

A Record Increase In Municipal Fiber Broadband

BROADBAND COMMUNITIES' 2017 census of municipal and public-private fiber networks now shows 216 active projects – and many more in preliminary stages.

By Masha Zager / *Broadband Communities*

BROADBAND COMMUNITIES' count of public and public-private fiber-to-the-premises network projects in the United States now stands at 216. This is a 21 percent jump over last year's count of 178 and the largest increase in any year. In fact, municipal fiber optic network projects are progressing so rapidly that, by now, there may be several more municipal networks than are listed here.

Fifteen of the new networks are in Western Massachusetts, where the state government promised several years ago to help fund last-mile networks in unserved and partially served towns. The original plan was for the unserved towns to build a fiber network through a coalition called WiredWest; however, the state rejected WiredWest's plan and, after considerable delay and confusion, allocated the funds to the towns separately. Fifteen of the towns are building municipal fiber networks on their own (some may hire WiredWest as a network operator); others are using their funding to subsidize builds by private network operators, including Comcast and Charter. Some towns are still considering their options.

A few networks that appeared on last year's list do not reappear this year. Sun Prairie, Wisconsin, sold its network to TDS, which was in a better position to finance the network's expansion. In addition, several projects that never materialized were removed from the list.

Other networks, though still listed here, are up for sale in whole or in part. For example,

BVU Authority of Bristol, Virginia, is about to sell its fiber optic network, OptiNet, to Sunset Digital Communications. Burlington, Vermont, is sorting through bids received for Burlington Telecom (though it expects to retain part ownership of the network). Lake Connections in Lake County, Minnesota, is trying to find a purchaser.

Though some cities, including the three just mentioned, seek to sell their networks because they failed to build, manage or market them effectively, that is not the only reason to do so. Localities sometimes build networks because no other operator will make the investment and are happy to sell these assets if private investors appear on the scene. Ted Chase, chairman of the Sun Prairie Utilities Commission, explains the sale of its telecom network in this way: "By transitioning our network to TDS, more households and businesses will have access to fiber internet at no risk to the utility."

As in prior years, the majority of community fiber networks appear to be self-sustaining or profitable. Despite the controversy attached to a few of them, most are not controversial in any way – rather, they are sources of civic pride. Many continue to expand or add new types of customers and services. (For three examples, see "Slow and Steady Wins the Fiber Race," p. 32.) Often, a municipal fiber network begins in one community and expands by popular demand into neighboring communities, though in some

cases, state legislatures have quashed expansions requested by residents.

Well-run community fiber networks are instrumental in attracting new businesses and retaining existing businesses. The most common rationale for building community networks is to provide businesses with affordable fiber

connections; in fact, many networks are built or extended to accommodate specific requests by local businesses. However, community fiber networks do not lead automatically to economic development. They succeed in doing so when network operators understand what businesses – including home-

based businesses – are looking for (price-performance, redundancy, reliability, service level agreements) and when economic development agencies can communicate a network's capabilities to prospective businesses.

Similarly, cities use municipal broadband networks to improve

WHAT'S A MUNICIPAL FIBER NETWORK?

There are many ways to define a municipal fiber network. Even state legislatures that want to restrict such networks disagree about what they are restricting. **BROADBAND COMMUNITIES** identifies networks as municipally owned if a public agency undertakes most of the investment, incurs most of the risk and exercises most of the control over the network.

All the MUNI network deployers on this list

- Are public agencies, public authorities, public benefit corporations or consortia of public entities
- Own all-fiber infrastructure that connects local homes or businesses to the internet (or are actively developing such networks). In most but not all cases, deployers also own the equipment that lights the fiber. In at least one case, Huntsville Utilities, the service provider owns the drop cable; this network could arguably be classified as public-private, but because the municipality is making the great majority of the investment, we classified it as municipal.
- Make available – directly or through retailers – such services as voice, internet access or video (or are planning such services)
- Are in the United States or U.S. territories.

Excluded are municipalities that provide broadband services exclusively for municipal government facilities, schools and other anchor institutions; those that provide broadband services only over cable or wireless networks; and those that serve private customers only by leasing conduit or dark fiber to them. (A few, such as Circa and Huntsville Utilities, lease dark fiber to retail service providers that serve private customers.)

This list includes only organizations that have either functioning networks or approved plans and funding. However, plans do not always materialize; every year, one or more listed projects fail to survive. Others, although partially deployed, have stalled.

Multiple-municipality projects can achieve economies of scale in construction and operation and, by aggregating demand, can attract third-party service providers more easily. Examples are ECFiber in Vermont,

BROADBAND COMMUNITIES maintains updated information about community fiber networks and other FTTP deployments in the U.S. on a searchable database at www.fiberville.com. The database field labeled "Community Benefits" contains a wealth of information on the economic development and other benefits of these networks.

SMBS in Minnesota and OTO Fiber in Maine.

Even a network owned by a single town or city may provide service beyond city limits. For example, EPlus Broadband and EPB Fiber Optics in Tennessee both serve areas adjacent to the cities that own them – areas that were already served by their electric utilities. The city of Williamstown, Kentucky, used broadband stimulus funding to expand its community network beyond city borders. (Its original network was hybrid fiber-coax, but the expansion area is FTTH.) In Washington state, though each public utility district builds and operates its own network, most or all belong to the Northwest Open Access Network (NoaNet), a coalition of public utility districts that 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.



Community fiber networks are found in 39 states and American Samoa. (Alaska and American Samoa are not shown.)

educational achievement, health care and other quality-of-life measures, but like economic development, quality-of-life improvement doesn't happen on its own. Municipal broadband is an opportunity, not a panacea.

