

# Independent Telcos Build Fiber to the Home

A sizable chunk of broadband stimulus funding is going to Tier 3 telcos for FTTH projects. Others are building fiber without outside help.

By Masha Zager ■ *Broadband Properties*

## ABOUT THE LIST

Since 2005, Broadband Properties has maintained a list of independent telephone companies deploying fiber to the premises. We've published the list at least twice each year, and the interactive database at [www.bbpmag.com/search.php](http://www.bbpmag.com/search.php) makes this information available for analysis and download at any time. The online list includes other types of deployers in addition to independent telcos.

Although we gather information from as many sources as we can, we know the list is not complete. To add to the list, fill in missing information or correct any errors, please contact [masha@broadbandproperties.com](mailto:masha@broadbandproperties.com).

**B**roadband Properties' list of independent telcos deploying or planning fiber to the premises has now grown to 518 – more than 10 times the size of the first list we compiled in 2005, and close to half the independent telcos in the United States.

The Rural Utilities Service, which recently completed awarding \$3.6 billion in broadband stimulus loans and grants, designated much of its funding for FTTH projects. Although not all the awards went to independent telcos, many of them did – in large part because these companies are traditional RUS borrowers and the agency gave preference to companies it had worked with successfully in the past.

Another reason the list continues to expand is that FTTH has become the default choice for telcos that are building new plant. Although few telcos have undertaken to replace their entire infrastructure with fiber, when they wire new subdivisions, replace deteriorated copper plant or overbuild into territories served by other providers, telcos tend to choose fiber to the home. "I never want to dig

up this town again," one general manager told us, explaining that the fiber he was putting in the ground was likely to outlast his career.

Drivers for FTTH investment by independent telcos include the following:

- Continued reductions in the cost of deploying fiber that make it comparable to, or less expensive than, deploying new copper plant
- Long-standing commitment to local economic development
- A desire to provide advanced services to residential customers.

Many, if not most, of the telcos on the list are in the midst of long-term fiber upgrades. After beginning with trial deployments, they commit to building out fiber wherever it makes economic sense, including in CLEC territories close to their established service areas.

Telcos that were early adopters of FTTH have also continued to upgrade their equipment. By deploying newer technologies, they demonstrate that they have achieved their original goals of future-proofing their networks: They can use the same fiber to offer more advanced services.

### WHY BUILD FIBER?

Independents have told us they are building fiber networks because

- Their old copper plant was failing and they didn't want to replace it with more copper that would soon be obsolete.
- In new housing developments, they found that FTTH was comparable to copper in terms of capital cost but would be less costly to maintain and have a longer useful life.
- They wanted to offer video and

### About the Author

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## Industry Perspectives: Independent Telcos Q&A With Jaxon Lang, ADC

- Q.** In the broadband stimulus program, Tier 2 telcos, such as TDS Telecom and Windstream, were funded for DSL projects, while smaller telcos were awarded funding primarily for FTTH projects. What accounted for these two divergent approaches?
- A.** The scoring system had a lot of different parameters. Two competing parameters were the number of new subscribers that could receive broadband and the method for delivering the broadband. Smaller telcos that didn't have copper plant suitable for delivering the triple play were better off using fiber to provide broadband and scoring highly on method. Telcos that had enough suitable copper plant could use it to deliver broadband to more subscribers, so maximization of their existing plant became the driver for them.
- Q.** Many of the big FTTH deployment challenges were solved in the last few years. What's still outstanding?
- A.** As smaller, more remote deployments are considered, there's room for improvement in the size of equipment to make it more appropriate for the application. Smaller cabinets sized for rural deployments allow for more cost deferment. New technology such as DLX fiber optic connectors [which ADC began deploying this summer] are OSP-hardened and designed to work in smaller spaces – and that drives down the cost of conduit. These size-appropriate solutions drive down the overall costs of deployment and the speed of turn-up, help with cost deferment and maximize the benefits of connectorized applications.
- Q.** In your work with smaller telcos, do you still find misconceptions about FTTH?
- A.** The overall community of prospective FTTH deployers is certainly well-read by now – they spend a fair amount of time at seminars and trade shows, and a lot has been written about “do’s and don’ts.” The biggest misconception remaining – and the biggest danger – is the idea that there’s a one-size-fits-all or cookie-cutter solution. Every provider has something unique about it, and discussing unique attributes allows us to come to the best decisions about deployment methods.

For example, our opinion is that, in most cases, a connectorized approach, as opposed to a pure splicing approach, is the right answer – we’ve seen it play out with more than 400 customers. But that doesn’t mean exactly the same architecture should be used for each one. You have to sit down and have a discussion about needs, application plans and turn-up plans for the customer to see there are opportunities to solve the problem in many different ways, using different approaches and technologies.

- Q.** Are there any success stories you can tell us?
- A.** Overall, the success story is that more of our customers are trying to be as future-proof as they can. More and more frequently, we’re finding our customers choosing fiber as the architecture of choice to provide the triple play today and meet the bandwidth needs of tomorrow. We’re having fun partnering with them to solve problems – providing new innovations and technology, and helping anticipate problems that the customer may not see.

*Jaxon Lang is vice president for global connectivity solutions of ADC, a company whose network equipment, software solutions and integration services support service providers’ migration to next-generation networks. Outside-plant equipment from ADC is widely used in the independent telco market.*

other advanced services and decided that DSL had too many limitations. Many rural telcos already owned cable TV plant (they are exempted from cable-telephone cross-ownership restrictions) and wanted to upgrade their video services without pouring money into obsolete cable networks.

- Their service areas were losing jobs and population, and they believed fiber would bring more economic opportunities.
- Their service areas were growing rapidly, and new residents moving in from metropolitan areas were attracted to fiber as an amenity.
- They saw opportunities to compete outside their traditional service areas in underserved areas where residents were unhappy with the available choices for video and/or Internet service.

Because independent telcos rarely compete with one another, they tend to regard one another as colleagues. They share experiences and pool information. As information spreads, one success gives rise to another. Over the last several years, with fiber deployment costs falling and the cost of copper rising, more and more independents have been encouraged to try out this technology.

### WHAT THE NUMBERS SHOW

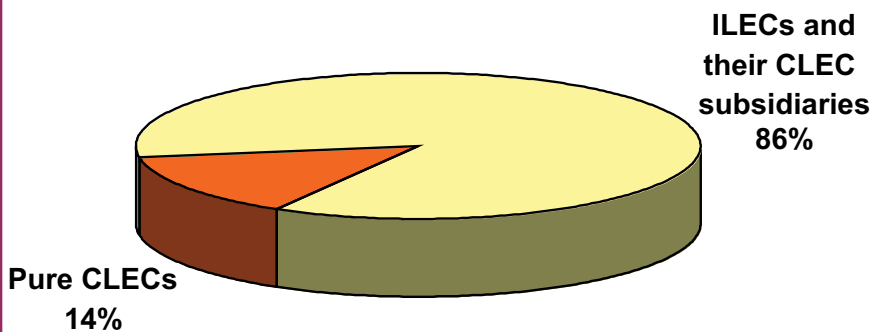
1. Larger telcos are more likely to deploy FTTH in new builds only; smaller telcos are more likely to replace their aging copper plant with fiber or to overbuild nearby areas.

Most of the Tier 2 telcos on our list, including CenturyLink, Fairpoint, Frontier, TDS Telecom and Windstream, deploy FTTH almost exclusively in greenfield developments. (Frontier also inherited a large FTTH network with its purchase of Verizon assets.) Large telcos with significant fiber overbuild programs, such as SureWest and Cincinnati Bell, tend to operate in metropolitan areas.

This means that almost all the fiber-to-the-home upgrades outside metropolitan areas are made by smaller, or Tier 3, telcos or by cable companies’ CLEC subsidiaries. Many of these companies are cooperatives and small, family-owned

# INDEPENDENT TELCOS

## FTTH Network Builders by Type



Five out of six independent telcos deploying FTTH are incumbents – though many are overbuilding nearby towns with fiber.

businesses that never marketed their services proactively, let alone competed with other providers. When we speak with these companies, they consistently express surprise at the failure of their larger competitors to compete – and at how easy it is to cherry-pick profitable customers that larger companies have overlooked.

2. The great majority of independent telcos building fiber networks are incumbent providers or subsidiaries of incumbents.

Five out of six companies on our list are ILECs (incumbent carriers dating from before 1996) that are replacing old copper plant with fiber, building fiber to new developments in their service areas, or overbuilding nearby towns where they have name recognition – or some combination of the three. In most states, they must form CLEC subsidiaries to move beyond their traditional service areas, but we still list them as ILECs even if their fiber-to-the-home networks are only in their CLEC areas.

The remaining companies are pure CLECs, or competitive carriers, many of which have no traditional geographic base. These companies seek out promising territories in which to deploy fiber. A few of them build hybrid fiber-coax networks in some areas and FTTH networks in others.

The proportion of ILECs to CLECs has remained surprisingly constant over the five years we have tracked telco fiber

builds, even as the number of companies on the list has increased tenfold.

Many of the pure CLECs originally collaborated with housing developers to build networks in greenfield developments and master-planned communities, but after the housing market peaked, some turned to overbuilding. A few, such as ComSpan USA and Hiawatha Broadband, adopted an overbuilding model from the start. Others focus on serving business customers.

Although the typical independent telco serves a few thousand customers in one or two rural counties, the companies on this list range from corporate giants to tiny cooperatives. Likewise, their fiber deployments range from more than 150,000 homes passed to pilot projects with fewer than a hundred homes passed.

