

The Public Option

More than 100 local governments – or groups of local governments – have now decided to offer fiber-based broadband to local residents or businesses.

By Masha Zager ■ *Broadband Communities*

Over the last year, this magazine's count of municipal fiber-to-the-premises systems rose to 106 from 88 – an increase of 20 percent – in spite of several cities having abandoned their projects.

Though the recession slowed some builds, many municipalities moved from early stages into full deployment. Others whose networks were already operational are expanding beyond their original service areas or adding new types of customers and services.

Public entities usually build fiber networks to give their communities a competitive edge. However, they don't follow a single model. They face varying legal and competitive landscapes, employ different financing methods, enter into many kinds of partnerships, operate their systems in diverse ways, deliver different sets of services to different types of customers and bring varying resources and competencies to the task. Local differences outweigh the simple fact of public ownership.

Although several municipal broadband projects have met with vehement opposition, including lawsuits and legislative action, the majority appear to be uncontroversial. Many are under the radar altogether, and others are sources of civic pride.

WHO'S ON THE LIST?

All the deployers on this list

- Are owned by public entities or consortia of public entities, or in a few cases (St. Joe Valley Metronet, Gahanna Net, Goshen Fiber Network) by consortia of public and private entities
- Operate all-fiber networks that connect local homes and/or businesses to the Internet or are actively planning such networks

- Make available – directly or through retailers – such services as voice, Internet access and video (or are planning such services).

Excluded are the many municipalities that own or operate institutional fiber networks exclusively for city facilities and schools, those that only lease dark fiber, as well as those that provide broadband access only over cable or wireless networks.

This list includes municipalities with functioning networks or with approved

operation and attract third-party service providers more easily. UTOPIA, in Utah, is an early example of an FTTH network built by a consortium of cities. More recent projects that include dozens of municipalities are ECFiber in Vermont, FastRoads in New Hampshire and WiredWest in Massachusetts (the last does not appear on this list because it is still in a formative stage).

Other examples include a number of countywide networks as well as LENOWISCO, which comprises three

Collaborative FTTP projects are becoming more common because they let deployers take advantage of economies of scale. Three big New England projects involve dozens of communities.

plans and projects that are actively under way. However, plans do not always materialize; a few projects well beyond the wishful-thinking stage that appeared on last year's list now seem to be moribund. Others, although still in existence (and still on this list), are far behind where they were expected to be at this point. Some projects may never become operational.

Collaborative projects are becoming more common; these can achieve economies of scale in construction and

counties and a city. Urbana-Champaign Big Broadband is a consortium initiated by the University of Illinois (a state agency) and includes two cities, Urbana and Champaign.

Even a network owned by a single town or city may provide service beyond city limits. For example, Jackson Energy Authority in Tennessee and NetQuincy in Florida both serve areas adjacent to the cities that own them. At least two cities – Windom, Minn., and Williamstown, Ky. – are using broadband stim-

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ulus grants to expand their community networks beyond city borders. (Windom built an FTTH network in 2004, and Williamstown's original network was hybrid fiber-coax. Both are using FTTH for their expansions.)

In Washington State, though each public utility district operates its own network, most or all belong to the Northwest Open Access Network (NoaNet), a coalition of public utility districts that have linked their fiber optic networks to achieve economic feasibility in underserved areas. NoaNet offers long-haul transport and last-mile access to wholesale communications providers throughout the Pacific Northwest.

MUNICIPAL UTILITIES

Municipalities are more likely to become broadband providers when they are already in the business of providing electric power. There are several reasons for this:

- Citizens in these municipalities are already used to the idea of government-provided utility services. Many public power utilities were set up in response to the failure of the private sector to deliver adequate services, and residents accept that government might launch public communications utilities for the same reason. In most cases, citizens have had positive experiences with their municipal utilities and are prepared to buy additional services from them.
- Public power utilities already have the back-office systems needed for providing telecom services.
- Many power utilities are installing communications networks for smart-grid applications; once they begin planning these networks, they often realize the networks are also suitable for business or residential broadband. Municipal utilities that are Tennessee Valley Authority distributors have been in the forefront of combining smart-grid and telecom applications.

