

Why is Bar Harbor looking at faster Internet access?

This project started out due to a current Town Council goal of seeking increased broadband access and the Town owning a network for internal communications.

Most importantly, the Town needs to address the issue of not controlling the current fiber network it uses for communications (both data and phone services, including SCADA) for Municipal use. Time Warner wishes to charge for the use of the current network which it has previously provided without charge to the Town for its exclusive use as part of the negotiated franchise agreement which expired in March, 2014.

As we look at building a network for Town use, we are also evaluating leveraging it as a start for a further build to benefit all its residents and businesses to utilize for faster Internet access. We are specifically looking at a Fiber to the Home (FTTH) network scenario to try to meet future requirements and needs. DSL and Cable run on 100 yr old and 50 yr old (respectively) infrastructure that have almost reached their limits, and are increasingly harder to get increased speeds from, and fiber to the home or business will allow future growth based on current demand.

Economic Development

The Town of Bar Harbor needs to be proactive. To get additional Internet access bandwidth NOW, we need to control our destiny. To do so, the town should own the network and lease unused 'dark fiber to interested Internet Service Providers (ISP's). If we wait for an incumbent provider to build out and expand, as they see fit to do or not, Bar Harbor will not see an increase in speed anytime soon and may never get it. As we experienced with Cable TV and cellular services, the Town will be last in line.

To maintain a sustainable, viable economy for residents, Bar Harbor needs to attract future businesses, professionals, keep existing businesses, and make it a destination to live and work. This will allow or create an incentive for future generations to stay, live, and make a living here as well as keep young people here or allow them to return after school.

Greater access to faster Internet will allow people and business's to be producers and not just consumers. This means selling items or running an Internet based business that requires equal amounts of bandwidth upstream as well as downstream. Video conferencing or tele-medicine require large amounts of upload speed, but it enables business to cut down on travel or allows them to choose where they want to be located. The current offerings in our area don't allow for that option (at least at a reasonable or affordable cost) and force us to be only a consumer; IE, viewing movies or other activities that don't require large upload capacity. More symmetrical (same up as down) bandwidth will allow for hosted services for people and business, such as VOIP phone systems or data back ups

Faster Internet will help encourage and sustain tourism, with the increased demand for internet access, while visiting. Social apps/programs/communications are increasing the demand on networks. People travel with more devices now and broadband access demand will only increase. The demand from visitors is huge and continues to grow.. Common access to a faster internet would be a significant

benefit to the Chamber of Commerce's marketing efforts to bring not only visitors, but new business to Bar Harbor.

Maine is already 49th in Internet access speed and coverage, ahead of only Montana. Keeping Bar Harbor competitive, and not an also-ran, especially in a state with limited access already, will require forward thinking. Our aim is to keep Bar Harbor from falling further behind by being proactive with a FTTH network.

One interesting effect of any Municipal build out is that it often gets the incumbent providers to respond with more competitive rates and increase speed.

<http://consumerist.com/2015/04/10/time-warner-cable-promises-free-internet-speed-boost-to-charlotte-customers-before-google-moves-in/>

The incumbent providers have demonstrated little response to Bar Harbor consumer demands thus far, as they have a primary fiduciary responsibility to their corporate shareholders and little financial incentive to expand in underserved areas.

Changing Technologies

You used to get your tv signal over the air from an antenna. And now you most likely get it via a satellite or a cable provider. Almost no one gets over the air tv signals in Bar Harbor any longer, for various reasons such as topography and distance. That technology shifted to cable and satellite and brought new opportunities to view programs in your home.

Now, Internet streaming of video (such as Netflix, SlingTV or Amazon Prime) will only increase bandwidth requirements as HD and 4K video streams grow in popularity. People are also streaming multiple devices at the same time, using more concurrent bandwidth.

The bandwidth requirements for the next shift in technology will be huge. And streaming tv via an Internet connection will allow us to choose what we get it and when, not what the incumbent providers want to offer us. Competition breeds choice as well as price parity.

The 'Internet of Things' is coming and anything to prepare our town for it is positive.

(The **Internet of Things** is the network of physical objects or "**things**" embedded with electronics, software, sensors, and connectivity to enable objects to collect and exchange data.)

https://en.wikipedia.org/wiki/Internet_of_Things

Several key factors make a Town such as Bar Harbor successful; strength of its local government, the financial maturity and health of its citizens, its cultural institutions, its recreational opportunities, its human capital and its infrastructure---one new aspect in this millennium is its broadband infrastructure, which helps tie all these strengths together. This gives Bar Harbor the ability to attract capital, business, talent and tourists.