## WHAT IS AN INDEPENDENT TELCO?

The companies that appear on this list are licensed providers of wireline voice services other than Verizon, AT&T and Qwest. They are regulated in the United States as ILECs (incumbent providers), CLECs (competitive providers) or both. The majority are rural providers, many of them cooperatives or small family-owned businesses, set up 50 or more years ago to offer telephone service in regions not served by the Bell system. A smaller number came into existence after the Telecommunications Act of 1996, some specifically to build fiber-to-the-home networks in new housing developments, others to serve businesses or offer alternatives in underserved areas. A few cable operators also have CLEC certificates and are included on the list.

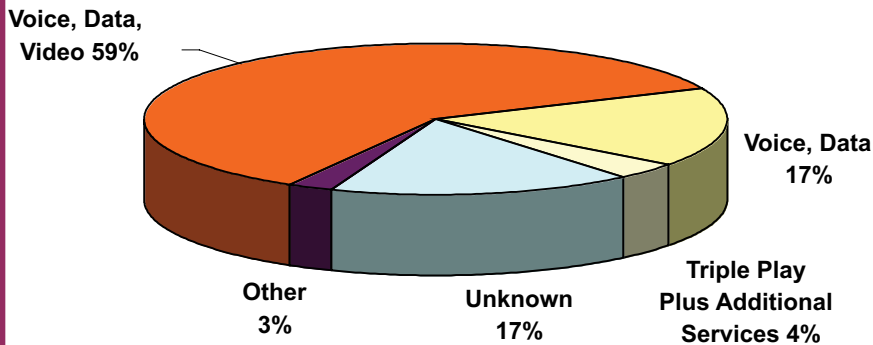
With each passing year, the telco category becomes more difficult to define. Many unregulated companies now deliver voice service using wireless or wireline networks. Excluding these companies is somewhat arbitrary, especially because many telephone companies also offer wireless service and wireline VoIP. Some nontraditional telephony providers are functionally no different from CLECs. However, telcos still exist as a historical and legal category, and our definition is consistent with industry usage.

The independent category has now also become difficult to define. In April, Tier 2 provider CenturyLink (the result of CenturyTel's acquisition of EMBARQ) announced plans to acquire Qwest, the smallest and financially weakest of the Regional Bell Operating Companies (RBOCs). If the acquisition is finalized, will the resulting company be an RBOC or an independent? In addition, Verizon recently divested its assets in 14 states – including 110,000 FiOS customers – to Frontier Communications, a Tier 2 rural provider. Frontier now owns an impressive FTTH network, but most of it was built by an RBOC.

To the extent possible, we have excluded from the list telcos whose only involvement with FTTH is to deliver services over fiber access networks that they do not own and did not build – for example, networks owned by municipalities or housing developers.

# INDEPENDENT TELCOS

## Services Planned or Delivered



Video is usually necessary to recoup the cost of an FTTH network, at least in residential areas. The triple play of voice, video and data continues to be the standard service offering.

- Most providers plan to deliver the triple play of voice, data and video services.

Delivering advanced video services is often a motivating factor for a fiber buildout. Many independent telcos manage cable TV networks alongside their telephone networks. Deploying fiber to the home allows them to merge the two, reducing network operating costs while adding high-definition TV, DVR, video on demand and a wider selection of channels.

Beyond the triple play, the most common additional service is security monitoring. Gaming, business applications and meter reading are also offered by some telcos.

Announcements of FTTH deployments often mention the goal of moving to all-IP networks. VoIP is now often used in place of traditional switched telephony, just as IPTV is displacing RF video.

- Companies are choosing more advanced FTTP technology.

Our first published list included mainly BPON, with a few EPON and one active Ethernet system. Today's new passive optical networks are now all at the gigabit standard (with GPON outnumbering GEAPON by about 10 to 1), and most older pre-gigabit networks have been upgraded. The migration to GPON was speeded by the availability of Calix's auto-sensing optical network

telcos have made a companywide commitment to active Ethernet – in at least one case (Paxio) to support an open-access model, in other cases because they believe active Ethernet has more bandwidth headroom. However, many telcos use active Ethernet for business services or niche applications and GPON for residential services.

The number of telcos using multiple FTTH technologies continues to grow. BBP's list now shows 23 percent with multiple technologies, almost certainly an undercount. Using multiple technologies has become more practical now that more electronics vendors support

*Many independent telcos build out fiber to the home so they can provide high-definition television, DVR, video on demand and other advanced video services.*

terminal, which allows telcos to upgrade central-office equipment without having to change out the customer-premises equipment.

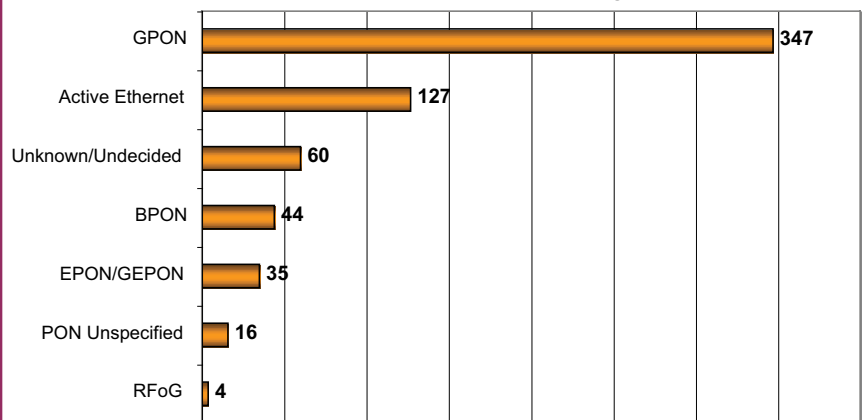
Although passive optical networking remains the most popular choice, at least 127 independent telcos now use active, or point-to-point, Ethernet. Some

multiple technologies, often from the same chassis.

Even though many companies prefer to stay with the technology they have already used successfully, others find that their needs change over time, that newer technologies allow them to upgrade their services or that their requirements

## Technology Used

Note: Some telcos use multiple technologies



Independent telcos overwhelmingly favor GPON technology, but active Ethernet technology continues to gain in popularity. In the last year or two, many telcos have deployed GPON to residential customers and active Ethernet to business customers.



# INDEPENDENT TELCOS

*Independent telcos can select fiber-to-the-home equipment from a large number of competing vendors, many of which specialize in serving operators in rural markets.*

vary from one part of their service area to another.

5. Many FTTH electronics vendors compete successfully in the independent telco market.

Independent telcos differ substantially from RBOCs in their dealings with vendors. RBOCs typically deal

with large, global equipment vendors that design and manufacture equipment to their specifications. The resulting equipment is not always well suited to smaller, more rural markets. The three FTTH electronics vendors from which Verizon purchased most of its equipment – Alcatel-Lucent, Motorola and Tellabs – are relatively minor players

in the Tier 2-Tier 3 telco market, even though all three have had significant customer wins (notably Cincinnati Bell and Optimum Lightpath, which serve metropolitan markets).

The great majority of the companies on the independent telco list purchase their FTTH electronics, and often their fiber management equipment, from vendors that specialize in serving Tier 2 and Tier 3 telcos. These vendors are less likely

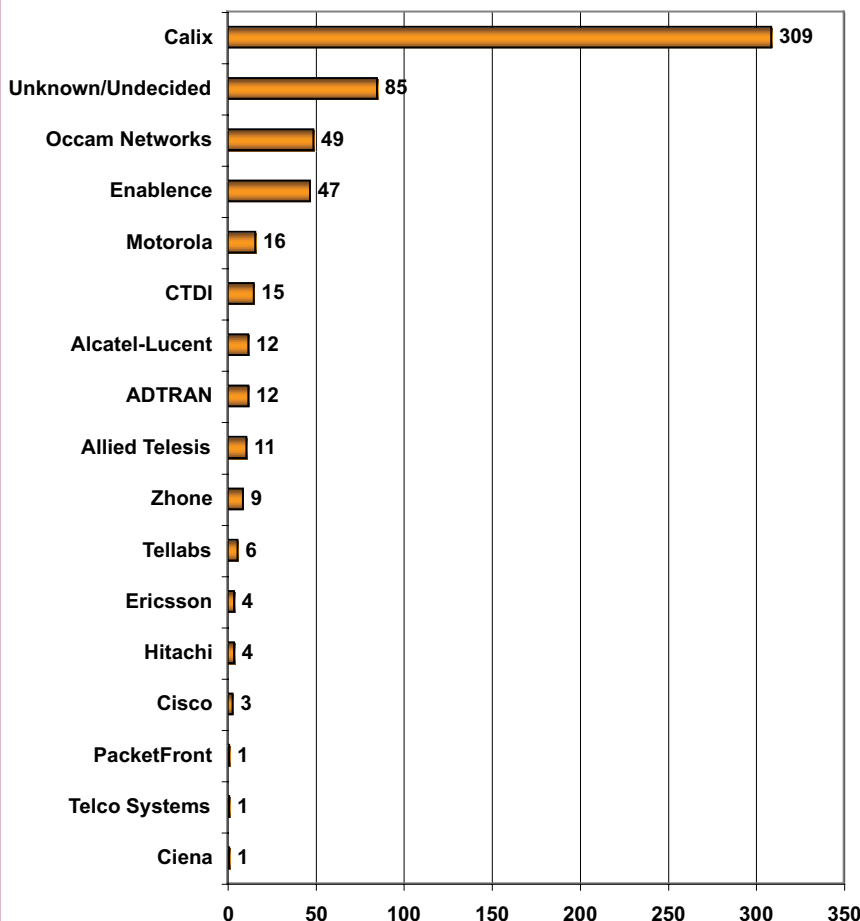
## TELCOs BUILDING FTTP NETWORKS, BY STATE

Our count of independent telco FTTP networks by state still shows Iowa in the lead -- not surprising, as Iowa has close to 250 rural telcos, far more than any other state. But Minnesota and Texas are close behind, and we've documented current or pending builds by independent telcos in 47 states, the District of Columbia and Puerto Rico. Only Massachusetts, Delaware and Rhode Island are missing from the list – and they are at the epicenter of Verizon's FiOS build.

