

**Massachusetts Technology Collaborative
Massachusetts Broadband Institute
MassBroadband 123 Project
Project Description
October 22, 2010**

Introduction: The Massachusetts Broadband Institute was created to extend affordable, robust, high speed Internet access to all homes, businesses, schools, libraries, medical facilities, government offices, and other public places across the state. The *MassBroadband 123* project, which will provide broadband internet access to unserved or underserved communities and community anchor institutions in western and north central Massachusetts, is a major step in meeting the Institute's challenging goal.

The Proposed Action: The Massachusetts Technology Park Corporation d/b/a Massachusetts Technology Collaborative's ("MTC") (which includes its Massachusetts Broadband Institute ("MBI") division) *MassBroadband 123* project proposes to deploy a fiber optic network consisting of approximately 1,000 miles of newly installed fiber optic cable in rural areas of western and north central Massachusetts to meet the broadband service needs of approximately 123 communities. (See Figure 1 – Project Overview Map, which contains planned and alternate routes totaling approximately 1,100 miles.) The project will put in place a carrier-class, middle-mile infrastructure and an active network. The network will be a carrier class system that will make use of reliable and proven technology to provide a high speed, all media network with complete redundancy. The "middle mile" infrastructure will extend service from a main internet gateway to 22 community interconnection points and 1,363¹ community anchor institutions throughout the project area. Ultimately "last mile" internet service providers will bridge the gap between the interconnection points and the customer premises. For anchor institutions, the project will provide a direct connection of fiber to their facilities.

Project Background and History: Most residents in urbanized eastern Massachusetts have a choice of broadband Internet providers; the residents of more rural western and north central Massachusetts, however, are faced with substantial gaps in broadband coverage. The low population density and the rugged topography in this hilly, wooded region have deterred investment by telecommunication companies. The potential to provide a complete service system will be available in the region once a middle mile network is put in place. There is universal support for a program of this nature. Private network operators, last mile internet service providers, and the state's public safety and information technology agencies have all expressed their willingness to partner with this project to ensure its effectiveness.

General Geographic Setting: The approximately 123 communities and 1,363 community anchor institution are located in western and north central Massachusetts in Berkshire County, Franklin County, Hampden County, Hampshire County, and portions of Middlesex County and Worcester County. The fiber optic network will cover a service area of approximately 3,430 square miles. The communities that will be served by the project encompass about 1,001,300 people, 388,400 households, and about 44,300 businesses.

