WiredWest
Life in the Fiber Lane™

Frequently-Asked Questions

The Big Picture

What is WiredWest?

WiredWest is a cooperative of municipal light plants (MLPs). Its members are the MLPs from 44 western Massachusetts towns, which are authorized by special legislation to finance the construction of telecommunications networks and offer services. WiredWest is governed by representatives from the member towns. In essence, WiredWest is a public utility owned and operated by you!

WiredWest aims to create a robust, long-term solution to our region's broadband needs by building and operating a fiber optic network that connects individual homes and businesses and provides universal and affordable access to all.

What is the Massachusetts Broadband Institute (MBI)?

In 2014, the state completed the "MB123" middle-mile network with state and federal funds, which significantly increases the data capacity in Western Massachusetts. It provides interconnection points for last-mile networks and direct fiber-optic quality connections to municipal buildings.

Also in 2014, the legislature granted MBI an additional $50 million to be used in Western Massachusetts to address the lack of last-mile internet infrastructure. $40 million is allocated towards that purpose. WiredWest is working closely with the MBI on the planning, financing and deployment of this network. WiredWest is the grassroots local organization that complements the state's effort and brings considerable financial, marketing, sales, legal and enterprise management expertise to the planning process. WiredWest also brings the interests of the towns and their citizens to the table and ultimately WiredWest will own and operate the network on behalf of our member towns.

Why is broadband so important?

Building a high-speed, high-capacity, affordable network will have numerous important positive effects for our region. Conversely, doing nothing will stifle future prospects for our communities.

High-speed internet access is necessary for much of our day-to-day lives. It impacts regional commerce, education, health and public safety, cultural enrichment, government operations,

and aids in countless conveniences and efficiencies in our lives. It is as critical to the future of economic growth as access to a telephone line.

Consider commerce. Today, high-speed internet access is a requirement for many business. A fiber optic network creates a level playing field so that western Massachusetts can compete with the rest of the world. Western Massachusetts has the highest proportion of home-based businesses in the state and also relies heavily on tourism revenues – both tied to high-speed internet access. Many kinds of businesses – large and small – can reduce costs by relocating to our rural region, which increases local employment opportunities, tax revenues, and investment. Universal internet access combined with the quality of life that our region offers entices telecommuters and people of all ages to remain in, or relocate to, the area. This benefits our region by increasing the tax base and demand for services, and also contributes to the vitality and diversity of our communities.

Educational opportunities with fiber are immense. Compared to their urban counterparts with high-speed access, our students are receiving an inferior learning experience. Online learning opportunities for all citizens are tremendous. The internet is our modern encyclopedia and university. So-called Massive Open Online Courses are now widely available ushering in an era of democratization of education around the world. And yet in western Massachusetts many of our students can be found after hours sitting outside the local library to perform rudimentary internet-based research!

Internet access affects our lives in many ways. n rural areas, telemedicine provides remote patient care and monitoring, and access to specialists through video conferencing. Police and emergency personnel depend on internet-based communication networks during crisis situations to access critical information quickly and securely. An increasing array of government services are only available online – from tax forms to payroll reporting - but without access, it's difficult or impossible to take advantage of them.

What's wrong with what we've got?

Our existing internet infrastructure is obsolete and expensive. The dramatic increase in internet traffic – particularly bandwidth-heavy multimedia applications – exceeds the speed limits of DSL and the capacity limits of satellite and cellular systems. The substandard nature of the internet infrastructure in Western Massachusetts today disadvantages our businesses and institutions, our workers, our students, our medical professionals and their patients, our health and safety efforts, and our governments. In turn, that affects the vitality of our communities. Our ability to attract top talent, foster new businesses, and keep young people in our communities is compromised. Property values are depressed and homes don't sell.

The average Western Massachusetts household pays about $3,000 annually for internet, phone and television to out-of-state corporations – at higher rates and for inferior service compared to others in Massachusetts. Building a state-of-the-art, regional, fiber optic network, accessible and affordable to all, cooperatively owned and locally operated, would fundamentally change the prospects for our communities.