STATE	TELCOs	STATE	TELCOs
IA	50	SD	11
MN	39	TN	10
TX	32	UT	10
KS	30	FL	9
WI	23	VA	9
GA	19	WA	9
NY	19	MS	8
OR	19	NM	8
OH	18	PA	8
ND	16	AR	7
NE	16	LA	6
ID	15	NV	4
NC	15	VT	4
SC	15	WV	4
IN	14	WY	4
CA	13	AK	3
CO	13	ME	3
IL	13	NH	3
MO	13	HI	2
MT	13	MD	2
AZ	12	CT	1
MI	12	DC	1
AL	11	NJ	1
KY	11	PR	1
OK	11		

## FTTH Electronics Vendors Used

Note: Some telcos purchase equipment from multiple vendors



Calix remains the leading electronics vendor in this market, and its planned acquisition of Occam Networks will give it even greater dominance.

# INDEPENDENT TELCOS

to design equipment for particular customers; rather, they supply equipment for a variety of use cases and help customers configure it to meet specific needs.

When independent telcos first began deploying fiber in 2001, nearly all of them used FTTH electronics from Optical Solutions Inc. (OSI). Since Calix acquired OSI in 2005, it has continued to maintain OSI's lead in this market. About three-fifths of the telcos on our list have purchased Calix equipment – a proportion that has remained stable over the last few years.

In September, Calix announced its intention to acquire Occam Networks, currently its strongest rival in the Tier 3 market, which would increase its domi-

*With the broadband stimulus program filling the breach left by the loss of private funding, the proportion of independent telcos receiving RUS loans or grants for FTTH doubled.*

nance of this market. If the deal is finalized, Calix will gain access to Occam's expertise in a strategically important area: Ethernet fiber-to-the-home technology. Occam focused on active Ethernet for most of the last decade and added PON technology later, while Calix took the opposite tack.

Still, about 10 other vendors are now actively competing in this space, and close to half the telcos on the list have bought FTTH electronics from vendors other than Calix. At least 12 percent have bought FTTH electronics from multiple vendors.

Although press coverage (for example, about the broadband stimulus program) tends to refer to independent telcos almost as if they were captive customers of their equipment vendors, this is far from being true. As the market has become more competitive – and, presumably, as more telcos have developed in-house expertise – an increasing number of telcos have been willing to mix FTTH equipment from different vendors.

*Many rural telcos view deployment of fiber to the home as part of a long-standing commitment to the economic vitality of the communities they serve.*

6. The Rural Utilities Service is playing an increasingly important role in funding FTTH builds by independent telcos.

The RUS Broadband Loan program has been an important source of funding for fiber to the home since its inception in 2004. However, many telcos have told us they considered RUS as a last resort and preferred to use internal funds or deal with local lenders if at all possible. In earlier iterations of this list, no more than 15 percent of telcos building fiber to the home used RUS loan funding.

In the last two years, however, other funding sources dried up; at the same time, RUS was given \$3.6 billion in broadband stimulus loans and grants to disburse in addition to its original loan programs.

Even though many of the companies awarded stimulus funding were telcos that had borrowed from RUS for earlier FTTH projects, the total number of telcos with RUS fiber funding doubled over the last two years to 29 percent. **BBP**

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# INDEPENDENT TELCOS

The following table shows independent telcos that have constructed FTTH networks or are actively planning them. A few companies identified as CLECs are non-telco amenity providers in some of the states where they operate. Many of the companies identified as ILECs are installing FTTH through their CLEC subsidiaries. We've made every effort to update the names of vendors and deployers to reflect mergers and rebrandings. If your company is missing, or if the information is incomplete, send corrections to [masha@broadbandproperties.com](mailto:masha@broadbandproperties.com). We update this list daily on [www.broadbandproperties.com/search.php](http://www.broadbandproperties.com/search.php)

Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
3 Rivers Communications	MT	Calix, Enablence, Occam Networks	2006	R	GPON, Active Ethernet	Triple play		ILEC
702 Communications	ND, MN			O	Active Ethernet	Business services, Voice, Data		CLEC
Adak Telephone	AK	Calix	2006	R	GPON	Triple play		ILEC
Adams Telephone Cooperative	IL	Calix	2006	R	GPON	Triple play		ILEC
Albany Mutual Telephone Association	MN	Enablence	2006	R	Active Ethernet	Triple play		ILEC
Alenco Communications (Pathway Com-Tel)	TX	Calix	2002	O, G	PON	Triple play		ILEC
All West Communications	UT	Calix	2004	O	GPON	Triple play		ILEC
Allband Communications Cooperative	MI	Calix	2005	G	GPON	Triple play, Security	✓	ILEC
Allendale Communications	MI	Enablence	2005	G	Active Ethernet	Triple play		ILEC
Alliance Communications	SD	Calix	2006	R	GPON	Voice, Data		ILEC
Allo Communications	NE	Calix	2005	O	GPON, Active Ethernet	Triple play, Business services	✓	CLEC
Alma Communications	MO	Enablence, Calix	2006	R	GPON	Triple play		ILEC
Alpine Communications	IA	Occam Networks	2007	R	Active Ethernet	Voice, Data		ILEC
Amherst Telephone Company	WI		2009	R	Active Ethernet	Triple play		ILEC
Arcadia Telephone Cooperative	IA	Calix	2010		GPON, Active Ethernet			ILEC
Armstrong Telephone	PA				GPON, Active Ethernet	Voice, Data		ILEC
Arvig Communications (East Otter Tail)	MN	Calix	1995	R, G	GPON	Triple play		ILEC
Astound Broadband	CA	CTDI	2004	R	EPON	Voice, Data		CLEC
ATC Communications	ID	Calix	2008		GPON	Triple play		ILEC
ATMC	NC	Motorola	2005	G	BPON, GPON	Triple play	✓	ILEC
Aztech Cable	AZ	Calix		O	GPON	Triple play		CLEC
Baldwin Telecom	WI	Calix	2002	G	GPON	Triple play	✓	ILEC
Ballard Telephone	KY	Occam Networks	2008	R	GPON	Triple play		ILEC
Baraga Telephone	MI	Calix			GPON	Triple play		ILEC
Barry County Telephone	MI	Calix			GPON			ILEC
Bascom Mutual Telephone Company	OH	Calix	2003	O	BPON	Triple play		ILEC
Bay Springs Telephone Company	MS			R		Voice, Data	✓	ILEC
Beehive Telephone	UT			R				ILEC
BEK Communications	ND	Calix, Cisco	2004	R	GPON, Active Ethernet	Triple play	✓	ILEC
Ben Lomand Telephone Co-op	TN	Occam Networks	2006	R	Active Ethernet	Triple play		ILEC
Benkelman Telephone Company (Wauneta Telephone, BW Telcom)	NE	Calix	2009		GPON			ILEC
Benton Cooperative Telephone Company (Milaca Local Link)	MN	Calix, CTDI	2005	G	GPON, EPON	Triple play		ILEC
Benton Ridge Telephone Company	OH		2010	R	Active Ethernet	Triple play	✓	ILEC
Bernard Telephone Company	IA		2010	R		Voice, Data	✓	ILEC