THE CHANGING LEGAL AND POLITICAL LANDSCAPE

About 20 states either prohibit communities from building community networks altogether or impose restrictions that discourage or effectively prevent them from building such networks. State legislatures aren't the only obstacles; often, opposition comes from community members who disapprove of municipal broadband on principle.

A 2015 FCC attempt to preempt state laws on this subject was overturned in the courts, and the current FCC appears unlikely to support municipal broadband. On the other hand, several recent attempts to make state laws stricter were defeated.

Because the pendulum of public opinion shifts constantly, a broadband project that is legally or politically impossible one year may become

feasible the next year. In Colorado, for example, the state law that restricts municipal broadband has been effectively nullified in the last few years as at least 68 cities and counties voted to exempt themselves from it. (Most of these localities are still in the planning stages, and not all are expected to proceed with broadband initiatives.) Holding a referendum is an expensive, time-consuming and unnecessary step in building a broadband network, but it does not seem to deter many Colorado cities at this point.

In several cases, city leaders and broadband activists succeeded in changing public opinion by educating citizens about the economic and social benefits of high-speed broadband. Some states – such as Massachusetts, as described above – now actively support municipal broadband projects.

MUNICIPAL UTILITIES

Municipalities have always been more likely to become broadband providers when they are already in the business of providing electric power. 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 private sector's failure to deliver adequate services, and residents accept that government might set up 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. In addition, public power utilities already have the outside-plant personnel and back-office operations, such as billing and customer service, that they need to provide telecom services.

Finally, public power utilities, like all electric utilities, are building communications networks for smart-grid applications; once they begin planning these networks, they often realize the networks are suitable for business or residential broadband. Municipal utilities that distribute Tennessee Valley Authority electricity have been in the forefront of combining smart grid and telecom applications.

In some cases, such as Hudson, Ohio, the city operates a municipal

electric utility but set up the telecommunications utility as a separate entity or department.

In the last several years, as the concept of municipal broadband has become more familiar, more cities are embarking on broadband projects without having previously operated a utility. Often, they seek experienced operators to build and manage their networks and provide services. The 15 Western Massachusetts hill towns

funded by the state this year do not operate electric utilities; they are all working with Westfield Gas & Electric, a nearby municipal utility that is in the process of building its own fiber network.

WHO ARE THE CUSTOMERS?

The municipal and public-private networks on this list vary widely in terms of the customers they serve. Some are essentially institutional networks that happen to serve a few businesses

conveniently located near municipal facilities. Others have made fiber connections available to every premises within their borders – and often to outlying areas. Most are somewhere in between. The smallest network we know of has seven customers, and the largest, EPB Fiber Optics, has about 75,000.

A typical deployment path is for cities to begin by installing institutional fiber networks to serve municipal office buildings or utility substations, then

WHAT'S A PUBLIC-PRIVATE PARTNERSHIP?

Throughout the broadband industry, the term public-private partnership is used loosely – and no two partnerships seem to follow the same model. In the last few years, cities have become much more proactive about working with private providers and offering a variety of concessions and assistance to encourage the provision of better broadband. To keep the list to a manageable size, we restrict the usage to cases in which both public and private partners make significant investments in the access network, incur significant risk and retain significant control. The investments may include contributing pre-existing conduit or fiber.

However, as there is no accepted definition of a public-private partnership, we do not argue for our definition over any other. To make matters even more confusing, descriptions of the details of public-private partnerships are not always precise or complete, and the agreements themselves change over time; in some cases, we are guessing about whether a public-private network meets our definition.

To the best of our knowledge, then, all the network deployers identified on this list as PUBLIC-PRIVATE

- Are consortia of public and private entities, public entities that built networks and later received infusions of private capital, or private entities that built networks with significant investment or participation by local governments
- Own all-fiber networks that connect homes or businesses to the internet (or are actively developing such networks)
- Make available – directly as a partnership, through one of the partners or through third-party retailers – such services as voice, internet access or video (or are planning such services)
- Are in the United States or U.S. territories.

Excluded are publicly owned networks that contract with private retail service providers or operators (those are labeled MUNI); privately owned networks for which public entities have helped raise funding; privately owned networks for which public entities have donated access to rights-of-way, expedited permitting or offered marketing assistance; privately owned networks for which municipalities have committed to be anchor tenants; and privately owned networks that lease backbone fibers or conduit from public entities in arms-length, market-rate contracts.

Public financing for private networks. One of the excluded categories – private networks for which public entities have helped raise funds – deserves special mention both because it fits many people's definitions of public-private partnerships and because it is a rapidly growing category. In these cases, a municipality obtains capital funding that a private operator is not eligible for – either grant funding or low-cost tax increment financing (or "tax abatement financing," as it is called in some states) and passes it through to the private operator. If the funding is a loan, the private operator is obligated to repay the municipality.

Cities entering into these arrangements take on considerable risk (they are on the hook if revenues are insufficient to repay loans or if private operators do not comply with grant terms) without gaining ownership or control. That's why we don't consider these arrangements true public-private partnerships. However, entering into this type of arrangement can still be a reasonable choice for a municipality. Typically, an operator commits to build out a high-quality network throughout the municipality in return for access to the funds. The network may be a "life or death" investment for the community, and if it succeeds and bolsters the local economy, the investment can be well worth the risk.

extend fiber to commercial buildings or business parks, add multiple-dwelling-unit properties and greenfield residential developments, and finally reach single-family households and small businesses. The list shows deployers at various points along this path.

