

More Than 300 Independent Telcos Deploying Fiber

Our most recent list details FTTH overbuilds and greenfield deployments announced by competitive carriers and incumbents.

By Masha Zager ■ *Broadband Properties*

ABOUT THE LIST

Since 2005, Broadband Properties has been keeping a list of fiber-to-the-premises deployments by independent telephone companies (incumbent and competitive local exchange carriers). We've published the list several times a year, and in the next few months we will begin maintaining it on www.broadbandproperties.com so that readers can have access to information as we update it.

Careful readers will note that the list is considerably longer than it was last fall. Not all of the additions are new deployers, however. We've tapped new sources of information, and added some companies that we had missed in earlier iterations. But although we've gathered information from as many sources as we can, we know the list is still not complete. Some telcos are reticent about publicizing their ventures; other projects may simply not have come to our attention at all. To add to the list, fill in missing information or correct any errors, please contact masha@broadbandproperties.com.

The earliest fiber-to-the-home builders in the US were not major telecom providers. For the most part, they were rural telephone companies, many of them nonprofits, with deep roots in their communities – companies that were agile, open-minded, customer-focused, and, in many cases, willing to take risks in order to survive. More than one telco manager has told us that fiber-to-the-home was a last-ditch effort to maintain the viability of the company, so that it could continue serving rural customers whom no one else would serve.

Other fiber pioneers were startup companies empowered by the 1996 Telecommunications Act to compete with incumbents in underserved areas or in new planned communities. Still others represent a cross be-

tween these two categories – formerly rural providers that saw their service areas turning into exurbs and even suburbs, and seized upon the chance to provide new technology to the greenfield developments that were springing up in their own or neighboring territories.

Here are some of the reasons that independents have told us they have been building fiber networks:

- 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 only marginally more expensive to install than copper but would be less costly to maintain and have a longer useful life.
- They wanted to offer video and other advanced services, and decided that DSL (in any and all flavors) had too many limitations.
- 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.

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- They saw opportunities to compete in underserved areas (outside their traditional service areas) where residents were unhappy with the available choices for video and/or Internet service.

Independents rarely compete with one another, so they tend to regard each other as colleagues. They share experiences and they pool information. As information spreads, one success gives rise to another – and 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 new technology.

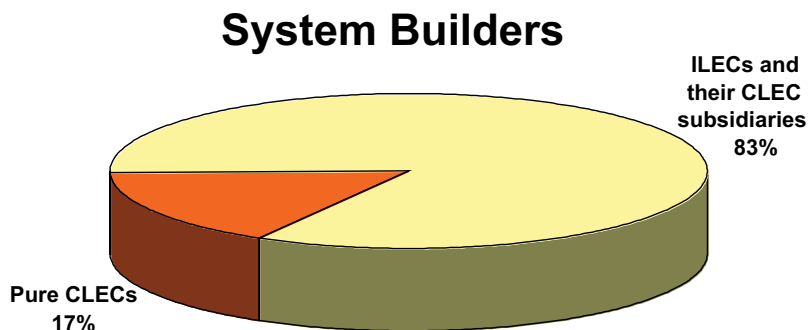
These companies are intensely pragmatic, because fiber makes more sense for them in some areas than in others. The CLECs that center their business models on fiber are highly selective about which communities they serve. The ILECs that are committed to serve wider geographical regions evaluate each town, neighborhood, and rural area separately and decide whether, when and how to upgrade their access networks. Often they begin with one or two small FTTP deployments and then follow up with more and larger ones as they become expert with the technology.

Not surprisingly, the ILECs often invest in fiber to the node in some areas at the same time that they invest in fiber to the premises in others. They also are willing to use different network technologies and topologies in different FTTP areas. We're seeing far more mixing-and-matching than in earlier years. But one trend worth noting is that many of these companies are investing in electronics that allow an easy upgrade path from copper to fiber. Announcements of FTTP deployments today routinely state that the equipment being purchased "will allow us to provide advanced services to our customers today over copper and will support fiber to the home when we're ready for that."

WHAT THE NUMBERS SHOW

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

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



Independents usually build in their area of incumbency, but often expand into neighboring towns as CLECs.

WHAT IS AN INDEPENDENT TELCO?

The "independent" part is easy enough to understand – independents are companies that aren't RBOCs, or Baby Bells. (The three RBOCs left standing after recent mergers are Verizon, AT&T and Qwest.) It's the "telco" part that's at issue. With technologies converging and regulators scrambling to keep up with the changed technology, it's no longer obvious what should qualify as a telephone company.

As voice service migrates from circuit-switched to more efficient packet-switched networks, the once-simple category of "telephone company" has begun to dissolve. VoIP, or packet-switched voice, has existed since the 1990s but has only recently become carrier-class. Today many kinds of companies deliver reliable, interconnected voice service over IP networks – cable companies are doing it, and so are new FTTP providers and even some traditional telephone companies. (Plus, of course, there are providers like Skype and Vonage that ride other people's networks.)