# INDEPENDENT TELCOS

Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
BEVCOMM (Eckles Telephone Company)	MN		2007	G	Active Ethernet	Triple play		ILEC
Big Bend Telephone	TX	Calix, Enablence, Occam Networks	2005	R	GPON, Active Ethernet	Voice, Data		ILEC
Blair Telephone (HunTel)	NE	Calix			GPON			ILEC
Bloomer Telephone	WI	Calix	2007	R	GPON, Active Ethernet	Triple play	✓	ILEC
Blossom Telephone Company	TX		2010	R			✓	ILEC
Blue Valley Tele-Communications	KS	Tellabs	2006	R	GPON	Triple play		ILEC
Border to Border Communications	TX	Calix, CTDI	2004	R	BPON, EPON	Triple play	✓	ILEC
Brantley Telephone	GA	Calix	2007	R	GPON	Triple play		ILEC
Brazoria Telephone Company	TX	Alcatel-Lucent	2008	G	GPON	Triple play		ILEC
Bretton Woods Telephone Company	NH		2009	R		Data		ILEC
Broadband Associates	CA			O				CLEC
BroadStar	NC		2005	G		Triple play, Security		CLEC
Bruce Telephone Company	MS		2009	R			✓	ILEC
BTC (Breda Telephone Corp., Western Iowa Networks)	IA		2008	O		Triple play	✓	ILEC
BTC Broadband (Bixby Telephone Company)	OK	Calix	2005	G, R	GPON	Triple play		ILEC
Buckeye Telesystem	OH	Calix, CTDI	2006	O, R, G	GPON, RFoG	Voice, Data		CLEC
Buckland Telephone Company	OH	Calix	2005	R	GPON	Triple play		ILEC
Buggs Island Telephone Cooperative	VA	Calix	2009		GPON			ILEC
Bulloch Telephone Cooperative	GA	Motorola	2005	R	PON	Triple play		ILEC
Butler-Bremer Communications	IA		2008	R	Active Ethernet	Triple play		ILEC
Calaveras Telephone	CA	Calix	2006	G	GPON	Triple play	✓	ILEC
Cal-Ore Communications	OR	Calix	2005	G	GPON	Triple play		ILEC
Cambridge Telephone	ID	Calix	2005	R	GPON	Triple play		ILEC
Cambridge Telephone Company	NE	Enablence	2009	R	Active Ethernet	Triple play	✓	ILEC
Cameron Communications (LBH LLC)	LA	Calix	2004	R, O	GPON	Triple play	✓	ILEC
Canby Telcom	OR	Calix	2006	G, R	GPON	Triple play		ILEC
Cap Rock Telephone Cooperative	TX	Calix	2005	G	GPON	Triple play		ILEC
Cascade Telephone	IA	Calix			GPON			ILEC
Centennial de Puerto Rico	PR	Occam Networks	2007	R	Active Ethernet	Voice, Data		CLEC
Central Scott Telephone	IA	Occam Networks	2007	O	GPON, Active Ethernet			ILEC
Central Texas Technologies	TX	CTDI	2002	G	EPON	Triple play		CLEC
CenturyLink	AL, CO, MI, MO, WI, Others	Calix		G	GPON	Triple play		ILEC
Champaign Telephone (CT Communications)	OH	Calix, Allied Telesis		R	GPON, Active Ethernet	Triple play		ILEC
Chariton Valley Telecom Corporation	MO	Enablence, Calix	2003	R, O	GPON, Active Ethernet	Triple play		ILEC
Chazy Westport Communications (Westelcom)	NY	Occam Networks	2009	R, O	Active Ethernet	Triple play		ILEC
Chequamegon Communications Cooperative	WI		2010			Triple play	✓	ILEC
Chesnee Telephone	SC	Calix		G	GPON	Triple play		ILEC
Cheyenne River Sioux Tribe Telephone	SD	Calix			GPON			ILEC
Chickamauga Telephone	GA	Calix	2008		GPON			ILEC
ChoiceTEL Communications	WI		2008	O		Triple play		CLEC
Christensen Communications	MN	Calix	2008	R	BPON, GPON	Triple play		ILEC



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Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
Cimarron Telephone	OK	Calix	2008		GPON		✓	ILEC
Cincinnati Bell	OH, KY	Alcatel-Lucent, Motorola	2009	R	GPON	Triple play		ILEC
Cinergy MetroNet	IN	Alcatel-Lucent	2005	O	BPON	Triple play	✓	CLEC
Citizens Mutual	IA	Calix	2006	R	GPON	Triple play		ILEC
Citizens Telephone Company	GA	CTDI, Cisco	2008	R	EPON, GPON	Triple play		ILEC
Citizens Telephone Company of Kecksburg	PA	Calix	2005	R	PON	Triple play		ILEC
Citizens Telephone Coop	WI	Calix			GPON			ILEC
Citizens Telephone Cooperative	VA	Calix	2004	R	GPON	Triple play		ILEC
Clarence Telephone	IA	Calix			BPON, GPON			ILEC
Clarks Telecommunications (Northeast Nebraska Telephone Company)	NE	Occam Networks	2009	R	Active Ethernet	Triple play		ILEC
Clear Creek Telephone & TeleVision	OR	Calix	2009		GPON	Triple play		ILEC
Clear Lake Telephone	IA	Calix	2008	R	GPON	Triple play	✓	ILEC
Clearwave Communications	IL	Calix			GPON			CLEC
C-M-L Telephone Cooperative Association	IA			R		Triple play	✓	ILEC
Cochrane Cooperative Telephone Company	WI	Calix	2010	R	GPON	Triple play		ILEC
Colo Telephone Company	IA	Calix	2005	R	GPON	Triple play	✓	ILEC
Columbus Telephone Company	KS	Enablence	2004	R	EPON	Triple play		ILEC
Communications 1 Network	IA	Calix	2008	R	GPON	Triple play		ILEC
Comporium Communications (Lancaster Telephone)	SC	Enablence	2004	G	EPON, GPON	Triple play		ILEC
ComSouth Telecommunications	GA	Calix, Motorola	2005	R, G	GPON	Triple play		ILEC
ComSpan USA	OR	Hitachi	2005	O	GPON	Triple play		CLEC
Connections Etc. (Sherburne County Rural Telephone Co./Iowa Telecom)	MN	Calix	2008		GPON			ILEC
Consolidated Communications Inc.	IL, TX	Zhone Technologies	2007		GPON	Triple play		ILEC
Consolidated Telcom (Consolidated Enterprises)	ND	Calix	2006	R	GPON	Triple play	✓	ILEC
Consolidated Telecommunications Company	MN	Calix	2005	O	GPON, Active Ethernet	Triple play	✓	ILEC
Conxxus (Illicom Telecommunications)	IL	Enablence	2001	O	EPON	Triple play		CLEC
Cooperative Telephone Exchange	IA	Occam Networks	2006	R	Active Ethernet	Triple play	✓	ILEC
Corn Belt Telephone	IA		2008	R		Triple play		ILEC
CP-Tel	LA	Calix	2004	G	BPON, GPON	Triple play		ILEC
Craigville Telephone Company	IN	Calix	2006	O	GPON	Triple play		ILEC
Craw-Kan Telephone Cooperative	KS							ILEC
Cross Communications	OK	Calix			GPON	Triple play	✓	ILEC
CSS Communications	WA	CTDI	2003	R	EPON	Triple play		CLEC
CT Communications	NC	Enablence	2005	G	EPON	Voice, Data		ILEC
CTS Telecom (Climax Telephone Company)	MI				Active Ethernet	Data	✓	ILEC
Cunningham Telephone and Cable	KS		2009	R		Voice, Data	✓	ILEC
Custer Telephone Cooperative	ID	Calix	2006	R	GPON, Active Ethernet	Triple play	✓	ILEC
D&E Communications	PA	Calix	2008		GPON			ILEC
D&P Communications	MI	Motorola	2008		GPON	Triple play		ILEC
Dakota Central Telecom	ND	Calix	2002	R, O	GPON	Triple play	✓	ILEC
Darien Telephone	GA	Calix			GPON	Voice, Data	✓	ILEC

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Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
Daystarr Communications	MI	Calix	2008	O	GPON			CLEC
Delhi Communications	NY	Enablence	2009	R	Active Ethernet	Triple play		ILEC
DFT Communications	NY	Calix			GPON			ILEC
Dickey Rural Networks	ND	Calix	2004	R	GPON	Triple play		ILEC
Diller Telephone Company	NE	ADTRAN	20209	R	GPON	Voice, Data		ILEC
Direct Communications	OR, WA, ID, UT	Calix		G	BPON, GPON	Voice, Data		ILEC
Dobson Telephone	OK	Calix			GPON			ILEC
DTC Communications (DeKalb Telephone Cooperative)	TN		2008		Active Ethernet	Data		ILEC
Dumont Telephone Company	IA	Hitachi	2006	R	GPON	Triple play		ILEC
Duo County Telephone Cooperative	KY		2010	R		Triple play		ILEC
EasyTel Communications	OK	Calix	2005	O	PON	Triple play		CLEC
EATEL	LA	Alcatel-Lucent, Calix	2004	R, G	BPON, GPON	Triple play		ILEC
Ellsworth Cooperative Telephone Association	IA		2010	R		Voice, Data	✓	ILEC
Emily Cooperative Telephone Company	MN		2007			Triple play		ILEC
Endeavor Communications	IN	Calix	2006	R	GPON	Triple play		ILEC
Enhanced Telecommunications Corporation	IN	Calix	2004	R	GPON	Triple play		ILEC
ENMR-Plateau Telecommunications	NM	Calix, Occam Networks	2003	R	GPON	Voice, Data		ILEC
En-Touch Systems	TX	Enablence	2006	G	EPON	Triple play, Security, Home automation		CLEC
Epic Touch (Elkhart Telephone Company)	KS	Enablence, Calix	2005	R	EPON, GPON	Triple play		ILEC
Etex Telephone Cooperative	TX	Calix, Enablence	2002	O	GPON, Active Ethernet	Triple play		ILEC
Evertex (FiberComm)	IA				GPON, Active Ethernet	Voice, Data		ILEC
F&B Communications	IA	Calix		O	BPON, GPON	Triple play	✓	ILEC
FairPoint Communications	WA	Occam Networks, Calix		G	GPON			ILEC
Falcon Broadband	CO	Hitachi	2005	G, O	GPON	Triple play		CLEC
Farber Telephone Company	MO		2008	R		Voice, Data	✓	ILEC
Farmers and Merchants Mutual Telephone Company	IA	Calix	2007		BPON, GPON	Triple play		ILEC
Farmers Mutual	ID	Calix		R	BPON, GPON	Triple play		ILEC
Farmers Mutual	MN	Calix		R	GPON	Triple play		ILEC
Farmers Mutual Telephone Company	IA		2010			Triple play	✓	ILEC
Farmers Telecommunications Cooperative	AL	Occam Networks	2007	R, G	Active Ethernet	Voice, Data		ILEC
Farmers Telephone Cooperative	SC	Occam Networks	2006	G, R	GPON, Active Ethernet	Triple play		ILEC
FEC Communications (Connexions Telecom)	TX	Calix	2006	G	GPON, Active Ethernet	Triple play		CLEC
Federated Telephone	MN	Calix	1996	O, R	GPON	Triple play	✓	ILEC
Fenton Cooperative Telephone Company	IA	Calix	2009		GPON	Voice, Data		ILEC
FiberNet	WV, OH	Calix	2007	O	BPON, GPON	Voice, Data, Videoconferencing		CLEC
Fibertech Networks	NY	Calix, Ericsson	2006		BPON, GPON	Data, Business services		CLEC