However you look at it, there is a critical need for improved internet infrastructure in Western Massachusetts and the potential contribution to our region is significant.

My broadband connection is good enough for me, why should I care?

Many of your fellow residents have no effective and affordable internet option. Satellite and cellular internet services are very expensive and have major technical limitations. Without adequate internet access, your neighbors and the town as a whole suffer: home values and economic development are depressed, educational opportunities are limited and the town is unattractive to young families, which reduces our school age population. Internet access is a modern utility and lack of broadband is a serious hardship, similar to the lack of electricity or telephone of 100 years ago. Nearly all of the methods of interacting with the outside world (shopping, education, communications, entertainment, etc.) are evolving rapidly to utilize and even depend on broadband access that is already available to most people in the industrialized world. Your support for broadband helps your neighbors who are not as lucky as you and supports the future vitality of the town as a whole. (And when there's fiber optic available to you, we think you'll want it as well!)

Why can't we just make Verizon provide us all with DSL?

DSL is a last-generation technology that is already inadequate, and would hobble the future economic development of our region. Verizon has expressed no interest in expanding their wired services anywhere, is discontinuing DSL in other markets, and is focused instead on wireless cellular business.

Should broadband be left to the private sector?

No. The private sector has left us behind because we are not sufficiently profitable. Meanwhile, internet access has become "infrastructure" just like roads, public water, or schools. Municipal infrastructure projects do not have to make a short-term profit for private investors, but are intended, instead, for the long-term public good. Private companies should not be the sole arbiters of who gets 21st century infrastructure and when they get it.

What is the effect of broadband access on my property value?

Some homes in our towns with no broadband access have simply not sold recently, suggesting that the lack of broadband significantly depresses property value. On the other hand, a recent study found that adding fiber optic service to a home increased the property value of a $300,000 home by an average of $5,250.

The Project

What is the proposed project?

WiredWest, in collaboration with the Massachusetts Broadband Institute (MBI) and the Franklin Regional Council of Governments (FRCOG), propose to build and operate a fiber-to-the-home network. The MBI will construct the fiber optic network, connecting every premise in the participating towns. WiredWest will own and operate the network on behalf of its member towns, offering internet access and other services to all homes and businesses.

How much will this cost and who will pay?

It is estimated that the total cost to construct the network in the 32 participating towns is about $79 million. The state is contributing approximately 40% towards project management and capital expenses. The towns will bear the remaining costs, funded primarily with municipal bonds. The MBI has allocated about half the available funding per town based on a formula equally weighting the number of wired road miles and the estimated number of premises. Each town is asked to borrow approximately 60% of the cost of construction in their respective town.

The WiredWest model is unique in our region, in that revenue that exceeds operating expenses will be used to offset the towns' bond payments, which would reduce or eliminate the need for towns to use property taxes or free cash to make payments.

How long until fiber optic gets to us?

We cannot provide precise timing, however, the sooner your town gets to the 40% minimum subscription required and passes a borrowing authorization, the sooner your town will be wired. MBI has estimated that bids will begin for project management and engineering as soon as summer 2015. Construction could begin within the year and the first parts of the network could be "lit" within two years of the beginning of construction. We expect that service will become operational in towns as they are wired. Towns with the strongest demand are likely to be some of the first towns to be connected.

Who is eligible to sign up for service?

All residents, including renters, and property owners in any of the 32 towns currently enrolled in the "Fiber Town" campaign may sign up to receive WiredWest services. This includes full-time as well as part-time residents. Renters will need the permission of the property owner prior to future installation.

How would this new network affect existing broadband subscribers and providers?

Some (or even all) of the residents in your town may already have access to high speed internet (via DSL or wireless). The new fiber optic network will be accessible to all residents — whether or not they currently have internet access. We believe the superiority of fiber optic service and the advantages a community-owned asset will be strong incentives to choose the fiber option.