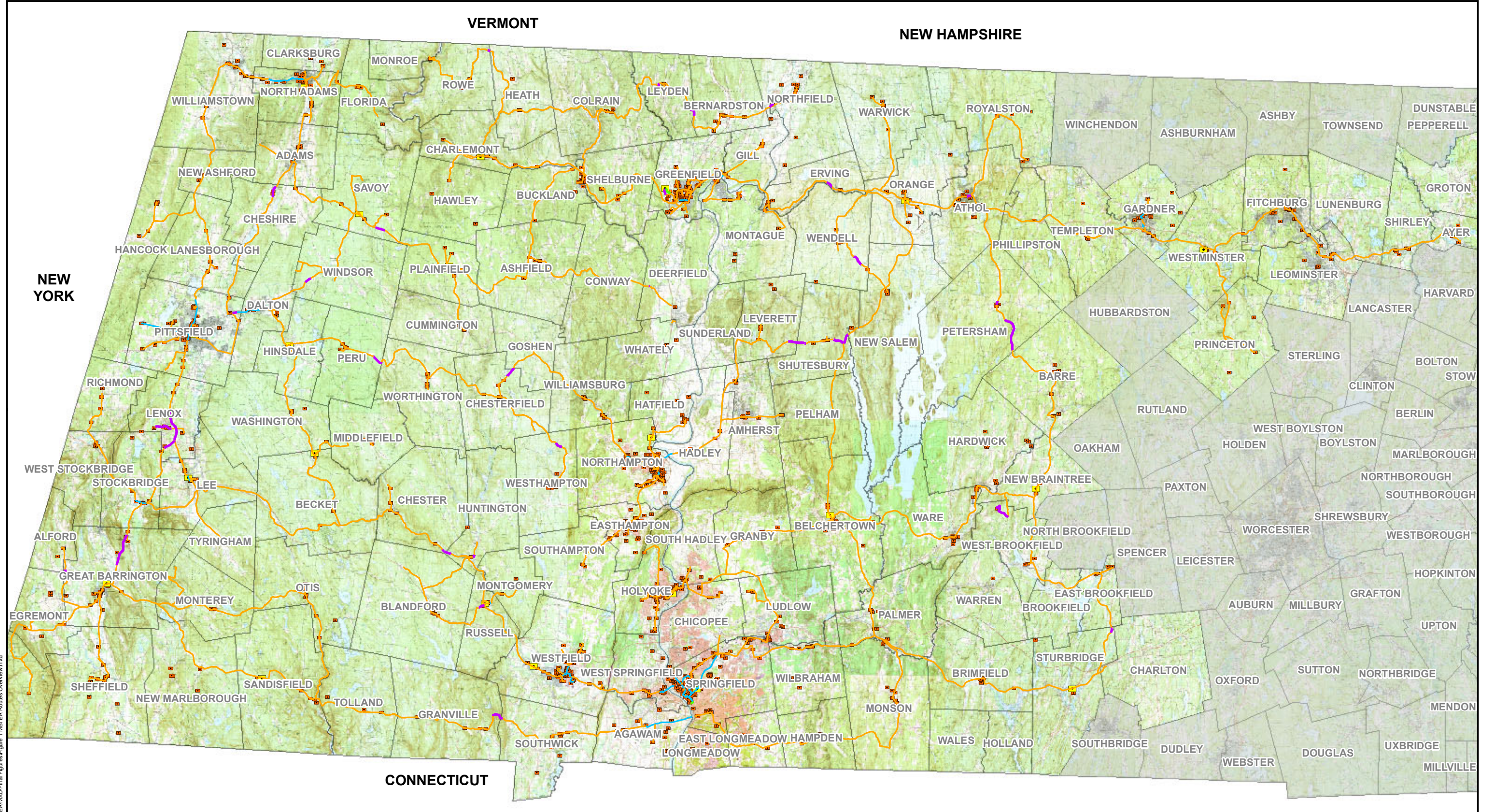
¹ The number of community anchor institutions shown on the map includes all known candidate locations. Final selection of institutions will be made after further analysis is completed based on environmental, historical, cost, need, and benefit considerations.

VERMONT

NEW HAMPSHIRE

NEW YORK



CONNECTICUT









P:\MIB\2009\242600\Discipline Files\GIS\EA\MXD\Final Figures\Figure 1 MBI EA Routes Overview.mxd

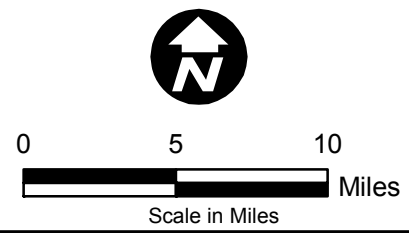
Source Information:
USGS Topographic Quadrangles

Legend:

-  Community Anchor Institution
-  Interconnection Point

-  Cable on Existing Pole Line
-  Cable in Existing Conduit
-  Cable on New Pole Line
-  Cable in New Conduit

-  Town Boundary
-  Outside Service Area



**MassBroadband 123
Project Overview Map**

Massachusetts **BROADBAND** Institute
Connecting the Commonwealth

Network as of
DATE: 10/27/2010



Figure 1

Major Project Features: The proposed fiber network is designed as a series of large, interconnected, irregularly shaped rings to provide highly reliable coverage across the service area. The service will originate at One Federal Street in downtown Springfield, Massachusetts, which is a main internet gateway. At this point the proposed *MassBroadband 123* project middle mile network will connect to the World Wide Web. The cable routes originating in Springfield will generally follow the existing roadway routes through the region. There will be 22 community interconnection points located along the system of rings. The elements of the interconnection points will typically be housed in one or two telecommunications equipment cabinet sets outdoors (Figure 2) and one or two equipment racks located within an existing building.

