

Proposal to upgrade & expand Warwick Broadband

In 2009, Town Meeting voted to borrow \$40,000 to begin Warwick Broadband, a town-owned enterprise tasked with providing wireless internet to Warwick residents. Over the past seven years, Warwick Broadband has built a wireless internet network that serves 180 households. The original loan was paid back from operating revenue, as promised, within three years.

Although our current system provides pretty good internet to many households in town, antiquated radio technology (much of it state of the art back in 2000) and challenges of terrain leave a few households unserved, and some households with very slow service (on the order of 0.5 Mbps*). We have an opportunity to upgrade our system to increase reliability, and increase the speed of service to most households by a factor of 10. The new system would provide at least 5 Mbps to nearly all households, and 25 Mbps or more to the majority. The loan will be paid back from operating revenue, with no effect on our tax rate.

Why does Warwick Broadband want to borrow money? We are trying to improve service and over the last year have talked to various wireless companies and wireless equipment suppliers about the best upgrade path. This led us to hire a wireless consultant to assess what we currently have and how to upgrade it in a cost effective manner. His recommendation, after evaluating our information and current technology, is to replace most of our electronics, much of which is over a decade old, with newer more technologically advanced equipment and to upgrade a number of our relay sites with 50' tall poles and add two relay sites to expand coverage to reach all residents. We will retain our current best gear, WiMAX, which is newer and capable of delivering up to 10 Mbps service, and we have already bought some new electronics out of the operating budget. In order to complete the designed buildout we need funding for new radios and labor to install them. Due to the integrated nature of our wireless network this can not be done efficiently or equitably in a piecemeal fashion going forward.

Why aren't we pursuing a WiredWest fiber option? Serving every home in town with fiber would be very expensive: \$2.4M total (\$1.6M of town borrowing plus \$800k in state subsidy). The likelihood of fiber being a reality within 5 years does not seem realistic since the state and nonprofit WiredWest have not yet reached any agreement. Fiber service may be an option for the town in the future and we should look at it again when it is time for us to consider a subsequent round of replacing electronics.

What about the MBI (state) contribution? The experience of Leverett (which received funding from MBI for its fiber buildout after-the-fact) and of Warwick with our MBI WiMAX grant leads us to expect that MBI is more likely to provide funding to towns with projects that are moving ahead than those that are simply waiting. MBI is only interested in successful and sustainable projects. Warwick Broadband's history has been successful and we believe MBI will support the expansion of our established venture with more funding. While we are not counting on it in the budget, we will seek grant support from MBI for this upgrade. We will also seek MBI funding for a second phase of upgrade to replace our WiMAX equipment (currently our fastest radios), probably with LTE.

***What is Mbps?** The speed of data transfer is measured in megabits per second (Mbps). Dial-up is typically 0.05 Mbps. The federal definition of "broadband" is 25 Mbps. Internet telephone requires around 1 Mbps. Streaming standard video requires about 3 Mbps, while streaming hi-def video requires 5 Mbps. Warwick Broadband currently provides between 0.5 Mbps and 10 Mbps. The new system should provide 25 Mbps to most households in town, with a minimum of 5 Mbps to the hardest-to-reach houses.

Why can't residents on Route 78 use the fiber that's right there? The contractual rights to that fiber belong to the network operator (Axia) and they are not interested in pursuing “to the home” fiber at this time. The fiber is there, but we can't legally touch it, and this is unlikely to change soon.

What is the financial picture? Warwick Broadband Service (WBS) has proven to be a valuable asset to the town. WBS paid for itself, provided residents with broadband service, and did not increase the cost of this service even as the amount of data users transmit has increased dramatically. Here is some basic financial information:

Initial borrowing (with town backing): \$40,000

MBI funding for WiMAX: \$50,000

Labor costs since 2009: \$77,000

Income from subscribers through 12/31/2015: \$545,000

Historical surplus (income minus purchases, labor, consulting, etc.):

FY 2013 - \$27,382

FY 2014 - \$36,518

FY 2015 - \$43,458

Additional Equipment (purchased out of revenue): \$265,000

In 6 years WBS has covered all operating costs and spent \$265,000 to upgrade and improve equipment. While doing this \$43,000 of surplus has accrued. If the purchased new equipment recommended by the consultant has a lifespan of at least 5 years (and it does), history predicts that, even with no increase in customer base, WBS will have little difficulty paying back the requested loan and interest.

Why do some households get 10 Mbps, and others get as little as 0.5 Mbps? It's a matter of geography, population distribution, older single channel electronics and terrain. At present sites with a clear view of a tower can use our older higher frequency dual channel radios such as WiMAX, which provides up to 10 Mbps and serves about a quarter of customers. Sites with vegetation to penetrate have to use radios at lower frequencies that can propagate through trees, but do so at a much slower speed.

The proposed upgrade would provide significantly faster service to all, even the hard-to-reach houses, thanks to newer dual channel radio technology and number of improved repeater stations on taller poles. Additionally, some base station radios on the towers serve too many households, dividing limited bandwidth among many users. The new design will arrange radios to share bandwidth more equitably. With the current equipment, it is possible for a single user to max out the connection on the base station, potentially slowing down internet service to many other users on that base station. The new equipment will have greater capacity.

How will this project benefit me and improve my internet experience? The consultant's plan was developed based on the assumption that the least advantageous wireless locations will receive 5 Mbps and the best sites should see in excess of 25 Mbps for downloads. More engineering needs to be done and the borrowing will pay for this engineering prior to deployment. A system which is planned out in advance rather than developing organically will be more stable and more predictable which will also enhance end user experience.

How much will it cost me to use the upgraded system? There will be no price change--broadband will continue at monthly fees of \$50, or \$30 for reduced speeds. There will be no installation cost to existing subscribers--new subscriber equipment will be paid for as part of the project. There is a \$100 installation fee for new customers. There is no deposit or contract.