



OLR RESEARCH REPORT

June 21, 2012

2012-R-0223

BROADBAND ISSUES

By: Kevin E. McCarthy, Principal Analyst

You asked for a discussion of (1) state initiatives to promote competition in and access to broadband services, particularly for residential customers and (2) municipal broadband deployment initiatives.

SUMMARY

Massachusetts is developing a fiber optic network in the western and north central parts of the state, in part to facilitate competition in broadband services. A number of other states, including Connecticut, Illinois, Missouri, Ohio, and Washington, have initiatives to expand the areas where high-speed broadband is available.

At least 60 municipalities have adopted initiatives to promote broadband accessibility to local residents and businesses. On the other hand, at least 19 states have adopted legislation restricting municipal development of broadband networks, including Arkansas, Nebraska, and Texas, which have effectively barred such initiatives.

This memo describes municipal initiatives in Groton and Manchester, Connecticut; Syracuse, New York; Dublin, Ohio; Chattanooga, Tennessee; and Bristol, Virginia. These initiatives range from a feasibility study in Syracuse to a fiber optic network in Bristol that serves most of its residents. Information on the initiatives in Chattanooga and Bristol is largely taken from a description prepared by the Institute for Local Self

Reliance, <http://www.ilsr.org/wp-content/uploads/2012/04/muni-bb-speed-light.pdf>. An interactive map of municipal broadband initiatives is available at <http://muninetworks.org/communitymap>.

In addition to the state and municipal initiatives described below, the University Community Next Generation Innovation Project (Gig.U), a group of over 30 public and private research universities, is working with local communities to accelerate the deployment of ultra high-speed (1 gigabyte per second or GBPS) network services to neighborhoods near the universities. According to the project's website, <http://www.gig-u.org/>, the universities see the availability of such services on campus and in their communities as essential to retaining their position in research and teaching and to remaining on the cutting edge of new techniques in collaborative research, which is now being done over such networks. The nearest member university is the University of Maine, which is developing a network in Orono.

STATE INITIATIVES

Connecticut

Virtually the entire state has access to broadband using one or more technologies. According to the state's broadband mapping project, most areas have access to broadband services at maximum advertised download speeds of 100 megabytes per second (MBPS) or more (actual speeds may be substantially slower, depending on traffic and other factors). On the other hand, only a small area in western Connecticut has service using a fiber optic network available with download speeds of 1 GBPS (1,000 MBPS) or more. The project's webpage, <http://connecticutbroadband.appgeo.com/MapGallery.aspx>, has a map showing available download speeds by technology.

While broadband access is widely available, in most areas consumers generally have a limited choice of providers, particularly for wireline service where service is typically only available from the local cable TV or telephone company. Broadband access is available using wireless technologies from several providers in virtually all parts of the state, but maximum download speeds are generally 25 MBPS or less.

While the state has no initiatives to promote competition in providing broadband access to residential consumers, it is using federal and state funds to develop a 1 GBPS network that will serve one school and one library in each town. The network is planned to become operational by the end of 2013, according to William Vallee, the state's broadband coordinator.

Illinois

The Partnership for a Connected Illinois, Inc. is a non-profit organization whose mission is to (1) collect and publish broadband data, (2) ensure broadband access throughout the state, and (3) maximize broadband's impact and use. The organization administers Broadband Illinois, which has had a wide range of initiatives to increase the availability of high speed broadband in the state.

Since 2006, Broadband Illinois has worked with ConnectSI, a foundation dedicated to promoting rural economies through broadband, agriculture, education, and healthcare initiatives, to expand broadband access in the state's 20 southernmost counties. ConnectSI brings together Internet providers, businesses, and other stakeholders to determine demand and supply within each county and uses broadband data and maps to address needs. In 2006, only 25% of households in the region had access to high speed broadband and only 12% purchased broadband; by the end of 2011 these proportions had increased to 70% and 45%, respectively.

More recently, the state's Department of Central Management Services, Illinois State University and more than 40 local organizations have joined to improve broadband access for education, health care, government, and public safety institutions in rural, economically distressed communities across a 55-county region. The project will construct more than 1,000 miles of new fiber and upgrade over 1,000 miles of existing fiber as part of the Illinois Century Network, the state's existing education network.

The Illinois Broadband Opportunity Partnership - East Central Region (IBOP-EC) fiber optic network will connect over 3,000 anchor institutions, including 21 community colleges across 55 counties in the eastern, central and northern portions of Illinois. The network will support speeds ranging from 10 MBPS to 10 GBPS. Residential broadband service providers will be able to extend their services into unserved or underserved communities with a potential to reach an additional 5,900 community anchors, 285,000 businesses and nearly four million households. Nine third-party service providers have provided letters of intent to use this project's middle-mile infrastructure and discussions continue with additional providers. The project is funded by a \$62 million grant under the federal American Recovery and Reinvestment Act and \$30 million from the state.

