns.

UniTel/ Direct Communication’s will lead and direct efforts to procure additional funding including State and Federal Grants.

Project Description Outline:
The proposed project outline will describe a FTTH build solution to the five rural communities (Freedom, Liberty, Montville, Palermo and Searsmont) in the Southwestern Waldo County Broadband Coalition (SWCBC). The parameter of the build encompasses all the roads within the town limits that currently have Utilities such as power and phone throughout the five communities, with +/- 3334 business and residential passings.
The proposed build is intended to utilize existing aerial assets including existing pole lines. However, construction methods may include but are not limited to trenching, plowing, boring, micro-trenching, and other cost-effective methods of fiber optic cable construction and installation. This will result in an offering of broadband services up to 1Gbp, scalable Service without usage limits.

UniTel will leverage its existing Fiber network to bring new broadband services to all areas within the individual towns. To do this we will begin upgrading, as necessary, the equipment in our head end to handle the increase in Internet Protocol (IP) traffic expected by the addition of the extra customers to our existing network. We will utilize our diverse, redundant connections to the internet to accomplish this.

The proposed network design will have multiple distribution points with electronic equipment on battery backup within the build area. Each fiber cable will have the capacity to service all the locations with a single fiber strand. All new fiber cable will be lashed to a new Extra High Strength (EHS) Strand which supports the fiber cable as it connects from one pole to another down the pole line. All new fiber construction will be built at or above accepted industry standards. The new fiber cable build in this project will push the fiber service out to many unserved and underserved areas.

UniTel will be utilizing fiber drop wire to go from the fiber cable on the poles to the customers dwelling, unless the customer determines they would prefer buried service instead of aerial. If the customer selects buried service, it will be the responsibility of the customer to provide UniTel with a trench meeting UniTel’s buried plant construction parameters. UniTel will provide the fiber and conduit facilities to be placed in the customer’s trench.

If at any time the distance from the dwelling to pole exceeds one thousand feet (1000’), a Cost in the Aid of Construction (CIAC) may be imposed to the customer to offset the cost increase for the installation.

The fiber drop is then connected to the dwelling via a Fiber Optic Network Interface Device (NID), usually located on the outside of the dwelling. An armored fiber cable rated to be used inside a living space is used to extend the fiber signal to an Optical Network Unit (ONU) provided to the end user by UniTel. The ONU converts the fiber signal to a 1Gb Ethernet electrical signal and transmits over a piece of CAT5 or CAT6 wire terminating into a router.

UniTel plans to implement a Passive Optical Network (PON) infrastructure to deliver its services to the end users.

---

**Project Cost Outline:**

FTTH Solution to all five rural communities as outlined in the project description:

- **a) Option 1: Project Cost at 90% of Community Coverage**

<table>
<thead>
<tr>
<th>Southwestern Waldo County Broadband Coalition</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footage – Miles*</td>
<td>$ 5,940,000</td>
</tr>
<tr>
<td>Four Additional DLCs (w/equipment)</td>
<td>$ 720,000</td>
</tr>
<tr>
<td>Sixteen Fiber Hubs</td>
<td>$ 80,000</td>
</tr>
<tr>
<td><strong>Total Project Costs</strong></td>
<td><strong>$ 6,740,000</strong></td>
</tr>
</tbody>
</table>
Footage:
48 Fiber-- 43.22 miles
96 Fiber-- 57.12 miles
144 Fiber-- 66.5 miles
288 Fiber-- 12.4 miles
(180 miles) * ($33,000/mile) = $5,940,000

Project Expenses:
4 DLCs (with equipment)16 Fiber Hubs

Project Specs:
• 4 Additional DLCs
• 16 Passive Fiber Hubs (288s)
• 4,500 Pole Attachments
  ▪ average pole distance being 215 ft spans on 180 miles of fiber
• 300 additional poles
• 1260 B cases (48-96 fiber size)
• 1000 D cases (144-288 fiber size)

b) Option 2: Project Cost at 100% of Community Coverage

57.31 miles additional * $33,000/mile = $1,891,230*
*Additional build materials, cases, poles & attachments

| Total Project Costs | $8,631,230 |

UniTel/Direct Communications agrees to commit up to $1,500,000.00 towards the construction of the proposed fiber network. These funds will be made available as required by awarded grant or as other funding sources require.

The SWCBC minimum investment will equal the greater of either $150,000 or the minimum amount required of the public partner in the grant funding requirements.

UniTel/Direct Communications will lead and direct effort to procure additional required funding. Effort will include but are not limited to, state, federal, and other grant opportunities.

SWCBC agrees to work exclusively with UniTel/Direct on requesting and procuring grant funds designed to construct or expand broadband services.

Customer Pricing:
UniTel commits to providing competitive service levels and rates. We commit to offering rates commensurate with those offered in our other territories. See example below
<table>
<thead>
<tr>
<th>Technology Type</th>
<th>Download Speeds</th>
<th>Upload speeds</th>
<th>Latency</th>
<th>Monthly Recurring</th>
<th>Data Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Residential</td>
<td>50</td>
<td>50</td>
<td>15.7</td>
<td>$39.95</td>
<td>0</td>
</tr>
<tr>
<td>Fiber Residential</td>
<td>100</td>
<td>100</td>
<td>15.7</td>
<td>$49.95</td>
<td>0</td>
</tr>
<tr>
<td>Fiber Residential</td>
<td>250</td>
<td>250</td>
<td>15.7</td>
<td>$69.95</td>
<td>0</td>
</tr>
<tr>
<td>Fiber Residential</td>
<td>500</td>
<td>500</td>
<td>15.7</td>
<td>$89.95</td>
<td>0</td>
</tr>
<tr>
<td>Fiber Residential</td>
<td>1000</td>
<td>1000</td>
<td>15.7</td>
<td>$129.29</td>
<td>0</td>
</tr>
</tbody>
</table>

Commercial plans and pricing are quoted based on the specific needs of the business with a dedicated business representative.

**Affordable Connectivity Program:**
UniTel is and will continue to participate and promote the Federal Communications Commission (FCC) Affordable Connectivity Program (ACP) for income-eligible individuals which offers up to $30/month discount on internet service. This subsidy benefit program helps ensure that households can afford the broadband they need for work, school, healthcare and more.

**Local Company – Local Focus:**
As a local company with local employees, we appreciate the philosophy of “we live and work here too.” UniTel prides itself on giving back to the communities it serves and has a vast interest in seeing our local communities prosper.

UniTel/Direct Communications’ support and commitment to local efforts include Big Brothers/Big Sisters, project graduation, local sports programs, book fairs, local golf tournaments for scholarships, fuel assistance programs and other charitable events.

UniTel’s largest area of philanthropy corresponds with a large local need – addressing hunger. Over the years, UniTel has donated thousands of dollars to local food pantries, as well as contributing to meal support/summer lunch programs in all school districts it serves.

**Proposal Terms:**

UniTel/Direct Communications has a long history of pioneering, developing, and managing public-private partnerships. The terms above represent the framework of a relationship that we feel would be beneficial to all parties. We recognize that there is no “one size fits all” solution in these situations. As such, almost all terms and conditions are negotiable, including responsibilities, financial commitments, network ownership, etc. Furthermore, many of the terms of a PPP may be dictated by the pursued Grant terms. As such we would expect that the actual terms of a relationship may be negotiated and renegotiated as opportunities are identified and sought.