In some places, such as Wilson, N.C., the city operates a municipal electric utility but sets up the telecommunications utility as a separate entity or department. A few cities, such as Salisbury, N.C., do not have municipal electric utilities at all.

Because municipal electric utilities have often been strong presences in their communities for the better part of a century, many citizens are willing to buy additional services from them, including telecommunications.

WHO ARE THE CUSTOMERS?

A typical path for growing an FTTP network organically is to start with an institutional network that serves municipal office buildings or utility substations, then extend fiber to commercial buildings or business parks, begin residential deployment with MDUs and greenfield developments, and finally reach single-family households and small businesses. This list shows deployers at various points along this path.

Thirty of the municipal networks on the list deliver fiber-based services to businesses only, apparently with no immediate plans to extend fiber to the home. (Some deliver residential broadband services via cable or wireless; most do not serve residences at all.) A few that began as business-only networks, such as Gainesville Regional Utilities (Florida), now serve MDU or greenfield housing developments as well.

Cedar Falls Utilities (Idaho), which originally served businesses with fiber and residences with hybrid fiber-coax, is building out fiber to the home throughout its service area. Several other municipal providers that once planned to follow a similar path, such as Ashland Fiber Network, have been stymied by lack of funding.

Most of these deployers are small- to mid-sized cities or groups of cities outside major metropolitan areas – large enough to carry out complex undertakings but small enough to be poorly served by private carriers. The smallest is Pend Oreille Public Utility District (Washington), whose pilot project covered 10 households (“all 10 consumers have the broadband bug and attest they would be hard pressed to ever revert back to dial-up,” the PUD’s website re-

ported). The network is now expanding thanks to broadband stimulus funding. The largest is EPB of Chattanooga, Tenn., which has made fiber available to about 170,000 premises.

WHOLESALE OR RETAIL?

Municipalities are more likely than private deployers to allow third-party providers on their networks – either because state laws require them to do so, because they do not have the expertise to provide services themselves or because they want to offer a wider variety of services than they can provide on their own. (See Forging Successful Public-Private Partnerships in this issue for an in-depth exploration of a municipality-service provider collaboration.)

Twenty-six municipal networks, or about a quarter of the total, allow or plan to allow multiple retail service providers to deliver services. Eight others that do not have an open-access model have contracted with a single third-party service provider to deliver services.

Some municipal providers are both wholesalers and retailers. For example, ECFiber, now building its first phase, is conceived as an open-access network but plans to offer retail services until it grows large enough to attract other providers. Urbana-Champaign Big Broadband has a similar plan.

Certain states, such as Utah and Washington, prohibit municipalities from providing retail services. This can pose a problem for municipal fiber deployers at start-up, when third-party providers may not find it worth their while to join the network. The difficulty of attracting reliable service providers was a major reason Provo, Utah, sold its municipal system; UTOPIA took many

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CENSUS OF MUNICIPAL FTTH PROVIDERS