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Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
Fidelity Telephone	MO	Calix			BPON, GPON, Active Ethernet			ILEC
Filer Mutual	ID	Calix			GPON			ILEC
Foothills Rural Telephone Coop	KY	Alcatel-Lucent	2004	R, G	BPON, Active Ethernet	Triple play	✓	ILEC
Fort Jennings Telephone Company	OH	Calix	2004	O, R	GPON	Triple play		ILEC
Fort Mojave Telecommunications	AZ	Calix	2008	R, G	GPON	Voice, Data	✓	ILEC
Frontier Communications	MANY	Calix		G	BPON, GPON	Voice, Data		ILEC
FTTH Communications	MN	Calix	2002	G	GPON	Triple play		CLEC
Ganado Telephone	TX	Occam Networks	2008	R	Active Ethernet	Voice, Data		ILEC
Garden Valley Telephone	MN	Calix	2005		BPON, GPON	Triple play		ILEC
Gardonville Cooperative Telephone Association	MN		2006	R				ILEC
General Communications	AK	Calix		R	GPON	Voice, Data		CLEC
Geneva Broadband	NE	Calix	2009	O	GPON	Data		CLEC
Gervais Telephone	OR	Calix	2001	O, R	GPON	Triple play	✓	ILEC
Gila River Telecommunications	AZ	Calix			BPON, GPON			ILEC
Glenwood Telephone	NE	Calix	2007	R	BPON, GPON	Triple play		ILEC
Global Valley Networks	CA		2005	G	PON	Voice, Data		ILEC
Golden Belt Telephone Association	KS	Occam Networks	2008	R	Active Ethernet	Triple play		ILEC
Golden West Telephone Company	SD	Calix	2004	R	GPON	Voice, Data		ILEC
Goldfield Telephone Company	IA		2007	O, R		Triple play	✓	ILEC
Gorham Telephone	KS	Calix	2007	R	GPON	Triple play		ILEC
Granby Telephone Company (GTC Broadband)	MO	Occam Networks	2009	R	Active Ethernet	Triple play		ILEC
Grand Mound Cooperative Telephone Association	IA	Calix	2005	O, R	PON	Triple play	✓	ILEC
Grand River Mutual Telephone Corp.	MO, IA		2009	R			✓	ILEC
Grande Communications	TX	Ericsson, Calix	2005	O	PON, GPON	Triple play		CLEC
Granite State Telephone (GSInet)	NH		2007	G, R		Voice, Data		ILEC
Great Plains Communications	NE	Enablence	2007	G, R	GPON	Voice, Data		ILEC
Greenfield Communications	AZ, CA	Calix, CTDI	2005	G	GPON, EPON	Triple play		CLEC
Gridley Telephone	IL	Calix	2006		BPON, GPON	Triple play		ILEC
Griggs County Telephone Company	ND		2010			Triple play	✓	ILEC
GTel Teleconnections (Germantown Telephone)	NY	Calix	2008	R	GPON	Triple play, Videoconferencing		ILEC
Gulfpines Communications	MS	Calix			GPON			ILEC
GVTC Communications	TX	Calix	2004	G, R, O	GPON	Triple play, Security		ILEC
H&B Communications	KS	Calix			GPON		✓	ILEC
Halstad Telephone Company	ND, MN	Calix	2010	R	GPON,	Triple play Active Ethernet	✓	ILEC
Hamilton County Communications	IL		2010	R		Triple play		ILEC
Hancock Telecom	IN	Enablence, Occam Networks, Calix	2002	G	EPON, GPON	Triple play		ILEC
Hargray Communications	SC	CTDI	2004	G	EPON	Triple play		ILEC
Harrisonville Telephone	IL	Calix	2007	G	BPON, GPON	Triple play		ILEC
Hartelco	NE		2009	R	GPON, Active Ethernet	Voice, Data		ILEC
Hawaiian Telecom	HI	Alcatel-Lucent	2006	G, R	GPON	Triple play		ILEC
Hayneville Telephone	AL	Enablence	2008	O	GPON	Triple play	✓	ILEC

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Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
Heart of Iowa Communications Cooperative	IA	Calix	2005	R	BPON, GPON	Triple play		ILEC
Hiawatha Broadband	MN	Calix	2005	O	GPON	Triple play		CLEC
Hickory Tech (Enventis)	MN, WI	Calix, Motorola	2002		BPON, GPON, Active Ethernet	Triple play		ILEC
Hickory Telephone	PA	Zhone Technologies	2009	R	GPON	Triple play		ILEC
Highland Telephone Cooperative	TN, KY	Calix	2008		GPON	Triple play	✓	ILEC
Highland Telephone Cooperative	VA	Enablence	2007		GPON	Triple play		ILEC
Hill Country Telephone Cooperative	TX	Occam Networks	2007	G, R	GPON, Active Ethernet	Triple play, Security	✓	ILEC
Hinton Telephone	OK	Calix	2002		BPON			ILEC
Home Communications	KS			R		Triple play	✓	ILEC
Home Telephone	SC	Calix	2001	G	GPON	Triple play	✓	ILEC
Home Telephone	IL	Calix	2006	G	GPON	Voice, Data		ILEC
Home Town Telephone (Home Town Cable Plus)	FL	Calix	2004	G	GPON	Triple play, Security		CLEC
Hood Canal Telephone Company	WA	Motorola	2004	R	PON	Triple play	✓	ILEC
Horizon Chillicothe Telephone (Horizon Telcom)	OH	ADTRAN, Calix	2007		GPON, Active Ethernet	Triple play	✓	ILEC
Horry Telephone Coop	SC	Motorola, Calix	2004	G, R	PON, GPON, Active Ethernet	Triple play		ILEC
Hospers Telephone Exchange (HTC Communications)	IA		2010			Triple play	✓	ILEC
Hotwire Communications	FL, VA, NJ, NY, PA, GA, SC, NC, MD	Calix, Motorola		G, O	GPON	Triple play, Home automation		CLEC
Huxley Telephone	IA	Calix	2001	O, R	PON	Triple play		ILEC
iCornerstone	GA	CTDI	2004	G	EPON	Triple play		CLEC
IdeaOne Telecom Group	ND	Calix	2002	O	GPON, Active Ethernet	Triple play, Business services		CLEC
Indiantown Telephone System (ITS Telecom)	FL	Calix	2006	G	GPON	Triple play	✓	ILEC
InterBel Telephone Cooperative	MT					Triple play		ILEC
Interstate Communications (Southwest Telephone Exchange)	IA		2010	R		Triple play	✓	ILEC
Interstate Telecommunications Cooperative (SS Telecom)	SD	Calix	2006	O, R	BPON, GPON, Active Ethernet	Triple play	✓	ILEC
JBN Telephone Company	KS		2010	R		Voice, Data	✓	ILEC
Jaguar Communications	MN	Calix	2006	O	GPON	Triple play	✓	CLEC
Johnson Telephone Company	MN	Calix	2008		GPON	Triple play		ILEC
Kalida Telephone	OH	Calix			GPON			ILEC
Kalona Cooperative Telephone Company	IA		2009	R	GPON, Active Ethernet	Triple play		ILEC
Kanokla Telephone	KS	Calix, Zhone Technologies			GPON, Active Ethernet	Voice, Data	✓	ILEC
Kaplan Telephone	LA	Calix	2005	R	GPON	Triple play		ILEC
Kerman Telephone Company	CA				Active Ethernet	Voice, Data		ILEC
KMTelecom	MN		2008	R				ILEC
Knology	AL, GA, TN, FL, SC	Ericsson, Enablence, Calix	2005	G, R, O	EPON, GPON	Triple play, Business services		CLEC
La Jicarita Rural Telephone Cooperative	NM		2010	R		Voice, Data	✓	ILEC
LaHarpe Telephone	KS	Calix	2006	R	GPON	Triple play		ILEC
Laurel Highland Telephone Company	PA	Calix	2003	R	GPON	Triple play		ILEC