Building an institutional fiber network can also be a starting point for a path to a public-private partnership, as exemplified by Urbana-Champaign Big Broadband, which began as a BTOP project.

Sixty-three community networks, or 29 percent of the total, deliver fiber services only to businesses, and several others serve mainly businesses. (Some of these deliver residential broadband services via cable or wireless; most don't serve residences at all.)

Some fiber networks that began as business-only, such as nDanville in Virginia and Cedar Falls Utilities in Iowa, eventually built out fiber to residential customers citywide. Owensburg Municipal Utilities in Kentucky and Whip City Fiber in Massachusetts recently added residential pilot programs to their fiber-to-the-business networks; the success of these pilot programs encouraged them to commit to larger residential buildouts. Others are beginning to upgrade residential cable to fiber. Still others, such as Chanute Utilities in Kansas, gave serious consideration to building out fiber to residences but failed to gain political support for their projects.

THIRD-PARTY SERVICE PROVIDERS AND OPERATORS

Municipalities are more likely than private deployers to allow third parties to provide services on their networks. There are several reasons for this: State laws or federal funding conditions may require a wholesale model; local political support may depend on a city's following a wholesale model; municipalities may not have the expertise, resources or will to become service providers; some municipalities want to offer a wider variety of services than they can provide on their own.

Forty-eight community fiber networks either allow or plan to allow

multiple retail service providers to deliver services. Another 53 have contracted, or plan to contract, with a single third-party service provider to deliver services (in a few cases, just phone or video service). Some of these, such as the city of Westminster, Maryland, plan to transition to a full open-access model in the future.

At least 25 municipal fiber systems contract with third parties – local exchange carriers, other municipalities or other network operators – to operate their networks. Such contracts (which privately owned networks also enter into) can be helpful for municipalities that lack experience operating telecommunications networks.

On the other hand, like any critical outsourcing contracts, they must be intensively managed. Several such arrangements have ended abruptly or even resulted in lawsuits.

TECHNOLOGY

Community broadband networks use a mix of PON and active Ethernet technologies. At this point, active Ethernet is used primarily for business customers, but in earlier years, active Ethernet was preferred even in residential networks for its ease of supporting open access. (GPON can now support open access.)

Municipalities have been leaders in deploying gigabit networks – Chattanooga EPB had the first citywide gigabit network in 2010 – and now lead the way in deploying 10 Gbps networks. Fibrant and EPB were among the first U.S. providers to announce 10 Gbps residential service.

GEOGRAPHIC DISTRIBUTION

Laws that govern municipalities' ability to compete as telecommunications providers vary from state to state. Some states give municipalities a free hand, and others do not. 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 of municipalities' building their own broadband networks are

wildly uneven in different parts of the United States.

This census identified community fiber systems in 39 of the 50 states and in American Samoa. There are also about a dozen fiber networks, not listed here, built on tribal lands by tribal governments. Eight states account for a large number of deployments: Massachusetts, California, Florida, Iowa, Kentucky, Minnesota, Tennessee and Washington.

With a few notable exceptions, municipalities that build fiber networks are small to midsized. As broadband improves in large metropolitan areas, smaller, more remote localities are increasingly left to fend for themselves.

TRIPLE PLAY AND BEYOND

Though some municipalities offer only internet access over their fiber networks, many offer the triple play of voice, video and data. Specialized business services are common, as are smart-grid applications. Broadband stimulus funding and encouragement from the Tennessee Valley Authority have made smart-grid applications more prevalent in recent years.

A few open-access networks actively recruit many different kinds of services. For example, on the St. Joe Valley Metronet, providers deliver more than 20 different types of services, including conferencing, disaster recovery and video surveillance. Enabling a wide variety of broadband services could make more community networks financially viable.

In conclusion, there is no single model for public broadband. Each project takes a slightly different approach, depending on the legal and political landscape, the availability of financing, the interest of potential partners, and the skills and assets that public agencies possess. Communities have many options and should explore as many as possible before committing to a plan or deciding that public broadband is not for them. ❖

*Masha Zager is the editor of **BROADBAND COMMUNITIES**. You can reach her at masha@bbcmag.com.*