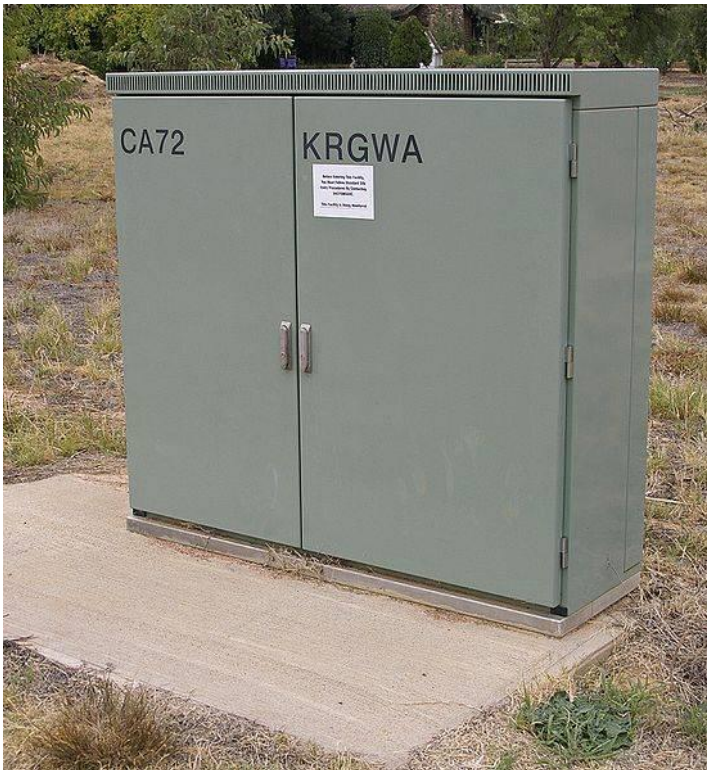


Figure 2 – Typical Exterior Equipment Cabinet at Interconnections Points

The direct service to the approximately 1400 anchor institutions will be provided with direct lateral service off the rings. The majority of the cable will be installed on existing utility poles. In some cases cable will be installed in existing conduits, installed on new utility pole lines, installed in new underground conduit, or attached to bridges. Where new poles are required, sufficient space exists within the right-of-way (ROW) to locate the poles within 10' feet of the edge of pavement and/or within the mowed shoulder. (Figure 3)



Figure 3 – Typical Conditions for New Pole Installation

In very few instances, cable will be installed on existing poles along an unpaved roadway. In all cases, the pole line can be reached by a bucket truck located on the unpaved surface. (Figure 4)



Figure 4 – Typical Conditions for Existing Pole on Unpaved Roadway

Rarely, isolated existing poles are located greater than 10' from the edge of pavement. In these instances, there is typically an existing cleared area from which the pole can be reached. (Figure 5)



Figure 5- Typical Situation for Existing Pole Offset from Roadway

In a few instances the existing pole line follows a maintained ROW through forest. (Figure 6) In these instances, the poles will be accessed via the existing pole route.



Figure 6- Existing Pole Line to Mount Greylock

Routing: The Project Overview Map (Figure 1) shows the configuration of the system, with the proposed type of cable installation. The origin of the service is in downtown Springfield and the rings are the features that define the network. The system extends to the border with New York State on the west, to the border with Connecticut on the south, and to the border with Vermont and New Hampshire on the north. Since the cable routes that define the rings follow the roadway system, the routes reflect the irregular alignments of the roadways through this hilly terrain. Only the cable lines following the highest level roadways in the area – namely Interstate Route 90 running from west to east along the south side of the service area and Interstate Route 91 running from south to north through the center of the service area – have a relatively smooth alignment. Table 1 summarizes the proposed cable installation by route type.

Route Type	Mileage	% of Network
Existing Poles	977.1	89.7 %
Existing Conduit	86.8	8.0%
New Poles	25.0	2.3%
New Conduit	0.7	0.1%
Total	1089.5	100%