In addition, the Illinois Gigabit Communities Challenge will award up to \$6 million in capital funding to the most promising high-speed Internet deployment projects. The competition is part of the comprehensive, multi-year Illinois Jobs Now! economic development program and is open to any private or public organization. Each proposal must outline a viable plan to connect at least 1,000 end users to an ultra high-speed (1 GBPS) broadband network.

Further information about these initiatives is available at <http://www.broadbandillinois.org/index.html>.

Massachusetts

The MassBroadband 123 network will consist of over 1,300 miles of fiber optic cable that will connect over 120 communities in western and north central Massachusetts. The network will have open access to allow any broadband service provider to connect and offer its services, in order to increase competition and affordability of options. The network has signed an agreement with Axia NGNetworks USA to operate the network on a wholesale basis.

When completed in mid-2013, the network will:

1. connect nearly 1,400 public safety entities, community colleges, libraries, medical facilities, and town halls;
2. build and maintain a network that will serve 333,500 households and 44,000 businesses over a geographic area covering over one-third of Massachusetts with more than one million residents; and
3. Provide the necessary broadband infrastructure to foster economic growth, improve health care and education, and strengthen public safety.

The network is being funded with a \$45.4 million grant under the American Recovery and Reinvestment Act and \$26.2 million in state funds. Further information about the network is available at <http://www.massbroadband.org/Network/mile.html>.

Missouri

To expand broadband access throughout the state, Missouri has established public-private partnerships with telecommunications utilities serving rural areas. Governor Jay Nixon announced the initiative in 2009, pledging to deliver broadband to 95% of residents by the end of 2014. In all, \$311 million in federal stimulus grants, state funds, and private investment will fund various projects.

As part of the initiative, representatives from governments, schools, public safety agencies, and other stakeholders have formed regional commissions to develop plans for each community. According to Damon Porter, director of the MoBroadbandNow initiative, more than 100 broadband providers are participating statewide. Porter anticipates that most of the broadband projects will be complete by 2013. Further information about the initiative is available at <http://mobroadbandnow.com/>.

As part of the initiative, the state is participating in the U.S. Department of Agriculture's Community Connect program, which provides grants to state and local governments, businesses, and non-profit organizations in rural areas not currently served by networks capable of download speeds of more than 200 kilobits per second (i.e., 0.2 MBPS). The grantees can use the funds to build broadband infrastructure and establish a community center that offers free public access to broadband. Further information about this program is available at http://www.rurdev.usda.gov/utp_commconnect.html.

Ohio

The Ohio Board of Regents created the Ohio Academic Resources Network (OARnet) in 1987, pursuant to Ohio Rev. Code § 3333.04(V). OARnet was founded to provide researchers with online access to the resources of the Ohio Supercomputer Center, established in Columbus earlier in 1987.

OARNet introduced its fiber optic network in 2004. Currently, OARnet consists of more than 1,850 miles of fiber optic backbone. The network covers the state, connecting colleges and universities, public schools, public broadcasting stations, academic medical centers, research organizations, and state and federal governments. However, the network does not provide residential service.

In 2008, the Board of Regents directed OARnet to serve as the technology infrastructure organization for the newly coordinated University System of Ohio, sharing services, staff, and technical capabilities to provide for administrative efficiencies.

Governor John Kasich announced plans earlier this year to spend \$8.1 million revamping OARnet. The plan calls for a ten-fold increase in download speeds, expanding the network's capacity to 100 GBPS. Further information about OARNet is available at www.oar.net.

Washington

The Northwest Open Network (NoaNet) is the state's nonprofit broadband provider. It currently operates an open-access broadband network totaling more than 1,800 fiber miles across the state, providing high-speed connectivity on a wholesale basis to nearly 260,000 people in rural areas.

NoaNet is expanding its network, using \$140 million in federal grants, to reach more than 170 communities and 2,000 schools, hospitals, emergency responders, libraries, colleges, and universities. NoaNet is working with over 50 public and private organizations including public utility districts, tribes, cities, counties, and competitive carriers from across the state to bring broadband to their communities. Further information about NoaNet is available at www.noanet.net.

MUNICIPAL INITIATIVES

Connecticut

Groton. Thames Valley Communications is the cable television, Internet, and digital phone division of Groton Utilities. In addition to Groton, it serves parts of Mystic and Stonington. It provides customers in the area served by the municipal utilities with high-speed Internet, cable TV, and digital phone services, using a hybrid fiber/coaxial cable network. Its Internet service offers download speeds ranging from 1.5 to 20 MBPS. Further information is available at <http://maverick.tvconnect.net/index.html>.