Throughout the country wherever fiber optic networks are deployed, residents with a choice of alternative broadband technologies usually switch to fiber, including DSL subscribers.

Community-owned fiber-to-the-home (FTTH) networks have been around for about ten years and after four years the percentage of residents who choose to subscribe to services on a municipal FTTH is on average 54%, which is much higher than typical subscriber rates for DSL or cable broadband. Thus, we have good reason to believe that a fiber optic network will be successful and competitive with other technologies.

Why are some WiredWest towns not part of the fiber project?

Towns that are served partially by Comcast (Conway, Shelburne, Buckland, Northfield, Chester and Huntington) are working on a separate effort to extend service to unserved residents. A few other WiredWest towns have chosen not to participate in the current project. Great Barrington is considered fully served.

Why are some towns not part of WiredWest at all?

If your town has no cable service and would like to be part of the WiredWest Cooperative, please contact your Select Board about becoming a WiredWest member town.

The Service

What type and level of service will be offered and how much will it cost?

We plan to offer basic internet service starting at $49 per month. None will have data caps:

- $49/month basic 25 Mbps internet
- $79/month superfast 100 Mbps internet
- $109/month ultrafast 1 Gbps (1000 Mbps) internet

We expect to offer digital telephone service with offerings as follows:

- $25/month full-featured phone

The delivery of television over the internet is a rapidly evolving market. More programming is becoming available online, as opposed to through a traditional TV provider. We believe there will be better consumer choices over the next few years, and we will be able to provide television prices closer to the timing of the network launch.

We also plan to offer a seasonal service rate for part-time residents, but the pricing is not yet decided. We expect that it will be similar to suspension programs offered for other telecommunication services.

Is there a data limit (cap)?

No. Unlike Satellite and cellular internet services, there is no maximum amount of data that can be downloaded or uploaded each month.

What are the features of the full-featured phone service?

It is expected to include unlimited long-distance calling in North America, voicemail, call forwarding, caller ID along with other basic features. Overseas calls will be extra.

Is there a connection or installation fee?

Yes. During the initial network construction process we anticipate that each premise will incur an installation cost of about $100. If a resident requests a connection at a later date after the network is operational, then the cost is expected to be significantly higher.

What will be the cost of installation for long driveways, buried cables, private communities and other special cases?

The service can be installed along any route where you have a right-of-way, but irregular installation configurations may incur an additional fee. The details are yet to be determined, however it is likely that trenching, installing additional poles, or attaching more than 300 feet of fiber optic cable will cost more than the standard installation. Special cases may require the homeowner to perform an engineering estimate and hire third party contractors. If the installation cost is unsatisfactory, then you can request that your deposit be returned.

Will I save money compared to my existing internet and phone services?

Most people will realize a significant savings.

For example, a minimum satellite internet service is typically $50 (10/1 Mbps down/up, 10GB data cap). (Cellular internet costs are comparable to satellite.) A full-featured "Freedom Essentials" Verizon land line is typically $75 including $15 in fees. (Digital service through WiredWest is not expected to include the fees and recovery charges levied by Verizon.) Total cost for residents today typically starts at $125 per month.

By comparison, fiber optic service ($49 for symmetric 25 Mbps, no data cap) and a full-featured digital phone ($25) together cost $74 per month representing a savings of at least $50 per month.

Verizon DSL subscribers will likely find that the WiredWest internet and phone ($75) is about the same as Verizon's bundled internet and phone (typically $80 including fees).

Importantly, fiber optic residents may also incur additional property tax to cover the bond payments. It is estimated that the revenues based on a 40% subscription rate will be sufficient to offset debt payments, but residents may be on the hook to pay up to the full debt payments through increased property taxes. Across the 32 towns, the average homeowner is estimated to pay an average of $8 to $12 per month in additional taxes, with a few communities paying more and a few paying less. Thus, even with additional taxes, most people will experience significant

savings and those who pay slightly more will enjoy far superior service while supporting an important community asset that will add value not only to connected premises, but also to overall quality of life in that town.