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Lavalle Telephone Cooperative	WI	Occam Networks	2006	G	Active Ethernet	Triple play	✓	ILEC
LaWard Telephone Exchange	TX	ADTRAN	2010	R	GPON	Voice, Data		ILEC
Leaco Rural Telephone Cooperative	NM	Calix	2010		GPON	Voice, Data		ILEC
Lehigh Valley Cooperative Telephone Association	IA	Calix			GPON			ILEC
Lemonweir Valley Telephone	WI	Calix	2008	R	GPON	Triple play		ILEC
Lexcom	NC	CTDI, Enablence	2007	R	RFoG, EPON	Triple play		ILEC
Liberty Communications	IA	Calix	2008	R	GPON	Triple play		ILEC
Lightnex Communications (formerly Vivid)	MT	Calix	2002	G	BPON, GPON	Triple play		CLEC
Ligonier Telephone	IN	Calix	2008	R	GPON	Triple play		ILEC
Lincoln County Telephone System	NV	Alcatel-Lucent	2008	G, R	GPON	Security, Triple play		ILEC
Lincoln Telephone	MT	Calix			GPON			ILEC
LISCO	IA	Occam Networks	2005	O	Active Ethernet	Triple play	✓	CLEC
Lismore Cooperative Telephone Company	MN		2010	R	Active Ethernet	Voice, Data	✓	ILEC
Litestream Technologies	FL	Calix	2002	G	PON	Triple play, Security	✓	CLEC
Long Island Fiber Exchange	NY		2007	O	Active Ethernet	Business services, Voice, Data		CLEC
Long Lines	NE	Enablence	2007	O	EPON	Triple play		ILEC
Lonsdale Telephone	MN	Calix			GPON			ILEC
Loretel Systems	MN	Calix	2009		GPON	Triple play		ILEC
Lost Nation-Elwood Telephone	IA	Calix			GPON			ILEC
Mabel Telephone Cooperative	MN	Enablence	2006	R	PON	Triple play		ILEC
Madison Telephone	KS	Calix	2009	R	GPON, Active Ethernet	Voice, Data	✓	ILEC
Mahaska Communications Group	IA	Calix	2004	O	GPON, Active Ethernet	Triple play		CLEC
Manti Tele Communication Company	UT	Enablence	2008	R	Active Ethernet	Triple play		ILEC
Margaretville Telephone Company	NY	CTDI	2007	O	RFoG	Triple play		ILEC
Marquette-Adams Telephone Cooperative	WI	Occam Networks	2008	R, O	GPON, Active Ethernet	Triple play	✓	ILEC
Matanuska Telephone Association	AK	Calix	2007	G, R	BPON, GPON	Triple play		ILEC
McClure Telephone Company	OH	Enablence	2006	R	GPON	Triple play	✓	ILEC
McDonald County Telephone Company	MO	Enablence	2009	R		Triple play		ILEC
McDonough Telephone Cooperative	IL	Calix	2007	R	GPON	Triple play		ILEC
Medicine Park Telephone Company	OK, TX	Motorola	2008	G, R	GPON	Triple play	✓	ILEC
Melrose Telephone Company (diversiCOM)	MN		2009	R		Triple play		ILEC
Metrostat Communications	NC	CTDI	2006	O	EPON	Voice, Data		CLEC
Middleburgh Telephone Company	NY	Calix, Motorola	2008	R	GPON	Triple play		ILEC
Mid-Plains Rural Telephone Cooperative	TX	Calix	2008	R	GPON	Voice, Data	✓	ILEC
Mid-Rivers Communications	MT	Calix	2010	R	Active Ethernet	Triple play		ILEC
Midstate Communications	SD	Occam Networks	2008	R	Active Ethernet	Triple play	✓	ILEC
Midstate Telephone	ND	Calix			GPON			ILEC
Midvale Telephone	AZ, ID	Calix	2006	G, O	BPON, GPON	Voice, Data	✓	ILEC
Minburn Telephone	IA	Calix		R	BPON, GPON	Triple play		ILEC
Minford Telephone Company	OH	Calix	2009		GPON			ILEC
Minnesota Valley Telephone	MN	Calix			GPON			ILEC
Missouri Telephone	MO	Allied Telesis	2006	G	Active Ethernet	Triple play		ILEC
MoKan Dial	KS, MO	Calix			BPON			ILEC

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Molalla Communications Company	OR	Calix	2004	G	GPON, Active Ethernet	Voice, Data		ILEC
Momentum	AL	Alcatel-Lucent	2007	G	GPON	Triple play, Security		CLEC
Monitor Cooperative Telephone Company	OR		2009	R		Voice, Data		ILEC
Monon Telephone Company	IN	Calix	2009		GPON			ILEC
Monroe Telephone Company	OR		2010			Triple play	✓	ILEC
Montana Opticom	MT	Calix	2005	G, O	GPON	Triple play	✓	CLEC
Mosaic Telecom	WI	Calix	2007	R	GPON	Triple play		ILEC
Mosinee Telephone	WI	Calix			GPON			ILEC
Moundville Telephone Company	AL		2008	G		Voice, Data		ILEC
Mountain Rural Telephone Cooperative	KY		2010	R		Voice, Data	✓	ILEC
Mountain View Telephone (Yelcot Telephone)	AR	Calix			GPON	Triple play		ILEC
MTCO Communications	IL	Calix	2008	O	GPON	Voice, Data		ILEC
Mud Lake Telephone Cooperative Association	ID	Calix	2010		Active Ethernet			ILEC
Mulberry Cooperative Telephone	IN	Calix	2009	R	GPON	Triple play		ILEC
Mutual Telephone Company	KS	Calix	2008	R	GPON			ILEC
Nehalem Telecommunications	OR	Calix			BPON, GPON			ILEC
Nemont Telephone Cooperative (Project Telephone)	MT	Calix	2006	R	GPON	Voice, Data	✓	ILEC
Nevada Comstock Communications	NV		2008	G, O	Active Ethernet	Voice, Data		CLEC
New Hope Telephone Cooperative	AL	Calix, Occam Networks	2006	R	PON	Triple play	✓	ILEC
New Knoxville Telephone Company	OH	Enablence	2004	R	EPON	Triple play		ILEC
Niagara Telephone Company	WI	Calix	2008		GPON			ILEC
Nortex Communications	TX	Calix	2007	R	GPON, Active Ethernet	Triple play	✓	ILEC
North Central Telephone Cooperative	TN	Occam Networks	2007	R	Active Ethernet	Triple play	✓	ILEC
North Dakota Telephone Company	ND	Allied Telesis	2005	R	Active Ethernet	Triple play		ILEC
North Penn Telephone Company	PA	Calix	2008		GPON	Triple play		ILEC
North State Communications	NC	Calix	2005	G	BPON, GPON	Voice, Data		ILEC
Northeast Florida Telephone Company	FL	Calix	2005	G	GPON	Voice, Data		ILEC
Northeast Louisiana Telephone Company	LA	Calix	2010	R	Active Ethernet	Triple play	✓	ILEC
Northeast Missouri Rural Telephone	MO	Occam Networks	2009	R	Active Ethernet	Triple play	✓	ILEC
Northern Arkansas Telephone Company (NATCO)	AR	Occam Networks	2009	R	Active Ethernet	Triple play	✓	ILEC
Northern Telephone Cooperative	MT	Calix	2008	R	GPON			ILEC
North-State Telephone Company	OR	Calix		R	GPON	Voice, Data		ILEC
Northwest Communications Cooperative	ND	Calix	2008	R	GPON	Triple play		ILEC
Northwestern Indiana Telephone	IN	Calix	2010		GPON	Voice, Data		ILEC
Nsight	WI	Enablence	2003	G	Active Ethernet	Triple play		ILEC
NTELOS	VA	Alcatel-Lucent, Tellabs, Ciena, ADTRAN, Zhone Technologies	2006	R	GPON	Triple play	✓	ILEC
Nunn Telephone	CO	Calix	2010		GPON		✓	ILEC
Omnilec	IL	Calix			BPON			CLEC
Oneida County Rural Telephone Company	NY	Calix	2010		GPON			ILEC

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Openband	VA, MD, DC	Calix	2005	O	GPON	Triple play, Security		CLEC
Optimum Lightpath	CT, NY	Cisco, Tellabs		O	Active Ethernet	Business services, Triple play		CLEC
Oregon Telephone	OR	Calix	2006	R	GPON		✓	ILEC
Orlando Telephone Company	FL	Enablence	2007	O	EPON	Triple play		CLEC
Ottoville Mutual Telephone	OH	Calix	2010		GPON	Triple play		ILEC
Oxford Networks	ME	Calix, ADTRAN	2001	O, R	GPON, Active Ethernet	Triple play		ILEC
Palmetto Rural Telephone Cooperative	SC				GPON	Triple play		ILEC
Panhandle Telephone Cooperative	OK		2010	R	Active Ethernet	Triple play	✓	ILEC
Panora Cooperative Telephone Association (Guthrie Telecommunications)	IA	Calix	2002	O, R	GPON	Triple play		ILEC
Parker FiberNet	GA	Occam Networks, Calix	2006	R	GPON	Voice, Data		CLEC
Paul Bunyan Rural Telephone Cooperative	MN	Calix, Allied Telesis	2004	O, R	GPON, EPON, Active Ethernet	Triple play	✓	ILEC
PAXIO	CA	PacketFront	2004	G, O	Active Ethernet	Voice, Data		CLEC
PBT Telecom	SC	Motorola	2005	G	GPON, BPON	Triple play		ILEC
Pembroke Telephone Company	GA	Calix, ADTRAN	2004	G, R	GPON	Triple play	✓	ILEC
Pembroke Telephone Cooperative	VA	Calix	2008		GPON			ILEC
Penasco Valley Telecommunications	NM	Calix	2008		GPON	Triple play	✓	ILEC
Peoples Rural Telephone Cooperative	KY	Occam Networks	2008	R	GPON, Active Ethernet	Triple play	✓	ILEC
People's Telecommunications	KS		2010			Voice, Data	✓	ILEC
Peoples Telephone Cooperative	TX	ADTRAN	2009	R	GPON	Voice		ILEC
Perry-Spencer Rural Telephone Cooperative (PSC)	IN	Enablence, Occam Networks	2009	R	GPON, Active Ethernet	Triple play		ILEC
Phillips County Telephone Company (PC Telcom)	CO							ILEC
Piedmont Rural Telephone Company	SC	Calix	2010		GPON			ILEC
Pine Drive Telephone Company	CO	Calix	2008		GPON	Triple play		ILEC
Pine Telephone Company	OK		2010			Voice, Data	✓	ILEC
Pine Telephone System	OR	Calix	2010		GPON	Voice, Data		ILEC
Pine Tree Networks	ME	Calix			BPON			ILEC
Pineland Telephone Cooperative	GA	Occam Networks	2006	R	Active Ethernet	Triple play		ILEC
Pinnacle Communications	AR	Calix	2005	R	GPON	Triple play		ILEC
Pioneer Communications	KS	Calix	2009		GPON	Triple play		ILEC
Pioneer Telephone Cooperative	OR	Calix			GPON			ILEC
Pioneer Telephone Cooperative	OK, KS	Calix	2008	R	GPON	Triple play	✓	ILEC
Plains Cooperative Telephone Association	CO		2010			Voice, Data	✓	ILEC
Plainview Telephone Company (Nyecom)	NE	Calix	2009	R	GPON	Voice, Data		ILEC
Plant Telephone	GA	Calix			BPON			ILEC
Planters Telephone Company	GA	Calix	2006	G	GPON, Active Ethernet	Triple play		ILEC
Poka Lambro Telephone Company	TX	Calix	2005	O	GPON	Voice, Data		ILEC
Polar Communications	ND, MN	Occam Networks	2007	R	GPON, Active Ethernet	Triple play		ILEC
Pottawatomie Telephone Company	OK	Calix	2009		GPON	Triple play		ILEC
Prairie Grove Telephone Company	AR	Occam Networks	2007	G	Active Ethernet	Voice, Data		ILEC