Network Deployer	Community	State	Date Project Started	Vendors (FTTH Electronics)	Technology	Services	Markets Served by Fiber (all premises unless otherwise noted)	Operator (if not network owner)	Service Provider (if not network owner)
American Samoa Telecom	American Samoa		2008	Calix	GPON				
Ashland Fiber Network	Ashland	OR	2000			Triple Play	Fiber connections mainly for businesses, HFC for residential		Multiple
Auburn Essential Services	Auburn	IN	2006	Enablence	EPON	Voice, Data, Smart Grid			
Barbourville Utility Commission	Barbourville	KY	2010	Calix	GPON	Data, Video			
Barnesville Municipal Utilities	Barnesville	MN	2009	Calix	GPON	Triple Play			
Bellevue Municipal Utilities	Bellevue	IA	2006	Enablence	EPON	Triple Play			
Benton County Public Utility District	Kennewick, Prosser and Benton City	WA				Business Services, Data	Businesses only		
Blue Ridge Crossroads Economic Development Authority (Wired Road)	Carroll & Grayson counties, city of Galax	VA	2009			Data	Fiber connections mainly for businesses, wireless for residential		Multiple
BlueAlbany	New Albany	OH	2010			Business Services, Data	Businesses only	Bluemile	Bluemile
Bowling Green Municipal Utility	Bowling Green and Warren County	KY	2007	CTDI	EPON	Voice, Data	Businesses only		
Braintree Electric Light Department	Braintree	MA	2008		Active Ethernet	Data	Businesses only		
Bristol Tennessee Essential Services	Bristol	TN	2005	Alcatel-Lucent	GPON	Triple Play, Smart Grid			
Burbank Water and Power (One Burbank)	Burbank	CA	2010	MRV		Data, Business Services	Businesses only		
Burlington Telecom	Burlington	VT	2006	Calix	GPON	Triple Play, Business Services			
BVU Optinet	Bristol	VA	2003	Calix, Alcatel-Lucent	GPON	Triple Play, Business Services, Smart Grid			
Cass County	Cass County	MO	2010			Data, Voice			
CC Communications	Churchill County	NV	2004	Enablence	EPON, Active Ethernet	Triple Play			
CDE Lightband	Clarksville	TN	2007	Ciena	Active Ethernet	Triple Play, Smart Grid			
Cedar Falls Utilities	Cedar Falls	IA	2006	Motorola	Active Ethernet, GPON	Data			
Chelan County Public Utility District	Chelan County	WA	2004	Alcatel-Lucent	BPON	Triple Play			Multiple
Chicopee Electric Light	Chicopee	MA				Data	Businesses only		
City of Ammon	Ammon	ID	2011			Data			Multiple
City of LaGrange	LaGrange	GA		Calix	GPON	Data, Voice, Business Services	Businesses only		
City of Leesburg	Leesburg	FL	2001			Data	Businesses only		
City of Powell	Powell	WY	2007	Calix	GPON	Triple Play			Tri County Telephone, open to others

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City of Williamstown	Corinth and parts of Grant and Owen Counties	KY	2010			Triple Play	Fiber in network extension area only; Williamstown served by HFC		
City of Wilson (Greenlight)	Wilson	NC	2008	Alcatel-Lucent	GPON	Triple Play			
City Utilities of Springfield (SpringNet)	Springfield	MO	2000		Active Ethernet	Business Services, Data	Businesses only		
Clallam County Public Utility District	Clallam County	WA	2002	Cisco	Active Ethernet	Data			Multiple
Coldwater Board of Public Utilities	Coldwater	MI	2010		EPON	Data	Businesses only		
Community Telecom Services	Monticello-Wayne County	KY	2009			Triple Play			
Crawfordsville Electric Light & Power (Accelplus)	Crawfordsville	IN	2006	Enablece	EPON	Video, Data			
Crosslake Telephone	Crosslake	MN	2005	Calix	GPON, Active Ethernet	Triple Play			
Dalton Utilities	Dalton	GA	2003	Alcatel-Lucent	GPON	Triple Play			
Douglas County Public Utility District	Douglas County	WA	1999	Telco Systems	Active Ethernet	Triple Play			Multiple
Dover Technology	Dover	OH	2004	Hitachi		Triple Play	Businesses only		
ECFiber	Consortium of 23 Vermont towns	VT	2010		GPON				Multiple
EPB Telecom	Chattanooga	TN	2007	Alcatel-Lucent	EPON, GPON	Triple Play, Smart Grid			
FastRoads	NH Community Development Finance Authority, Monadnock Economic Development Corporation, 42 towns	NH	2011						Multiple
FiberNet Monticello	Monticello	MN	2008	Calix	GPON	Triple Play		Hiawatha Broadband Communications	
Fibrant Communications	Salisbury	NC	2008	Zhone Technologies		Triple Play			
Fort Pierce Utilities (FPUAnet Communications)	Fort Pierce	FL		Cisco	Active Ethernet	Data			
Frankfort Plant Board	Frankfort	KY	2009	CommScope	RFoG	Triple Play			
Franklin County Public Utility District	Franklin County	WA			Active Ethernet	Data, Business Services	Businesses only		Multiple
Gahanna Net	Gahanna	OH	2010			Data	Businesses only	Bluemile	Bluemile
Gainesville Regional Utilities	Gainesville	FL	2001	Cisco	Active Ethernet	Data	Businesses, MDUs, greenfield developments		
Glenwood Springs Community Broadband Network	Glenwood Springs	CO	2002			Data, Voice			Multiple (for residential services)