Will WiredWest be the internet service provider or network operator?

We expect that each resident will contract for services through WiredWest. Internet access and network operation may be performed by WiredWest or we may contract with a third party. That is not yet decided.

How will WiredWest manage the network?

As part of the business and operational plan, WiredWest will be hiring a CEO and other staff to fulfill operational, financial, marketing, customer service and network maintenance roles as necessary. Some of these activities may be provided by third party contractors.

The Campaign

What is the Fiber Town campaign?

WiredWest launched a campaign to help towns become "Fiber Towns" starting in early 2015. There are two milestones that must be met:

1. *Pre-subscription.* Residents must make a $50 deposit on the first month of service for 40% of the premises in a town. The refundable deposit indicates a commitment to take service once the network is constructed. This demonstrates that the town has a sufficient number of subscribers for the network to be financially sustainable in that town. Residents can sign up online or by mail.

2. *Debt authorization.* The town must authorize borrowing of the funds that the town has been allocated to contribute as its share of network construction. A ⅔ vote in a Town Meeting is needed. Usually a majority ballot vote will also be required to approve a debt exclusion. This is a major financial commitment for a town. In time, WiredWest's revenues from the network may cover all or part of the principal and interest on that debt, but the town will need to be prepared to cover the bond payments.

What are the deadlines?

The pre-subscription campaign ends on June 30, 2015. Debt authorization can occur later, but is likely to happen during spring Annual Town Meeting or a Special Town Meeting before September 1. MBI expects to grant funds to towns for a fiber optic project through June 30, 2016.

What happens if most but not all towns qualify as "Fiber Towns"?

There is a point where the build out proceeds without some towns, but other towns will probably join later. It is likely that those towns that have reached their 40% pre-subscription target by the deadline and authorized borrowing before the end of 2015 will collaboratively create a new MLP co-op consisting of only those Fiber Towns and will submit a grant proposal to the MBI to begin construction.

Even if a town does not meet its pre-subscription goal, that does not mean that they are out of luck. Other towns may join the first group of towns later or there may be alternative options that those late towns can pursue. Technically the 40% threshold is a goal set by WiredWest as part of its aim to ensure a sustainable business model; MBI is not requiring this participation level to grant money to the towns.

What happens to deposits if a town does not qualify?

According to the terms of the pre-subscription sign up process, deposits are promptly returned with interest.

What happens if I move?

If you move, your deposit is returned with interest.

What are the terms of service? Where is the "fine print"? What happens if I don't like the terms of service?

WiredWest has not formally established legal terms of service including contract length, installation fees, service offerings including a seasonal plan, and service costs. The $50 sign up is a deposit on the first month's bill. It is not a service agreement or payment for service. If you are ultimately unsatisfied with any terms of service, you may request a refund of your deposit and it will be promptly returned with interest. However, remember WiredWest is *your* network and every town has a say in WiredWest's policies and terms.

Can I sign up for service if I own land that does not yet have a house, but I intend to build before service is ready?

Yes, please do sign up. A valid street number is required.

I'm locked into a multi-year contract for internet, phone or TV. What should I do?

Fiber service is at least 2-3 years away. When the time comes to renew your contract, decide then. Also look at the buyout amount per month for early termination. You may find that you will save that amount over the first few months by subscribing to the WiredWest service instead of satellite or wireless.

I tried to sign up but the system could not locate my home. What should I do?

In rare cases, the geolocation system does not recognize or position an address correctly. You can print the sign up form and mail it in to WiredWest, Old Courthouse, 99 Main Street, Northampton, MA 01060.

What is a premise?

We define a premise as a location that will receive a separate fiber optic wired connection. In the vast majority of cases, a premise is the same as a household (and so we often use the terms interchangeably). However, we consider a two-family duplex to be two premises, for example. (The MBI refers to these as separate "units".) An office building or an apartment will likely have multiple premises.