MUNICIPAL AND PUBLIC-PRIVATE FTTP NETWORKS IN THE UNITED STATES

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
AccessEagan	Eagan	MN	MUNI	2013	Active Ethernet	Business Services, Data	Businesses only	Multiple	
Albany Utilities	Albany	GA	MUNI			Data			
Alford Municipal Lighting Plant	Alford	MA	MUNI	2017		Data, Voice			
Algona Municipal Utilities	Algona	IA	MUNI	2013	Active Ethernet, GPON	Data, Video, Voice			
ALP Utilities	Alexandria	MN	MUNI			Data	Businesses only		
Altitude Community Broadband	Highlands	NC	MUNI	2016		Data	Downtown area only		
American Samoa Telecom	American Samoa		MUNI	2009	GPON	Data, Voice			
Anderson Municipal Light and Power	Anderson	IN	MUNI	2007	Active Ethernet	Data	Businesses only	Multiple	
Ashfield Municipal Light Plant	Ashfield	MA	MUNI	2017		Data, Voice		Westfield G&E	
Ashland Fiber Network	Ashland	OR	MUNI	2000		Video, Data, Voice	Mainly businesses	Multiple	
Athens Utilities Board	Athens	TN	MUNI	2015		Data	Businesses only	EPB Fiber Optics	
Auburn Essential Services	Auburn	IN	MUNI	2006	EPON	Data, Smart Grid, Video, Voice			
Barnesville Municipal Utilities	Barnesville	MN	MUNI	2009	GPON	Data, Video, Voice			
Bellevue Municipal Utilities	Bellevue	IA	MUNI	2006	EPON, GPON	Data, Video			
Benton County Public Utility District	Kennewick, Prosser and Benton City	WA	MUNI	2002		Business Services, Data	Businesses only	Multiple	
Beverly Hills Fiber	Beverly Hills	CA	MUNI	2017		Data, Video, Voice			
BlakelyNet	Blakely	GA	MUNI	2016		Data			
Blink (Barbourville Utilities)	Barbourville	KY	MUNI	2017 (decided in 2010)	GPON	Data, Video			
Bowling Green Municipal Utility	Bowling Green and Warren County	KY	MUNI	2007	EPON	Business Services, Data, Voice	Businesses only		
Bozeman Fiber	Bozeman	MT	MUNI	2015		Data, Voice	Businesses only (plans to add residential services)	Multiple	
Braintree Electric Light Department	Braintree	MA	MUNI	2008	Active Ethernet	Data	Businesses only		
Bristol Tennessee Essential Services	Bristol	TN	MUNI	2005	GPON	Data, Smart Grid, Video, Voice			
Buffalo Municipal Utilities	Buffalo	MN	MUNI	1996		Data	Businesses only		
Burlington Telecom	Burlington	VT	PUBLIC-PRIVATE	2006	GPON	Business Services, Data, Video, Voice			
BVU OptiNet (BVU Authority)	Bristol	VA	MUNI	2003	GPON	Business Services, Data, Smart Grid, Video, Voice,			
Calnet (Calhoun Utilities)	Calhoun	GA	MUNI	1997	Carrier Ethernet	Data, Voice	Businesses only		
CBPU Telecom (Coldwater Board of Public Utilities)	Coldwater	MI	MUNI	2010	EPON	Data	Businesses only		
CC Communications	Churchill County	NV	MUNI	2004	Active Ethernet, EPON	Business Services, Data, Security, Video, Voice			

COMMUNITY BROADBAND

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
CDE Lightband	Clarksville	TN	MUNI	2007	Active Ethernet	Data, Smart Grid, Video, Voice			
Cedar Falls Utilities	Cedar Falls	IA	MUNI	2006	Active Ethernet, GPON	Data, Smart Grid, Video, Voice			
Chanute Utilities	Chanute	KS	MUNI	2005		Data	Businesses only		
Charlemont Municipal Light Plant	Charlemont	MA	MUNI	2017		Data, Voice		Westfield G&E	
Charles City County	Charles City County	VA	MUNI	2015		Data		Multiple	
Chaska.net	Chaska	MN	MUNI	2004	Active Ethernet		Businesses only		
Chelan County Public Utility District	Chelan County	WA	MUNI	2004	GPON	Data, Video, Voice		Multiple	
Chesterfield Municipal Light Plant	Chesterfield	MA	MUNI	2017		Data, Voice		Westfield G&E	
Chicopee Electric Light	Chicopee	MA	MUNI	2007		Data	Businesses only	Holyoke Gas & Electric	
Circa (Idaho Falls Power)	Idaho Falls	ID	MUNI	2007	Active Ethernet	Data, Voice	Businesses only	Multiple	
City of Ammon	Ammon	ID	MUNI	2011		Data		Multiple	
City of Blackfoot/Optix Media	Blackfoot	ID	PUBLIC-PRIVATE	2016		Data	Businesses only	Optix Media	Optix Media
City of Celina	Celina	TX	PUBLIC-PRIVATE	2017		Data		Multiple	
City of Columbus	Columbus	OH	MUNI	2016		Data	Businesses only		
City of Cortez	Cortez	CO	MUNI	2011	Active Ethernet, GPON	Data, Video, Voice	Businesses only	Multiple	
City of Ellensburg	Ellensburg	WA	MUNI	2015		Data	Pilot project for businesses		
City of Ellsworth	Ellsworth	ME	MUNI	2015		Data	Businesses only	GW, open to others	
City of Fort Morgan	Fort Morgan	CO	MUNI	2017		Data		Allo Communications (in negotiations)	
City of Grover Beach/Digital West	Grover Beach	CA	PUBLIC-PRIVATE	2017		Data	Businesses only	Digital West	Digital West
City of Hamilton	Hamilton	OH	MUNI	2014	Active Ethernet, GPON	Business Services, Data	Businesses only	CenterGrid	
City of Hudson Oaks	Hudson Oaks	TX	MUNI	2017				NextLink	
City of Jasper and Dubois County/Smithville	Jasper and Dubois County	IN	PUBLIC-PRIVATE	2015	GPON	Data, Video, Voice		Smithville	Smithville
City of LaGrange	LaGrange	GA	MUNI	2000	GPON	Business Services, Data, Voice	Businesses only		
City of Leesburg	Leesburg	FL	MUNI	2001		Data	Businesses only		
City of Madison	Madison	WI	MUNI	2015		Data	Pilot project	ResTech	
City of Maupin/LS Networks	Maupin	OR	PUBLIC-PRIVATE	2017		Business Services, Data, Voice		LS Networks, open to other providers	QLife
City of Mishawaka	Mishawaka	IN	MUNI	2012		Data	Businesses only	St. Joe Valley MetroNet	
City of Mont Belvieu	Mont Belvieu	TX	MUNI	2017		Data			
City of Mount Vernon	Mount Vernon, Burlington and Port of Skagit	WA	MUNI	2002	GPON	Data, Voice	Businesses only	Multiple	