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Goshen Fiber Network	Goshen (city and school district)	IN	2008			Triple Play	Businesses only	New Paris Telephone	Multiple
Grant County Public Utility District	Grant County	WA	2000	Cisco, others	Active Ethernet	Triple Play			Multiple
Grays Harbor County Public Utility District	Grays Harbor County	WA	1998			Data			Multiple
Greenlight Communications	Dunnellon	FL	2010	Zhone Technologies	GPON	Triple Play			
Harlan Municipal Utilities	Harlan	IA	2010	Calix	GPON	Data	Fiber connections available for businesses, HFC for residential		Walnut Comm.
Highland Communication Services	Highland	IL	2010	Calix	GPON	Triple Play			
Holland Board of Public Works	Holland	MI				Data	Businesses only		Multiple
Holyoke Gas & Electric Department	Holyoke	MA	1997			Data, Videoconferencing, Voice	Businesses, some MDUs		
Hometown Utilicom	Kutztown	PA	2002	Calix	BPON, GPON	Triple Play, Smart Grid			D&E Comm. (voice)
Idaho Falls Power (Circa)	Idaho Falls	ID	2007		Active Ethernet	Voice, Data	Businesses only		Multiple
Jackson Energy Authority (EPlus Broadband)	Jackson and part of Madison County	TN	2004	Enablence	EPON	Triple Play, Smart Grid			
Kitsap County Public Utility District	Kitsap County	WA	2000		Active Ethernet		Businesses only		Multiple
KPU Telecommunications	Ketchikan	AK	2007	Enablence, Zhone Technologies	Active Ethernet, GPON	Triple Play			
Lake County	Lake County, part of Saint Louis County	MN	2010			Triple Play			
LENOWISCO Planning District Commission	Lee, Wise and Scott Counties, city of Norton	VA, KY	2004	Ciena	Active Ethernet	Data		Sunset Digital	Clariti Media
Lenox Municipal Utilities	Lenox	IA	2008	Calix	GPON	Triple Play			Farmers Mutual Telephone (voice and Internet)
iInKCity	North Kansas City	MO	2007	Ciena	Active Ethernet	Data			
Loma Linda Connected Communities Program	Loma Linda	CA	2005	Allied Telesis	Active Ethernet	Triple Play	Greenfield and major renovations (developers required to install FTTH and turn network over to city)		Multiple
LUS Fiber	Lafayette	LA	2007	Alcatel-Lucent	GPON	Triple Play, Smart Grid			
Marshall Municipal Utilities	Marshall	MO	2005			Data, Smart Grid			