The MBI produced detailed maps of the estimated location of all premises. In most towns these maps were carefully reviewed and the final premise count is derived from this work.

I don't have an Amazon account or I don't want to use my Amazon account to place my deposit online. Are there any alternatives?

We are exclusively using Amazon as our third party payment processor. It provides a sophisticated payment tracking system at a competitive price and eliminates the security risks of storing credit cards. We cannot switch to alternative payment schemes such as PayPal at this time. If you have concerns or difficulties working with the Amazon payment system, please sign up by mail.

As a service subscriber, what are the next steps?

Your deposit will be held in escrow until service becomes available, which may be two or more years. During construction you will be contacted to plan the attachment of fiber to your premise and the installation of electronics ("ONT") inside your house. Before service becomes available, you will be provided with a service contract with full legal terms of service. When service begins, your deposit will be applied to your first month's bill.

The Technology

Why Fiber?

A fiber-to-the-home network involves the communications signal being delivered over fiber optic cable to the home or business. Fiber is the fastest known technology, transmitting information at the speed of light and using one of the world's most stable materials – glass. This technology is the most reliable method to provide vastly higher bandwidth to households and businesses, supporting modern applications.

Fiber means phone, cable television, and very fast Internet over just one line. One strand of fiber has thousands of times more bandwidth capacity than any of the competing technologies

like DSL, cable, satellite and wireless, and thus is the only one considered "future proof." Fiber has virtually unlimited capacity to meet emerging and future needs like video-streaming, video conferencing, remote medical care, file sharing and cloud computing. Currently the FCC is predicting an order of magnitude increase in bandwidth requirements every two years, based on recent history. Fiber optic can handle this increase in demand.

Compared to copper-based DSL and cable systems, fiber is also cost-effective to install and maintain. It is the cheapest way to bring universal, reliable high-bandwidth service to rural America. It is, in fact, cheaper than the copper wires we extended to American homes 100 years ago, on a cost-adjusted basis. Also, because fiber is lashed to a high-tensile cable, it is less susceptible to breakage and weather events. As a hard-wired solution, it is not vulnerable to the shortcomings of wireless technologies. The fiber itself is installed on existing pole or conduit infrastructure and most of the cost is in labor, providing good regional economic stimulus in the deployment phase, and a critical foundation for future regional commerce.

Fiber-optics also makes environmental sense. Fiber users report doing more work from home. On average, fiber customers work about one more day a month from home because of their connectivity. If everyone worked at home just one day a month we would see annually:

- 5% reduction in gasoline use
- 4% reduction in C02 emissions
- $5 billion in lower road expenditures
- $1.5 billion commute hours recaptured
- Direct savings to business

In the late 20th century, copper wire technologies were tweaked to increase the amount of data they could carry. However, despite these improvements, the fundamental physical properties and limitations of DSL are no different today than when the first telephone exchange was opened in 1877 by the Bell Telephone Company. Our bandwidth needs are now increasing 40 to 50% per year, and they are beginning to dramatically slow the flow of information over this "souped-up" copper, the same way increasing the number of homes served by one small water pipe would reduce the flow to each home.

Like the other last generation technologies, wireless has similar bandwidth limitations, making it slow and ill-equipped for modern applications. It is also subject to interference from weather and signal obstacles including foliage. Of particular challenge to our area is the requirement of a clear line of sight between the transmitting tower and the receiver at the residence.

In much of the rest of the world, and urban/suburban areas of the U.S., fiber networks to the home have become the deployed medium of choice. It is important that our rural businesses, students, medical professionals and citizens can live and operate on a level playing field with the rest of the world.

Isn't fiber too expensive for rural areas?

No, this is a myth. It is too expensive for the business model of private providers – particularly those who are publicly-traded companies – who have to show profitability in a very short period. And that's why we don't have ubiquitous high-speed internet access now: we've left it to the private market.