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
City of Ottawa	Ottawa	KS	MUNI	2013		Data	Businesses only		
City of Pasadena	Pasadena	CA	MUNI	2016		Data	Businesses only		
City of Ponca City	Ponca City	OK	MUNI	2000		Data	Businesses, residential pilot project		
City of San Bruno	San Bruno	CA	MUNI	2015	Active Ethernet, GPON		New condo development		
City of South Portland/GWI	South Portland	ME	PUBLIC-PRIVATE	2014		Data			
City of Union City	Union City	CA	MUNI	2017		Data	Businesses only	Multiple	
City of Vallejo	Vallejo	CA	MUNI	2017		Data	Businesses only	Inyo Networks	Inyo Networks
City of Vernon	Vernon	CA	MUNI	1999		Data	Businesses only		
City of West Plains	West Plains	MO	MUNI	2016	GPON	Data, Voice	Businesses only		
City of Westminster	Westminster	MD	MUNI	2014	GPON	Data		Ting	Ting
Clallam County Public Utility District	Clallam County	WA	MUNI	2002	Active Ethernet	Data		Multiple	
Click! Network (Tacoma Power)	Tacoma	WA	MUNI		Carrier Ethernet	Data, Video	Businesses only	Multiple	
Colrain Municipal Light Plant	Colrain	MA	MUNI	2017		Data, Voice		Westfield G&E	
Community Fiber Network (formerly Goshen Fiber Network)	Goshen, New Paris, Milford, Nappanee, Wakarusa	IN	PUBLIC-PRIVATE	2008		Data, Voice		New Paris Telephone	New Paris Telephone
Community Network Services (South Georgia Governmental Services Authority)	Thomasville, seven other communities	GA	MUNI	1999	Carrier Ethernet	Data, Video, Voice	Businesses only in some communities		
Community Network System (Pend Oreille County Public Utility District)	Pend Oreille County	WA	MUNI	2001	Active Ethernet	Business Services, Data, Video, Voice		Multiple	
Concord Light Broadband	Concord	MA	MUNI	2014		Data, Smart Grid			
Conway Corporation	Conway	AR	MUNI	2011		Data, Voice			
CPWS PowerNet (Columbia Power and Water Systems)	Columbia (also serves Spring Hill)	TN	MUNI	2016		Data, Video, Voice			
Culver Connect	Culver City	CA	MUNI	2016		Data	Businesses only	Multiple	Mox Networks
Cummington Municipal Light Plant	Cummington	MA	MUNI	2017		Data, Voice		Westfield G&E	
DiamondNet (Sallisaw Municipal Authority)	Sallisaw	OK	MUNI	2004	EPON	Data, Video, Voice		Momentum Telecom (voice)	
Douglas County Community Network (Douglas County Public Utility District)	Douglas County	WA	MUNI	1999	Active Ethernet	Data, Video, Voice		Multiple	
Downeast Broadband Utility	Calais, Baileyville	ME	MUNI	2017		Data		Multiple	To be selected
DubLink	Dublin	OH	MUNI	2015		Data	Businesses only	Multiple	
Eastern Shore of Virginia Broadband Authority (ESVBA)	Counties of Northampton and Accomack	VA	MUNI	2016		Data		Multiple	
ECFiber	Consortium of 23 Vermont towns	VT	MUNI	2010	GPON	Business Services, Data, Voice			ValleyNet
EPB Fiber Optics	Chattanooga (also serves surrounding areas)	TN	MUNI	2007	GPON, NG-PON2	Data, Smart Grid, Video, Voice			

COMMUNITY BROADBAND

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
EPlus Broadband (Jackson Energy Authority)	Jackson (also serves part of Madison County)	TN	MUNI	2004		Data, Smart Grid, Video, Voice			
Erwin Utilities	Erwin	TN	MUNI	2014		Data, Smart Grid, Voice			
EUGNet (Eugene Water and Electric Board)	Eugene	OR	MUNI	2014		Data	Downtown area	Multiple	
FairlawnGig	Fairlawn	OH	MUNI	2016		Data, Voice			
FastRoads (Monadnock Economic Development Corporation)	Rindge and Enfield	NH	MUNI	2011		Data		Multiple	WideOpen Networks
Fayetteville Public Utilities	Fayetteville	TN	MUNI	2010	EPON, RFoG	Data, Video, Voice			
FiberCom	Cartersville (also serves surrounding areas)	GA	MUNI	1998	Carrier Ethernet	Business Services, Data, Voice	Businesses only		
FiberNet	Monticello	MN	MUNI	2008	GPON	Data, Video, Voice		Arvig Enterprises	
Fibrant	Salisbury	NC	MUNI	2008	Active Ethernet, GPON, NG-PON2	Data, Video, Voice			
FPUAnet Communications (Fort Pierce Utilities Authority)	Fort Pierce	FL	MUNI	2000	Active Ethernet	Data, Voice	Businesses		
Frankfort Plant Board	Frankfort	KY	MUNI	2009	Carrier Ethernet, RFoG	Data, Security, Video, Voice			
Franklin County Public Utility District	Franklin County	WA	MUNI		Active Ethernet	Business Services, Data, Voice		Multiple	
Franklin Municipal FiberNET (Franklin Electric Plant Board)	Franklin	KY	MUNI	2013		Data, Voice	Businesses, residential pilot project		
GahannaNet	Gahanna	OH	PUBLIC-PRIVATE	2010		Business Services, Data	Businesses only	WOW Business	WOW Business
Garrett County	Garrett County	MD	MUNI			Data	Businesses only		
Get Wired Alabama (South Central Alabama Broadband Commission/Oasis Construction)	17 counties	AL	PUBLIC-PRIVATE	2015		Data, Video, Voice		Multiple	Oasis Alabama Broadband
Glasgow Electric Plant Board	Glasgow	KY	MUNI			Data	Businesses only		
Glenwood Springs Community Broadband Network	Glenwood Springs	CO	MUNI	2002	GPON	Data, Voice	Businesses only	Multiple	
Goshen Municipal Light Plant	Goshen	MA	MUNI	2017		Data, Voice		Westfield G&E	
Grant County Public Utility District	Grant County	WA	MUNI	2000	Active Ethernet	Data, Video, Voice		Multiple	
Grays Harbor County Public Utility District	Grays Harbor County	WA	MUNI	1998		Data		Multiple	
Greenlight	Wilson	NC	MUNI	2008	GPON	Data, Video, Voice			
GreenLight (Greenfield Community Energy and Technology, GCET)	Greenfield	MA	MUNI	2017	Active Ethernet	Data, Voice	Businesses only		
GRUCom Fiber Optics (Gainesville Regional Utilities)	Gainesville (also serves surrounding areas)	FL	MUNI	2001	Active Ethernet	Data	Businesses, MDUs, greenfield developments		
Harlan Municipal Utilities	Harlan	IA	MUNI	2010	GPON	Data, Video, Voice			