Bar Harbor Municipal Fiber project – Risks.

It's certain that Bar Harbor will eventually have a Fiber To the Premises (FTTP) network. And it's certain that Bar Harbor residents will pay for it. Bar Harbor residents will pay for it in the form of fees to a commercial carrier for the costs plus their profit margin, or in the form of fees and/or taxes if we build it ourselves. The only question is when we get it, who owns it and who can access it.

Risks of pursuing a FTTP project in Bar Harbor.

- 1) Project costs and recovery do not match expectations. Even though estimates are very conservative, it is possible project costs will be higher than expected and sign-ups are lower than estimated. Bar Harbor taxpayers will be responsible for covering the capital costs and some fixed operating costs above what can be recovered from users if there aren't sufficient customers to cover these costs.

While costs could be at or greater than estimates, it seems very unlikely that sign ups will be below the current estimate of 30% of all properties. Access to Broadband is becoming an essential service to participate in 21st century American culture and the economy. It's more likely that 90-100% of households will require Internet access in the coming years. Furthermore, this project will introduce a service that's currently not available from existing providers so it's likely that many customers will move to the new service as the value (speed, cost and reliability) will be so much better. We estimate this investment will have at least a 20 year life without significant reinvestment and likely be longer.

- 2) Incumbent providers (Time Warner and/or Fairpoint) will lower prices or offer services designed to undercut the municipal FTTP service.

Incumbent providers would need to complete significant infrastructure upgrades to be able to offer services that would be compelling enough to compete with this project. If they had invested in these upgrades already, we would not be pursuing this project. If we pursue this project, it's unlikely that the incumbents will upgrade as well. There is a silver lining to this though. If by building our own network, incumbent providers take steps to improve their own service offering to remain competitive, that would ultimately benefit Bar Harbor residents as well.

- 3) in the next 10-20 years a new technology will emerge that is superior to a FTTP network.

While it's usually hard to predict the growth of technology 10 or 20 years into the future, there are a couple of factors that recommend a FTTP build as having a 20 or more year use of this infrastructure.

- a) Copper technology is at or near it's carrying capacity.

Currently it's difficult to transmit signals reliably greater than 10Gb for distances greater than 100m and only with modern copper wiring. In order to reach current copper wire speeds, existing copper would have to be replaced and that would be more costly than a fiber build as copper itself is far far more expensive than the glass used in fiber optic cables. Even still, modern copper cabling's carrying capacity horizon (how much more bandwidth we can get out of copper as opposed to fiber) is much much closer than fiber. While we are at or very close to the limits of copper as a data transport medium, we know that fiber's capacity is many magnitudes greater than what we would use for this project and that's with the technology that already exists.

b) As with Copper, wireless data transmission has limitations that we are fast approaching and which seem difficult if not impossible to exceed. Furthermore, wireless is a shared medium technology where performance goes down as more simultaneous users at the same location compete for the existing signal and must negotiate the shared use. Fiber networks can easily isolate traffic so that communications between one user wouldn't compete for bandwidth with other users.

4) Cable franchise agreement extends free use of fiber to the town and schools.

This is a risk to embarking on the project. If Time Warner were to include free use of fiber in the next franchise agreement, it would be difficult to justify financially spending considerable money on a service we could get for free. Time Warner would have to agree to that before we started the project. Once the project begins and moneys are committed, it would difficult to change course.

Risks of NOT pursuing a FTTP project in Bar Harbor.

1) If we did NOT build this network ourselves, we would again be beholden to someone else's business plan to provide this service to us.

Much like we were for Cable TV, cellular phone service and current broadband service, we lagged the rest of the country waiting for commercial deployment of these technologies by the incumbent providers. And who knows how long we'd wait for a commercial entity to be able to make the business case to invest in Bar Harbor. As is the case today, a commercial entity needs a certain population density to justify installing service. Parts of Bar Harbor still don't have access to broadband or cellular service or even Cable TV because they live on sparsely populated roads and developments where the service is unavailable and the incumbent providers are unwilling to make the investment to serve them. It's likely that any private investment in an FTTP network would follow the same logic and deploy only where population density was sufficient to justify the investment.

2) New Franchise agreement excludes free use of fiber to town buildings and schools (likely).

Current indications of the Cable Franchise agreement renewal suggest that Time Warner is unwilling to give free use of fiber optic cable to connect the towns buildings and schools together into a single network. These institutions, like most, depend greatly on high speed internet for their activities: centralized town computer systems and phone systems, learning techniques that leverage high speed internet service, etc. The town would have to spend money to replace these circuits. While it's possible to replace these circuits with services from incumbent providers, costs will be high and service will be reduced compared to what would be available with a FTTP build.