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Premier Communications	IA	Calix			GPON			ILEC
Prime Time Communications	CO, UT, NV, MS	Calix, Alcatel-Lucent, Enablence	2004	G	GPON, EPON	Triple play		CLEC
PrimeLink (Champlain Telephone Company)	NY	Calix, CTDI	2002	O	EPON, GPON, Active Ethernet	Triple play		ILEC
Project Mutual Telephone Co-op	ID	Calix	2005	O, G	GPON, Active Ethernet	Triple play		ILEC
Public Service Telephone Company	GA	Calix	2005	G	GPON	Triple play		ILEC
Radcliffe Telephone Company	IA	Calix	2009		GPON	Triple play		ILEC
Rainbow Telephone Cooperative Association	KS	Calix	2008		GPON	Triple play		ILEC
Rainier Connect	WA	Calix	2010		GPON			ILEC
Randolph Telephone	NC	Calix	2005	G	GPON	Triple play		ILEC
Range Telephone Cooperative (Advanced Communications Technology, Dubois Telephone Exchange)	MT, WY	Calix	2008	O	GPON	Triple play		ILEC
Readlyn Telephone Company	IA	Calix	2008	R	GPON	Triple play		ILEC
Red River Telephone	ND, MN	Calix	2005	R	GPON	Voice, Data	✓	ILEC
Reliance Connects (Rio Virgin Telephone/Cascade Utilities/Trans-Cascade Telephone)	NV, OR	Calix, ADTRAN	2008	R	GPON	Triple play	✓	ILEC
Reservation Telephone Cooperative	ND	Calix	2007	R	GPON	Triple play, Meter reading, Security	✓	ILEC
Rice Belt Telephone	AR	ADTRAN	2009		GPON	Triple play		ILEC
Richland-Grant Telephone Cooperative	WI	Occam Networks	2006	G	GPON, Active Ethernet	Triple play	✓	ILEC
Ridgeville Telephone Company	OH	Enablence	2006	O	EPON	Triple play		ILEC
Ringgold Telephone	GA	Enablence, Calix	2004	G	EPON, GPON, Active Ethernet	Triple play		ILEC
Ritter Communications	AR	Enablence	2006	G, O	Active Ethernet	Voice, Data		ILEC
River Valley Telephone Cooperative	IA	Calix	2008		GPON	Triple play		ILEC
Roberts County Telephone Cooperative Association (RC Communications)	SD		2004			Triple play	✓	ILEC
Rochester Telephone Company	IN	Enablence	2002	R	PON	Triple play		ILEC
Rockwell Cooperative Telephone Association	IA	Enablence	2007	R	GPON	Triple play		ILEC
Ronan Telephone	MT	Calix			BPON, Active Ethernet			ILEC
Royal Telephone Company	IA	Calix	2005	R	GPON	Triple play		ILEC
RST Communications	SC, NC	Motorola	2010	O	GPON	Triple play, Meter reading, Home automation, Security		CLEC
RT Communications	WY	Enablence, Calix	2006	R	GPON	Voice, Data		ILEC
RTC Communications	IN	Calix	2005	R	GPON	Triple play		ILEC
Runestone Telephone Association	MN	Calix	2007	R	GPON	Triple play		ILEC
Rural Telephone (Nex-Tech)	KS	Calix, Occam Networks	2001	O, R	GPON, Active Ethernet	Triple play	✓	ILEC
Rye Telephone Company	CO	Calix	2002	R	GPON	Triple play		ILEC
S&T Telephone Cooperative	KS	Calix	2008	R	GPON	Triple play		ILEC
Saddleback Communications	AZ	Calix	2008		GPON			ILEC
San Carlos Apache Telecom	AZ	Calix			GPON		✓	ILEC
San Isabel Telecom	CO	Calix	2002	G	GPON	Triple play		CLEC



# INDEPENDENT TELCOS

Provider	States	Vendor - FTTH Electronics	Start Date	Greenfield/ Replace/ Overbuild	Technology	Services	USDA Rural Dev Loan	ILEC/ CLEC
Sandwich Isles Telecom	HI	Calix			GPON			ILEC
Santa Rosa Telephone Cooperative	TX	Calix	2005	O	GPON	Triple play		ILEC
Santel Communications	SD	Enablence	2005	O	EPON	Triple play	✓	ILEC
SC Telcom (South Central Telephone, South Central Wireless)	KS	Calix	2002	R, O	GPON, Active Ethernet	Voice, Data	✓	ILEC
Scio Mutual Telephone Association	OR	Calix	2004	R	GPON	Triple play		ILEC
Scott County Telephone Coop	VA, TN	Enablence, Calix	2004	R	EPON, GPON, Active Ethernet	Triple play	✓	ILEC
Sebastian (Audeamus)	CA	Occam Networks	2009	G		Triple play	✓	ILEC
Shawnee Telephone Company	IL	Zhone Technologies	2010	R	GPON	Voice, Data	✓	ILEC
Shenandoah Telecommunications	VA, WV	Enablence, Motorola	2006	G	EPON	Triple play, Security		ILEC
Sherwood Mutual Telephone Association	OH	Calix		R	GPON	Triple play		ILEC
Sierra Telephone	CA	Calix	2010		GPON			ILEC
Silver Star Communications	WY	Calix	2005	G	GPON	Triple play		ILEC
Siren Telephone	WI	Allied Telesis	2008	R	Active Ethernet	Triple play		ILEC
Siskiyou Telephone	CA			R				ILEC
Skyline Membership Corporation	NC	Allied Telesis, Calix	2004	R	PON	Triple play	✓	ILEC
Sledge Telephone Company	MS	Occam Networks	2009	R	Active Ethernet	Voice, Data		ILEC
Slic Network Solutions (Nicholville Telephone Company)	NY	Occam Networks	2009	O	GPON	Triple play	✓	ILEC
Smart City	FL	Calix		G	BPON, GPON, Active Ethernet	Triple play		ILEC
Smithville	IN	Calix	2008	R	GPON, Active Ethernet	Triple play	✓	ILEC
Socket Telecom	MO		2010			Triple play	✓	CLEC
Solarus	WI	Calix			GPON	Triple play		ILEC
Sonic.net	CA		2010	O	Fiber to Building	Data		CLEC
South Central Communications	UT	Calix	2002	G	GPON	Triple play	✓	ILEC
South Central Rural Telephone Cooperative	KY	ADTRAN	2009	R	GPON	Triple play		ILEC
South Plains Telephone Cooperative	TX	Calix		G	GPON			ILEC
South Slope Cooperative Communications	IA	Calix	2010	R	GPON, Active Ethernet	Triple play		ILEC
Southeast Nebraska Telephone Company	NE		2009	R		Voice, Data	✓	ILEC
Southern Kansas Telephone	KS	Occam Networks	2008	R	GPON, Active Ethernet	Voice, Data		ILEC
Southern Montana Telephone Company	MT	Calix	2009	R	GPON	Voice, Data	✓	ILEC
Southwest Michigan Communications (Bloomingdale Telephone)	MI	Calix		O	GPON	Triple play	✓	ILEC
Spring Grove Communications	MN	Calix	2007	R	GPON	Triple play		ILEC
Spring Valley Telephone	WI		2009	R		Triple play		ILEC
Spruce Knob Seneca Rocks Telephone	WV	Calix	2008	R	GPON	Triple play	✓	ILEC
SRT Communications	ND	Zhone Technologies, Calix	2008	G, R	GPON, Active Ethernet		✓	ILEC
St. John Telephone Company	WA		2007	R			✓	ILEC
St. Paul Cooperative Telephone Association	OR	Calix	2008		GPON			ILEC
Stanton Telecom	NE	Calix	2010	R	GPON	Triple play		ILEC
State Telephone Company	NY	Calix	2009		GPON			ILEC
Stayton Cooperative Telephone	OR	Occam Networks	2009	R	GPON, Active Ethernet	Triple play		ILEC