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
HES (Hopkinsville Electric System) EnergyNet	Hopkinsville	KY	MUNI	1999		Data			
HG&E Telecom (Holyoke Gas & Electric Department)	Holyoke (also serves Springfield and surrounding areas)	MA	MUNI	1997	Carrier Ethernet	Data, Voice	Businesses, some MDUs	OTT Communications (voice)	
Highland Communication Services	Highland	IL	MUNI	2010	GPON	Data, Video, Voice			
Holland Board of Public Works	Holland	MI	MUNI	1990s		Data	Businesses, residential pilot project	Multiple	
Home Net (Hometown Utilicom)	Kutztown	PA	MUNI	2002	BPON, GPON	Data, Smart Grid, Video, Voice			
Huntsville Utilities	Huntsville	AL	MUNI	2016				Google Fiber, open to others	
Independence Light and Power Telecommunications	Independence	IA	MUNI	2013	GPON	Data, Video, Voice			
Indianola Municipal Utilities	Indianola	IA	MUNI	2012	Active Ethernet	Data, Video, Voice		MCG	
Islesboro Municipal Broadband	Islesboro	ME	MUNI	2016	GPON	Data, Voice		GWI	GWI
Kent County Fiber Network (Kent County/FTS Fiber/Think Big Networks)	Kent County	MD	PUBLIC-PRIVATE	2016		Data		Think Big Networks	
Kitsap County Public Utility District	Kitsap County	WA	MUNI	2000	Active Ethernet	Data	Mainly businesses	Multiple	
KPU Telecommunications	Ketchikan	AK	MUNI	2007	Active Ethernet, GPON	Data, Video, Voice			
Lac qui Parle County Economic Development Authority/Farmers Mutual Telephone	Lac qui Parle County	MN	PUBLIC-PRIVATE	2010		Data, Video, Voice			
Lake Connections (Lake County)	Lake County (also serves part of St. Louis County)	MN	MUNI	2010	Active Ethernet, GPON	Data, Video, Voice		Consolidated Telecommunications Company	
LanCity Connect	Lancaster	PA	MUNI	2015		Data, Smart Grid		MAW Communications	
Lenox Municipal Utilities & Communications	Lenox	IA	MUNI	2008	PON	Data, Video, Voice			
Leverett Municipal Light Plant (LeverettNet)	Leverett	MA	MUNI	2012	Active Ethernet	Data, Voice		OTT Communications	Holyoke Gas & Electric
Leyden Municipal Light Plant	Leyden	MA	MUNI	2017		Data, Voice		Westfield G&E	
LightTUBE (Tulahoma Utilities Board)	Tulahoma	TN	MUNI	2007	GPON	Data, Video, Voice			
liNKCity	North Kansas City	MO	MUNI	2007	Active Ethernet	Data			KC Fiber LLC
Lit San Leandro	San Leandro	CA	PUBLIC-PRIVATE	2012		Data	Businesses only		
Loma Linda Connected Communities Program	Loma Linda	CA	MUNI	2005	Active Ethernet	Data, Video, Voice		Multiple	
Los Angeles Department of Water and Power Fiber Optic Enterprise	Los Angeles	CA	MUNI		Carrier Ethernet	Business Services, Data	Businesses only		
LUS Fiber	Lafayette	LA	MUNI	2007	GPON	Data, Smart Grid, Video, Voice			