Manchester. Manchester has several broadband initiatives. It created a 50-mile long, town-owned fiber optic network called FiberNet. The network connects 44 town buildings, including schools, libraries, and fire stations, giving town and board of education employees access to a wide range of computer resources, including the Internet and the Connecticut Educational Network.

The town developed a WiFi network system that is also connected to FiberNet. The system consists of six Wi-Fi hotspots on or near Main Street, plus an additional hotspot at Manchester Community college. The system provides free wireless access to the Internet for town and board of education employees, residents, and any other members of the public desiring Internet connectivity while in downtown Manchester.

Further information about Manchester's initiatives is available at www.townofmanchester.org/InfoSystems/strategicplan.cfm.

Other States

Syracuse, New York. The Syracuse Community Broadband Initiative received a \$15,000 grant in 2012 to determine the viability of a non-profit, community-owned broadband network for the city. The network would provide residents and institutions with cable, internet, and phone. It would operate like a public utility with a commitment to the best service at the least cost, and rely on subscriber revenue independent of taxpayer subsidies.

The initiative is a citizen organization that was originally formed to help the city in the franchise renewal process with the incumbent cable service provider, Time Warner Cable. It is currently exploring the feasibility of establishing:

1. a high-speed fiber-to-the-home (FTTH) network reaching all of the homes and businesses in the city;
2. citywide wireless Internet access, using a technology to be determined; and
3. a community-owned cable utility.

The initiative anticipates the network would be financed by revenue bonds backed by subscriber revenues, and possibly federal broadband stimulus grants for some related community services, such as public computer clusters and computer training. Further information about the initiative is available at <http://syracusebroadband.org/about>.

Dublin, Ohio. The city owns and operates the DubLINK broadband system, which includes a 125-mile line underground fiber optic network. The network passes over 2,000 businesses connecting, among other things, data centers and cloud computing centers. The network is part of

the Columbus Fibernet that passes through several central Ohio communities. In Dublin, the fiber network is the backbone for a WiFi system that covers 24 square miles of business and residential areas. Further information about DubLINK is available at <http://dublin.oh.us/econdev/dublink.php>.

Chattanooga, Tennessee. Chattanooga began developing its fiber optic network in the 1990s to control and monitor the grid of its municipal electric utility. In the early 2000s, the city's Electric Power Board (EPB), which serves nearby areas in Tennessee and Georgia, expanded the network and began offering telephone and broadband services to local businesses.

EPB made a commitment to develop a FTTH network in 2007, adopting a 10-year plan to build the network across its entire service area, using a loan from EPB's Electric Division. The incumbent cable TV company and the state cable industry association filed lawsuits challenging the plan, which ultimately failed.

In 2009, the EPB began to offer a "triple-play" (TV, Internet, and telephone) package to local residents and business. At the beginning of 2010, EPB announced the first 100 MBPS package available in the community. Unlike many Internet offerings, this service was symmetrical, offering the same upload and download speeds. EPB currently provides Internet service to over 35,000 residential and 2,500 business customers. The current price for a triple play package with 30 MBPS symmetrical is \$121 per month, plus taxes; the current price for 100 MBPS symmetrical Internet service by itself is \$140 per month, plus taxes. Further information about the EPB network is available at <https://epbfi.com/>.

In the summer of 2011, using \$5 million in federal and state grants, the city of Chattanooga began building a Wi-Fi network using EPB's fiber network. The Wi-Fi network is used for many government purposes, including public safety and intelligent traffic systems. Downtown traffic signals are coordinated and respond to changes in traffic conditions.

Bristol, Virginia. Bristol was one of the first cities in the nation to build a citywide FTTH network offering telephone, cable television, and broadband access to the Internet. The city launched its OptiNet in 2003 shortly after Bristol Virginia Utilities (later named BVU Authority) connected municipal buildings, electrical substations, and schools with its new fiber optic network.

Securing and defending Bristol's right to build its own network cost \$2.5 million and several years of litigation and legislative action. Over 70% of Bristol residents currently use the network, which has expanded in nearby counties to serve nearby businesses and industrial parks

OptiNet's telephone and broadband prices have remained unchanged since launched. Its cable rates have increased with rising prices for network channels but they remain below industry averages. Schools and local governments have saved approximately \$1 million by using the network rather than leasing private facilities. The network has recently begun new service packages, including a broadband tier offering download speeds of one GBPS.

KM:ro