Think back to the rural electrification of America. Then, as now, it wasn't profitable enough for private companies to build out electrical service to rural communities. Imagine where those communities would be today if the government hadn't stepped in to help fund this essential service – which over time has sustained itself and become a profitable enterprise.

Rural fiber-to-the-home is affordable when you use an appropriate financing and business model that isn't subject to the same short-term measures of profitability as a private company. A municipal model for example, allows capital investment that can be written off over a longer period of time.

Communities are driven by the "common good" interest of providing critical infrastructure that serves a larger constituency: individuals, businesses, schools, government entities and service providers. It not only provides them with the essential tools to prosper, but also becomes a regional asset that employs people in the construction and operation of the service, and pays revenues for services back to the region.

If the town is building important infrastructure, then it is wise to spend once to build a system that has capacity for growth for decades into the future. Fiber is not just an expense, it is an investment in our towns.

How will the service enter my home? What will the device look like?

There is a small device, similar in size to a DSL or cable modem mounted on the inside of the house called an optical network terminal (ONT). Cable will enter the house usually at the same location where your current telephone cable is found. There may be a small box on the outside of the house, too.

Will I be able to stream video?

Yes, and at very high quality.

Can I keep ("port") my landline telephone number?

Yes, you can use your existing telephone number.

Does the phone service go out in storms?

Service can go out if power is lost. However the on-premise equipment has a built-in battery backup that will last many hours.

Can I use a cellular extender in my house?

Yes, cell extenders work very reliably over fiber optic. Extenders may allow you to be a "cord cutter" and save money by disconnecting your copper or digital "landline."

What does a "digital phone" look like?

No special phones are required. You can use your existing phones using existing internal twisted-pair copper wiring. The optical network terminal (ONT) will convert the digital signal to the traditional analog phone signal through a plug in the side of the ONT. Just disconnect the phone wire that connects to your external wiring and connect it to the ONT.

If I already have DSL, why do I need fiber?

You need fiber if you want high speed internet now or want to be able to increase your speed later as your needs increase. Most DSL speeds in Western Massachusetts are less than 3 Mbps. A small number of residents in town have 6 or 7 Mbps service. WiredWest fiber optic speed is *at least* 25 Mbps with speeds available up to 1000 Mbps!

What's wrong with cellular or satellite internet service?

First, cellular service is not accessible from many locations in many of our towns. Additional cellular towers would be required. Second, cell service is extremely expensive when used as your primary internet connection. A gigabyte (GB) of data averages between $5 and $15 depending on your cell plan. In 2014, the *average* internet user with a wired connection in the United States consumed over 51 GB per month. Third, cellular data is unreliable. Congestion on cellular networks are common resulting in dropped calls and slowed internet traffic.

For satellite internet, there are two main problems: data caps and latency. Like cellular networks, the overage charges are prohibitively expensive. In addition, satellite internet is fundamentally limited by the long distance that radio transmissions must travel between earth and the orbiting satellite. This transmission lag, called latency, means that many modern uses for the internet including video conferencing, cloud-based storage services, internet telephony, online games, and secure networking for telecommuting, are flaky at best, often fail completely, or quickly exceed data caps.

What's wrong with fixed wireless?

Fixed wireless using directional antennas can provide very high speed service. But there are significant engineering challenges to create a robust repeater system mounted on hundreds of buildings, poles or towers to ensure sufficient access for everyone. Wireless operates within limited radio frequencies so congestion and interference are a frequent problem.

What do all these Mbps speeds really mean?

The basic (slowest) fiber optic speed will be four to ten times faster than DSL and about twice as fast as the current generation satellite systems. Cellular speeds vary considerably, but maximum speeds in our region are comparable to satellite.

Practically speaking, as a point of comparison, a typical download for an operating system update will require about 35 minutes using DSL, eight minutes using satellite and four minutes using the basic fiber optic service.

Using the fastest speed, the download would complete in six *seconds*.