COMMUNITY BROADBAND

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
MachLink (Muscatine Power & Water)	Muscatine	IA	MUNI	2015		Data, Video	Businesses, expanding to residential		
Marshall FiberNet	Marshall	MI	MUNI	2017		Data			
Marshall Municipal Utilities	Marshall	MO	MUNI	2005		Data, Smart Grid			
Martinsville Information Network (MINet)	Martinsville	VA	MUNI	2009		Business Services, Data, Voice	Businesses only		
Mason County Public Utility District	Mason County	WA	MUNI	2000	Active Ethernet	Business Services, Data, Voice		Multiple	
Mayfield Village	Mayfield Village	OH	MUNI	2012		Data	Businesses only		OneCommunity
Medina County Fiber Network (Medina County Port Authority)	Medina County	OH	MUNI	2012		Data	Businesses only	Multiple	
MI-Connection	Mooresville, Davidson and Cornelius	NC	MUNI	2009	GPON	Data, Video, Voice			
MINET	Monmouth and Independence	OR	MUNI	2007	BPON	Data, Video, Voice			
Montana Economic Revitalization & Development Institute/ Fatbeam	Butte	MT	PUBLIC-PRIVATE	2013		Business Services, Data, Voice	Businesses only		
Morristown Utility Systems (MUS Fibernet)	Morristown	TN	MUNI	2006	GPON	Data, Smart Grid, Video, Voice			
Murray Electric System	Murray	KY	MUNI	2000	Active Ethernet	Data, Video, Voice	Businesses only		
nDanville	Danville	VA	MUNI	2007	Active Ethernet, GPON	Business Services, Data, Security, Video, Voice		Multiple	
Nelson County Broadband Authority	Nelson County	VA	MUNI	2015		Data		Multiple	
New Albany Net	New Albany	OH	MUNI	2010		Business Services, Data	Businesses only	WOW Business	
New Ashford Municipal Light Plant	New Ashford	MA	MUNI	2017		Data, Voice		Westfield G&E	
NextLight (Longmont Power and Communications)	Longmont	CO	MUNI	2012	GPON	Data, Video, Voice		Layer3 TV (video)	
Norwood Light Broadband	Norwood	MA	MUNI			Data, Voice	Businesses only		
NU Connect (Newport Utilities)	Newport	TN	MUNI	2017		Data, Video, Voice		Morristown Utility Services	
Ocala Utility Services	Ocala	FL	MUNI	1995	Active Ethernet	Business Services, Data			
Okanogan County Public Utility District	Okanogan County	WA	MUNI	2002	Active Ethernet			Multiple	
OMU Fibernet (Owensboro Municipal Utilities)	Owensboro	KY	MUNI	1998		Data, Voice			
ONE Burbank (Burbank Water and Power)	Burbank	CA	MUNI	2010	Active Ethernet, Carrier Ethernet	Business Services, Data	Businesses only		
OnLight Aurora	Aurora	IL	MUNI	2012	Carrier Ethernet	Business Services, Data	Businesses only		
OntarioNet	Ontario	CA	MUNI	2015		Data, Video, Voice		Inyo Networks	
Opelika Power Services	Opelika	AL	MUNI	2010	GPON	Data, Smart Grid, Video, Voice			

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
Optilink (Dalton Utilities)	Dalton	GA	MUNI	2003	GPON	Data, Video, Voice			
Orangeburg County Broadband	Orangeburg County (serves nine communities in the county)	SC	MUNI	2010	Active Ethernet	Data			
Osage Municipal Utilities	Osage	IA	MUNI	2016	GPON	Data, Video, Voice	Pilot projects		
Otis Municipal Light Plant	Otis	MA	MUNI	2017		Data, Voice		Westfield G&E	
OTO Fiber	Old Town, Orono	ME	MUNI			Data, Video, Voice			
Pacific County Public Utility District	Pacific County	WA	MUNI	2000		Data		Multiple	
Palm Coast FiberNET	Palm Coast	FL	MUNI	2009	Active Ethernet	Business Services, Data, Voice	Businesses only	Multiple	
Paragould Light, Water and Cable	Paragould	AR	MUNI	2017		Data, Video			
Parallax Systems (Richmond Power and Light)	Richmond	IN	MUNI	2000		Data	Businesses only		
PES Energize (Pulaski Electric System)	Pulaski (also serves Giles County)	TN	MUNI	2007	EPON	Data, Smart Grid, Video, Voice			
Philippi Communications System	Philippi	WV	MUNI	2005	BPON	Data, Video			

GLDS
GREAT LAKES DATA SYSTEMS

**CUSTOMER MANAGEMENT
BILLING & PROVISIONING**

“Our customers are very important to us... it was critical that we provide them with the level of service and support they deserve. We selected GLDS because their best-of-suite approach offered all of the functionality we needed to ensure end-to-end customer management, at a responsible, reasonable price. We haven't been disappointed.”