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Mason County Public Utility District	Mason County	WA	2000	Telco Systems, Ciena	Active Ethernet	Voice, Data			Multiple
MI-Connection	Mooresville, Davidson and Cornelius	NC	2009	Calix	GPON	Triple Play			
MINET	Monmouth and Independence	OR	2007	Alcatel-Lucent	BPON	Triple Play			
Morristown Utility Systems (MUS Fibernet)	Morristown	TN	2006	Alcatel-Lucent	GPON	Triple Play, Smart Grid			
Murray Electric System	Murray	KY	2000		Active Ethernet	Triple Play	Fiber connections available for businesses, HFC for residential		
nDanville	Danville	VA	2007	PacketFront	Active Ethernet	Triple Play, Business Services, Security	Businesses first, then residential		Multiple
NetQuincy	Quincy and surrounding areas	FL	2003	Alcatel-Lucent	BPON	Triple Play			
Norwood Light Broadband	Norwood	MA				Voice, Data	Fiber connections available for businesses, HFC for residential		
Ocala Utility Services		FL			Active Ethernet	Business Services, Data	Businesses only		
Okanogan County Public Utility District	Okanogan County	WA	2002		Active Ethernet				Multiple
Opelika Light and Power	Opelika	AL	2010	Alcatel-Lucent	GPON	Triple Play, Smart Grid			
Orangeburg County	Nine communities in Orangeburg County	SC	2010			Data, Voice			
Pacific County Public Utility District	Pacific County	WA	2000			Data			
Paducah Power System (PPS FiberNet)	Paducah, McCracken County	KY	2004	Alcatel-Lucent, Allied Telesis	BPON, Active Ethernet	Triple Play, Security	Businesses only		Multiple
Palm Coast FiberNET	Palm Coast	FL	2009	Cisco	Active Ethernet	Data, Voice, Business Services	Businesses only		Multiple
Pend Oreille County Public Utility District	Pend Oreille County	WA	2001	Cisco	Active Ethernet	Triple Play, Business Services			Multiple
Philippi Communications System	Philippi	WV	2005	Motorola	BPON	Data, Video			
Pulaski Electric System	Pulaski	TN	2007	Enablence	EPON	Triple Play, Smart Grid			
Reedsburg Utility Commission	Reedsburg	WI	2003	Calix	BPON, GPON	Triple Play			
Rochelle Municipal Utilities	Rochelle	IL		Zhone Technologies	Active Ethernet	Business Services, Data	Fiber connections available for businesses, wireless for residential		
Russelville Electric Plant Board	Russelville	KY	2010	Calix	GPON	Triple Play, Smart Grid			

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Sallisaw Municipal Authority	Sallisaw	OK	2004	Enablence	EPON	Triple Play			Newroads Telecom (voice)
Santa Monica City Net	Santa Monica	CA	2004	MRV	Active Ethernet	Data	Businesses only		Multiple
Scottsboro Electric Power Board	Scottsboro, Alabama	AL			Active Ethernet	Data, Smart Grid	Fiber connections available for businesses, HFC for residential		
Shawano Municipal Utilities	Shawano	WI	2008	Tellabs	GPON	Triple Play			
Sherwood Broadband	Sherwood, Oregon	OR	2004			Data	Businesses only		Multiple
Spencer Municipal Utilities	Spencer	IA	2007	Calix	GPON	Triple Play, Smart Grid			
St. Joe Valley Metronet (Zing)	South Bend	IN	2005			Data, Business Services, Voice, Security, Videoconferencing	Businesses, MDUs, institutions		Multiple
Sun Prairie Water & Light Telecom	Sun Prairie	WI	1999	Ciena	Active Ethernet	Data, Smart Grid	Businesses only	INOC (network operator)	
Swiftel Communications (Brookings Municipal Utilities)	Brookings	SD	2006	Calix	GPON	Triple Play			
Sylacauga Utilities Board	Sylacauga	AL	1997	Alcatel-Lucent	Active Ethernet	Data			
Taunton Municipal Lighting Plant	Taunton	MA	2003	Enablence	EPON	Data			
Thames Valley Communications	Groton	CT	2002			Data	Fiber connections available for businesses, HFC for residential		
Tifton CityNet	Tifton	GA	2007	CTDI	RFoG	Triple Play			
Tullahoma Utilities Board	Tullahoma	TN	2007	Enablence	GPON	Triple Play			
UC2B (Urbana-Champaign Big Broadband)	Urbana, Champaign and University of Illinois	IL	2010		Active Ethernet	Triple Play			Champaign Telephone Company
UTOPIA	Consortium of 16 cities	UT	2004	Allied Telesis, Alcatel-Lucent	Active Ethernet	Triple Play			Multiple
Vernon City Utilities	Vernon	CA	1999			Data	Businesses only		
Windom Telecommunications	Windom, 8 new cities being added	MN	2004	Calix	GPON	Triple Play			

years to attract a diverse and reliable group of providers.