3) We would become a less attractive place for people live and work.

Already we know that people who move to Bar Harbor are dismayed to find that broadband performance and costs are inferior to what they've known before they moved to Maine. And even more tragically, folks have purchased houses here only to find that broadband service was poor or simply unavailable at their new home. This proves to be an impediment to the growing community of remote teleworkers who might otherwise love to live in our community, buy houses and raise their families. Other towns in Maine get this and are rapidly pursuing FTTP projects of their own. While tourism has been and will continue to be a substantial component of the Bar Harbor economy, we would do well to avail ourselves of other opportunities to grow our economy. We need to diversify. The underserved will remain so. People who come here as tourists may want to move here, buy a home and contribute to the local economy.

4) Competition.

Experts point to the federal government's dismantling of Ma Bell in the 1980's as the major event that greatly reduced telephone costs and improved service. Before the break up, you bought your service AND phones from one company that had a monopoly on this service throughout the nation. After the breakup, long distance prices dropped rapidly, we could purchase phones from any number of manufacturers, and we saw great innovation, better services and lower prices, all because of competition.

Similarly, after the Telecommunications act of 1995 which required incumbent carriers to open up their physical network to competition, we saw the growth of more competition as well as the rise of broadband service. But this was a short lived revolution as it depended on opening up access to copper infrastructure that had been built before then. Existing providers who have invested in wiring on telephone poles in our town count on a monopoly on the market to justify their investment. In fact, the original cable franchise agreement stipulated that the cable provider would have a monopoly on cable tv service as part of the agreement. A frequently heard complaint is the incumbent provider's customer service is terrible. But people have no – or few – choices of service providers.

A major goal of this project is to build the physical infrastructure and make it an open access network such that anyone could lease fiber strands from Bar Harbor

and sell services to our residents. This brings competition back to the market and reduces the barrier of entry to competition. We hope that providers will again have to provide a good service at a fair price and not depend on their monopoly to keep customers. If they don't serve their customers, competition will move in and the free market will work as it should.

Notes for CTF Workshop – How do we pay for this. 11/2/2015

Bar Harbor Municipal Fiber Project – How do we pay for it?

Much discussion has proven that this is a highly visible and costly request, which has many layers to dissect. We have already discussed the need and the risks attributed to this project and more importantly we need funding and realistic budgeting. Below is the summary of our workshop on the 2nd of November, which subject of funding was the topic.

Phase 1 / Tax Payer Based

It was discussed on how the parking garage is a hard project to sell, although Fiber has many more benefits than the garage. Approaching council and the community with framing it in a specific and understandable format is important. We want town members to understand the project and see all of the positives.

It was additionally mentioned that ½ of the cost in this project is in the last phase. The last phase is what moves the it direction from from self supporting to fees and cost that are not supported or will be able to cover the cost. A point was made that we should mention that this project will be for all members of the town, not just for some. This will not be like the water system or water department; this will be Bar Harbor wide.

Grant disqualification

Bar Harbor is not qualified for Grants, although ConnectME may be able to find other avenues for funding if needed. It was discussed that the HUB maybe able to research economic grants, or ERATE funding could be available.

Link that may be helpful-

<https://www.fcc.gov/guides/universal-service-program-schools-and-libraries>

<http://muninetworks.org/tags-292>

Cost of each building was discussed, phase 1 – Total of 23 buildings @ \$356,000 annually for year. Justin discussed that the mil rate would go up approx.. .12, per \$1000.00.

Other Options for cost savings

It was discussed that Fairpoint could be an option that will work with the town and the members of the town to have a less expensive option while being the anchor tenant. The town would still own the network but Fairpoint would administer.

Notes for CTF Workshop – How do we pay for this. 11/2/2015

It was stated that Karen Romano, VP of Fairpoint may be interested in discussion on building into this project. It would most likely be setup with a no fail agreement, the Fairpoint Existing Rightaway will work in our favor for permitting.

It was mentioned that RedZone would assist in funding if they could purchase or lease strands of fiber.

Cost of each building would cost the town approx.. QTY of 10 building (Phase 1)

23 Buildings @ \$356,000 annually for year.

\$15,500 per building per year.

How would we pay for that? Justin – 2.572million Muni Phase 1 and 2, .12cents per \$1,000 on mil rate. \$306,000 median home. \$38.00/year for a \$306,000 home.

.12cents for \$185,000

For whole and including municipal phase, \$13,000,000 with electronics. \$962,000 per year / Annual Bond Cost

.624cents per \$1000.00 in evaluation, \$199.36