- David Auger, CEO at MI-Connection



WWW.GLDS.COM SALES@GLDS.COM 760.602.1900 800.882.7950

COMMUNITY BROADBAND

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
Piqua Fast Fiber Network (Piqua Municipal Power System)	Piqua	OH	MUNI	2013		Data	Businesses only	Independents Fiber Network	
Plainfield Broadband Municipal Light Plant	Plainfield	MA	MUNI	2017		Data, Voice		Westfield G&E	
Port of Lewiston	Lewiston and Nez Perce County	ID	MUNI	2016		Data	Businesses only	Multiple	
PowellLink	Powell	WY	MUNI	2007	GPON	Data, Security, Video, Voice		TCT, open to others	
PPS FiberNet (Paducah Power System)	Paducah, McCracken County	KY	MUNI	2004	Active Ethernet, BPON	Data, Security, Video, Voice	Businesses only	Multiple	
Princeton Electric Department	Princeton	IL	MUNI	2003		Data	Businesses only	IVNet	IVNet
Reedsburg Utility Commission	Reedsburg (also serves nearby rural communities)	WI	MUNI	2003	BPON, GPON	Data, Video, Voice			
Rio Blanco Broadband	Rio Blanco County	CO	MUNI	2015		Data, Voice		Multiple	Colorado Fiber Community
Roanoke Valley Broadband Authority	Botetourt and Roanoke Counties, Roanoke and Salem	VA	MUNI	2015		Data	Businesses and some MDUs	Multiple	
Rochelle Municipal Utilities	Rochelle	IL	MUNI		Active Ethernet	Business Services, Data, Voice	Mainly businesses		
Rock County Broadband Alliance (Alliance Communications/Rock County)	Rock County	MN	PUBLIC-PRIVATE	2015		Data, Video, Voice		Alliance Communications	Alliance Communications
Rock Falls FiberNet	Rock Falls	IL	MUNI	2007		Data		Essex Telecom (for business customers)	
Rockbridge Area Network Authority	Rockbridge County, cities of Lexington and Buena Vista	VA	MUNI	2013		Data, Voice		Multiple	
Russellville EPB Smartnet (Russellville Electric Plant Board)	Russellville	KY	MUNI	2010	Active Ethernet, GPON	Data, Smart Grid, Video, Voice			
Sandersville FiberLink	Sandersville (also serves nearby areas)	GA	MUNI			Data			
SandyNet Fiber	Sandy	OR	MUNI	2011		Data, Voice			
SanfordNet Fiber	Sanford	ME	MUNI	2016		Data	Businesses only	GWI, open to others	GWI
Santa Monica City Net	Santa Monica	CA	MUNI	2004	Active Ethernet	Data	Businesses, residential pilot project	Multiple	
Scottsboro Electric Power Board	Scottsboro	AL	MUNI		Active Ethernet	Data, Smart Grid	Businesses only		
Sebewaing Light and Water Department	Sebewaing	MI	MUNI	2013	GPON	Data, Voice			
Selco (Shrewsbury Electric and Cable Operations)	Shrewsbury	MA	MUNI	1999	Active Ethernet, GPON	Data	Businesses only		
Sherwood Broadband	Sherwood (also serves nearby areas)	OR	MUNI	2004		Data	Businesses only	Multiple	
Shutesbury Municipal Light Plant	Shutesbury	MA	MUNI	2017		Data, Voice		Westfield G&E	
Southwest Minnesota Broadband Services	Bingham Lake, Brewster, Heron Lake, Lakefield, Jackson, Okabena, Round Lake, Wilder	MN	MUNI	2010		Data, Video, Voice		Windom Telecommunications	Windom Telecommunications

NETWORK DEPLOYER	COMMUNITY(IES)	STATE(S)	MUNICIPAL OR PUBLIC-PRIVATE	DATE PROJECT STARTED	TECHNOLOGY	SERVICES	CUSTOMERS SERVED BY FIBER (all types unless otherwise noted)	SERVICE PROVIDER (if other than network owner)	OPERATOR (if other than network owner)
Spanish Fork Community Network	Spanish Fork	UT	MUNI	2015	Active Ethernet	Data, Video, Voice			
Spencer Municipal Utilities	Spencer	IA	MUNI	2007	GPON	Data, Smart Grid, Video, Voice			
SpringNet (City Utilities of Springfield)	Springfield	MO	MUNI	1997	Active Ethernet	Business Services, Data	Businesses only		
Swiftel Communications (Brookings Municipal Utilities)	Brookings	SD	MUNI	2006	GPON	Data, Video, Voice			
Sylacauga Utilities Board	Sylacauga	AL	MUNI	1997	Active Ethernet	Data			
Taunton Municipal Lighting Plant	Taunton	MA	MUNI	2003	EPON	Data			
Town of Mount Washington	Mount Washington	MA	MUNI	2016		Data, Video			
Town of Rockport/GWI	Rockport	ME	PUBLIC-PRIVATE	2014		Data, Voice		GWJ	GWJ
Township of Lyndon	Lyndon	MI	MUNI	2017		Data			
UC2B (Urbana-Champaign Big Broadband)	Urbana, Champaign	IL	PUBLIC-PRIVATE	2010	Active Ethernet	Data, Video, Voice		i3 Broadband	i3 Broadband
UTOPIA	Consortium of 16 cities	UT	MUNI	2004	Active Ethernet	Data, Video, Voice		Multiple	
Velocity Broadband	Hudson	OH	MUNI	2015		Data	Businesses only		
Wadsworth CityLink	Wadsworth	OH	MUNI		Carrier Ethernet	Data	Businesses only		
Washington Municipal Light Plant	Washington	MA	MUNI	2017		Data, Voice		Westfield G&E	
Waverly Utilities	Waverly	IA	MUNI	2016		Data, Voice, Video			
Whip City Fiber (Westfield Gas & Electric)	Westfield	MA	MUNI	2015		Data, Voice			
Williamstown Cable & Broadband	Williamstown (also serves Corinth and parts of Grant and Owen Counties)	KY	MUNI	2010		Data, Video	Communities outside Williamstown		
Windomnet (Windom Telecommunications)	Windom	MN	MUNI	2004	GPON	Data, Video, Voice			
Windsor Municipal Light Plant	Windsor	MA	MUNI	2017		Data, Voice		Westfield G&E	
Wired Road Authority	Carroll & Grayson counties, city of Galax	VA	MUNI	2009		Data		Multiple	WideOpen Networks
Zing (St. Joe Valley Metronet)	Mishawaka, South Bend, St. Joseph County	IN	PUBLIC-PRIVATE	2005		Many	Businesses, MDUs	Multiple	



REGISTRATION NOW OPEN

MAY 1 – 3, 2018

Renaissance Hotel
Austin, Texas