OTHER PARTNERSHIPS

At least six municipal fiber systems currently have agreements with third parties—either local exchange carriers or man-

aged-service providers – to operate their networks. Such partnerships (which also exist in the private sector; Sprint’s cell service is managed by Ericsson) can be extremely helpful for municipalities with no experience operating telecommunications networks. On the other hand, like

any critical outsourcing contracts, they must be intensively managed. Not all such arrangements have ended happily.

Some municipalities formed agreements with developers either to allow the municipal providers to build fiber in new buildings or developments or to provide

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fiber backbone and services if developers build the local access infrastructure.

Finally, some networks, including St. Joe Valley Metronet and Urbana-Champaign Big Broadband, were developed in partnership with multiple anchor institutions, such as educational, health care and community service organizations.

VENDORS AND TECHNOLOGIES

Because of open-access requirements and the importance of business customers, active Ethernet networks are somewhat more prevalent among municipalities than among private network builders. (Supporting open access is easier on point-to-point than on PON systems.) At least one-third of municipal deployers use active Ethernet technology, compared with a quarter of small telcos and none of the large telcos.

Several electronics vendors have sizable shares of this market, with no single vendor taking a leading position. Alcatel-Lucent, Calix, Enablence and Ciena each have several deployments and at least one sizable system, and a number of other vendors have also had significant customer wins.

GEOGRAPHIC DISTRIBUTION

Laws governing municipalities' ability to compete as telecommunications providers vary from state to state. Some states give municipalities a free hand, while others do not. (The National Broadband Plan calls for greater encouragement of public broadband deployers.) Municipal electric utilities are more common in some areas than others, and some regions are better served by private providers than others are. Considering all these factors, the chances for municipal broadband are wildly uneven in different parts of the United States.

We identified municipal fiber systems in only 34 of the 50 states and in American Samoa. Seven states account for nearly half of municipal deployments: Washington (12), Kentucky (9), Florida (7), Tennessee (7), Iowa (5), Minnesota (5) and Massachusetts (5).

TRIPLE PLAY AND BEYOND

Though some municipalities offer only broadband Internet access over their fiber networks, most whose planned or actual

MAP OF MUNICIPAL FTTP SYSTEMS IN THE UNITED STATES



services we could determine offer the triple play of voice, video and data. Specialized business services are common, as are smart-grid applications. Stimulus funding, along with encouragement by the Tennessee Valley Authority, have made smart-grid applications more prevalent in the last year or two, and we expect these applications to become still more important in the future.

Finally, a few open-access networks are actively recruiting many different kinds of services – for example, on St. Joe Valley Metronet, 30 providers deliver 20 different types of services, including such offerings as conferencing, disaster recovery and video surveillance. Enabling a wide variety of broadband services could become a way to make more community networks financially viable. If this strategy succeeds, we can expect to see more municipal networks – at least larger networks – following suit. We could also see more municipalities trying to expand or partner with other municipal networks, as has happened in Europe, to achieve the necessary scale to attract providers of innovative services.

IS MUNICIPAL BROADBAND VIABLE?

Municipal broadband is not for the faint of heart. Political opposition is only one of many challenges municipal deployers

face. Developing a competitive broadband offering is not simple, and neither is operating, maintaining and upgrading a network. Attracting third-party retail service providers can be difficult. The time required to see any return on investment may be discouragingly long.

Many municipalities embark on broadband projects to boost economic development, but the mere existence of fiber infrastructure does not create jobs. A fiber optic network is only one aspect of a well-thought-out economic development program; it cannot compensate for other drawbacks that make a city unattractive to business.

Furthermore, network services must be marketed, and economic development agencies must work closely with agencies responsible for building and operating networks.

Municipalities that have launched broadband projects without adequate planning or financing have been disappointed; some have lost money for taxpayers. The good news is that many municipalities have created successful networks that bring significant benefits to their communities. Several of them are profiled in this issue of **BROADBAND COMMUNITIES**. There are plenty of good role models for other communities that are considering following in their footsteps. ❖