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Stoneham Cooperative Telephone Corporation	CO		2010	R		Voice, Data	✓	ILEC
Strata Networks (formerly UBTA-UBET Communications)	UT	Calix, Occam Networks	2007	G	GPON, Active Ethernet	Voice, Data		ILEC
Stratford Mutual Telephone Company	IA	Zhone Technologies	2005	R	GPON	Triple play	✓	ILEC
Sunflower Broadband	KS	Calix, Motorola	2003		GPON			CLEC
SureWest Communications	CA, KS, MO	Calix, Allied Telesis	2001	O, R, G	PON, Active Ethernet	Triple play		ILEC
Surry Telephone Membership Corporation	NC	Allied Telesis	2008	R	EPON, Active Ethernet	Triple play		ILEC
Swisher Telephone Company	IA	Calix	2009	R	GPON	Triple play	✓	ILEC
Syringa Networks	UT, ID		2010	O	Active Ethernet			CLEC
T2 Communications	MI	Calix	2005	G, O	GPON	Triple play		CLEC
Table Top Telephone	AZ	Calix	2010		GPON, Active Ethernet			ILEC
Tamarack Video & Telecom	ID	Calix	2008	G	GPON	Triple play		CLEC
Taylor Telephone Cooperative	TX	Zhone Technologies	2007	R	GPON	Voice, Data		ILEC
TDS Telecom	WI, MN	Calix, Ericsson	2005	G	GPON	Triple play		ILEC
Tech Valley Communications	NY	Calix	2006	O	GPON	Voice, Data		CLEC
TelAtlantic	WV	Tellabs	2006	G	BPON	Triple play		ILEC
Telepak Networks	MS	Calix	2005	O	GPON	Triple play		ILEC
Telephone Electronics Corporation (TEC)	MS, AL, TN	ADTRAN	2008	R	GPON	Triple play		ILEC
Teljet Longhaul	VT			O	Active Ethernet	Voice, Data		CLEC
Teton Telecom	ID	Calix	2004	G	GPON	Triple play		ILEC
Thacker-Grigsby Telephone	KY	Calix			GPON		✓	ILEC
Three River Telco	NE		2008	R			✓	ILEC
Tohono O'odham Utility Authority	AZ		2010	R			✓	ILEC
Toledo Telephone	WA	Calix	2006	O	GPON	Triple play		ILEC
Topsham Telephone	VT	Calix	2006		GPON	Triple play	✓	ILEC
Transtelco	TX	Calix	2010	O	GPON, Active Ethernet	Voice, Data		CLEC
Tri County Telephone (TCT West)	WY	Calix	2004	R	GPON	Triple play	✓	ILEC
Triangle Telephone Cooperative	MT		2007	R	GPON, Active Ethernet	Triple play		ILEC
TriCounty Telecom	NC		2009	G, R	GPON	Triple play	✓	ILEC
Tri-County Telephone Association	KS	Occam Networks	2009	R	GPON, Active Ethernet	Triple play		ILEC
TrioTel Communications (McCook Cooperative)	SD	Calix	2009	R	GPON	Triple play	✓	ILEC
Troy Cable	AL	CommScope, Hitachi	2008	O	RFoG	Triple play		CLEC
Trumansburg Telephone	NY	Tellabs, Occam Networks	2009	R	GPON, Active Ethernet	Triple play		ILEC
Truvista Communications	SC	Calix			GPON	Triple play		ILEC
TSC	OH	Calix	2003	O	GPON	Triple play		ILEC
Tularosa Basin Telephone Company	NM	Occam Networks	2006	R	Active Ethernet	Triple play	✓	ILEC
Twin Lakes Telephone Cooperative	TN		2008	R, O		Triple play, Security	✓	ILEC
Twin Valley Telephone	KS	Allied Telesis	2006	R, O	Active Ethernet, EPON	Triple play		ILEC
Union River Telephone Company	ME	Calix	2008	R	GPON	Voice, Data	✓	ILEC
Union Springs Telephone	AL	Calix, Occam Networks	2001	R	GPON, Active Ethernet	Triple play		ILEC
Union Telephone	NH	Enablence	2007	R	Active Ethernet	Triple play		ILEC

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United Telephone Association	KS	Calix	2010		GPON	Triple play		ILEC
United Telephone Company	TN	Calix	2004	G	GPON	Triple play		ILEC
United Telephone Mutual Aid Corporation	ND	Allied Telesis, Calix	2008	R	Active Ethernet	Triple play		ILEC
United Telesystems	GA	Alcatel-Lucent	2003	O	BPON	Triple play		CLEC
Upper Sioux Community	MN	Calix	2009		GPON			ILEC
Upsala Cooperative Telephone	MN	Calix	2010		GPON	Voice, Data		ILEC
US SONET	IL	Enablence	2003	O	PON	Triple play	✓	CLEC
Valley Telecom Group	AZ	Enablence	2005	R	EPON, GPON, Active Ethernet	Triple play	✓	ILEC
Valley Telecommunications Cooperative	SD	Calix	2008	R	GPON	Triple play		ILEC
Valley Telephone Cooperative	TX	Enablence	2005	G, R	GPON, Active Ethernet	Triple play	✓	ILEC
Velocity Telephone	MN		2010	O	Active Ethernet	Triple play		CLEC
Venture Communications Cooperative	SD	Calix	2006	R	GPON	Triple play	✓	ILEC
Veracity Networks	UT	Telco Systems	2005	G	Active Ethernet	Triple play, Gaming		CLEC
Vermont Telephone	VT	Calix	2007	R	BPON, GPON, Active Ethernet	Voice, Data	✓	ILEC
Volcano Telephone	CA	Calix	2010		GPON			ILEC
Wabash Mutual Telephone	OH	Enablence, Occam Networks	2005	O, R	EPON, GPON, Active Ethernet	Triple play	✓	ILEC
Wahkiakum West Telephone	WA			R				ILEC
Waitsfield and Champlain Valley Telecom (Waitsfield-Fayston Telephone Company)	VT	Enablence	2007	G	Active Ethernet	Voice, Data	✓	ILEC
Walnut Communications	IA		2009	O				ILEC
Wamego Telecommunications	KS	Calix	2002	R	GPON	Triple play		ILEC
Warwick Valley Telephone Communications	NY	Enablence, Occam Networks	2006	O	GPON, Active Ethernet	Triple play		ILEC
Webster-Calhoun Cooperative Telephone Association	IA	Calix	2005	R	GPON	Triple play		ILEC
West Carolina Tel	SC		2008	R	GPON, Active Ethernet	Triple play		ILEC
West Central Telephone	MN	Calix	2005	R	PON	Triple play		ILEC
West Kentucky Rural Telephone Cooperative	TN, KY		2010	R		Triple play	✓	ILEC
West Plains Telecommunications (Five Area Telephone Cooperative)	TX	CTDI	2006	R	EPON	Triple play	✓	ILEC
West River Cooperative Telephone Company	SD	Calix	2007	R	GPON			ILEC
West Texas Rural Telephone Cooperative (WT Services)	TX	Calix	2007	O	GPON	Triple play		ILEC
West Wisconsin Telcom Cooperative	WI	Calix	2007	R	GPON			ILEC
Westel Fiber	ID			G		Triple play		CLEC
WesTel Systems	IA	Calix	2009		GPON			ILEC
Westphalia Telephone	MI	Occam Networks	2006	O	GPON, Active Ethernet			ILEC
Wide Open West (Sigecom)	IN	Motorola, Occam Networks, Calix	2001	O	GPON	Triple play		CLEC
Wiggins Telephone	CO	Calix	2008	R	GPON	Voice, Data	✓	ILEC
Wikstrom Telephone Company	MN		2010		GPON	Voice, Data	✓	ILEC
Wilkes Telecommunications	NC	Allied Telesis	2009	R	Active Ethernet	Triple play	✓	ILEC
Wilkes Telephone & Electric	GA	Calix	2006	R	GPON	Triple play	✓	ILEC
Willard Telephone	CO		2010	R		Voice, Data	✓	ILEC

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Windstream Communications	AL, AR, FL, GA, KY, NE, NC, SC, TX	Calix	2006	G	GPON	Voice, Data		ILEC
Windwave Communications	OR	Calix	2004	O	PON	Triple play		CLEC
Winn Telephone	MI	Calix		O	BPON			ILEC
Winnebago Cooperative Telecom Association	IA, MN	Calix			GPON	Triple play	✓	ILEC
Wittenberg Telephone	WI	Calix			BPON			ILEC
WNM Communications	NM	ADTRAN	2010		Active Ethernet	Business services, Data		ILEC
Woodstock Telephone Company	MN	Tellabs	2008	R	GPON	Triple play	✓	ILEC
Xfone (NTS, Pride Network)	TX, LA	Calix	2003	G, O	GPON	Triple play	✓	CLEC
XIT Rural Telephone Cooperative	TX	Calix	2008	R	GPON	Triple play	✓	ILEC
Yadkin Valley Telecom	NC	Zhone Technologies	2007		GPON	Triple play	✓	ILEC
Yucca Telecom (Roosevelt County Rural Telephone Cooperative)	NM	Calix	2005	R	GPON	Voice, Data	✓	ILEC
Zial Networks	ID, UT		2003	G, O	Active Ethernet	Triple play		CLEC
Zito Media	PA		2008	O		Voice, Data		CLEC
Zona Communications	AZ	Calix	2005	G	GPON	Voice, Data	✓	ILEC
Zoomy Communications	MS, MT, ID, CO, AZ, NM, KS, WA, TX	Calix, Alcatel-Lucent	2002	G, O	GPON	Triple play		CLEC

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