Here's the twist: Once you're a telco, you're always a telco, even if you switch to VoIP. But cable or fiber providers that start with VoIP aren't telcos, even if they're providing exactly the same kind of voice service.

Then there's a second twist: The FCC has started imposing regulations that make non-telco VoIP providers more like telcos – for example, they must provide 911 service and contribute to the Universal Service Fund.

In the absence of a clear dividing line, we count as telcos only those facilities-based providers that are regulated in the US as ILECs (incumbent providers) or CLECs (competitive providers) or both. Generally, this means that they provide traditional switched telephone service *somewhere*. However, it doesn't mean that they provide traditional switched phone service over all or any of their fiber-to-the-home networks.

To the extent possible, we have excluded telcos that are delivering services over fiber access networks that they do not own and were not involved in building.

The remaining companies are pure CLECs (competitive carriers, virtually all facilities-based) with no traditional geographic base. These companies seek out promising territories to overbuild with fiber. A few of them build hybrid fiber-coax networks as well as FTTH networks. Most of the pure CLECs collaborate with housing developers to build communications networks in greenfield developments, especially master-planned communities. But others, like ComSpan USA and Hiawatha Broadband, have overbuilt existing towns that are underserved.

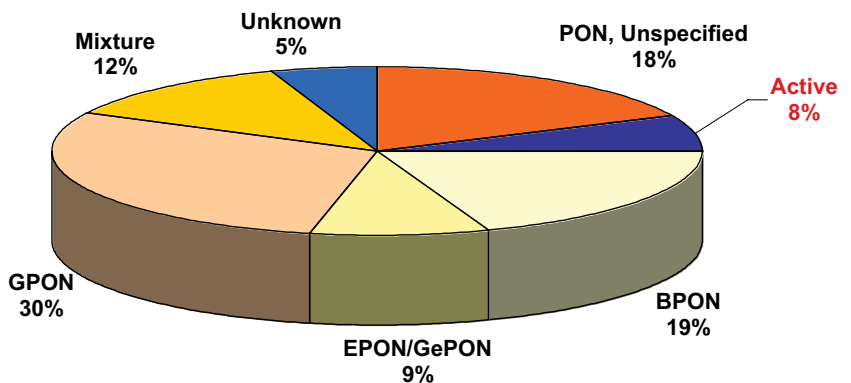
While the typical independent telco serves a few thousand customers in one or two rural counties, the companies on this list range from corporate giants like Windstream Communications, which serves 3 million customers in 16 states, to tiny cooperatives like Allband Communications, which serves 300 customers in a remote corner of Michigan. Likewise, their fiber deployments range from SureWest's 90,000 homes passed to pilot projects with less than a hundred homes passed.

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

Fiber's bandwidth enables the delivery of "Telco TV," and companies are taking full advantage of it; video is often a motivating factor for the fiber buildout. For many of these companies, however, video is nothing new – unlike the RBOCs, in-

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Technology Used



Passive optical networks are by far the most common, but active is gaining in popularity. Gigabit PON is also replacing older, slower standards.

dependent telcos have often managed cable TV networks alongside their telephone networks. By deploying fiber to the home, they can merge the two, reducing network management costs while expanding their video offerings.

Our data understates the prevalence of video. Some of the companies listed as providing voice and data said that they

would consider adding video services once their networks were up and running, and some of them may have done so already; they just didn't have any firm plans for video at the time their fiber deployments were announced.

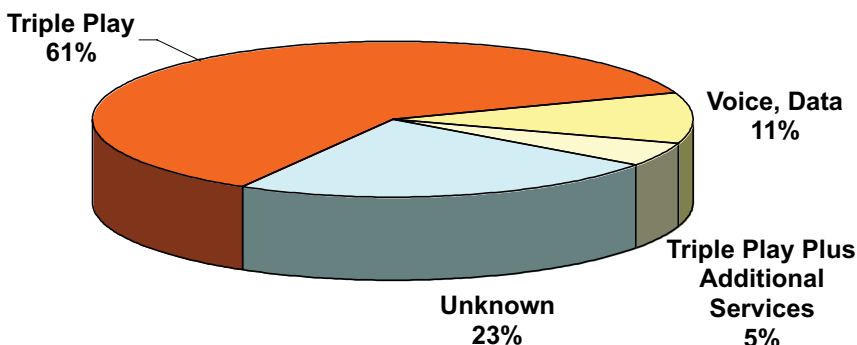
Beyond the triple play, the most common additional service is home security monitoring. Gaming, video Caller ID and business applications are also being offered by some telcos.

Recent FTTP announcements have increasingly mentioned all-IP networks. As mentioned in the sidebar, VoIP is now often used in place of traditional switched telephony, just as IPTV is beginning to displace R/F video. Video-on-demand is also becoming an important aspect of video service – complementary to, rather than displacing, linear programming.

3. Companies are choosing more FTTP technology options.

Our first published list included mainly BPON systems, with a few

Services Planned or Delivered



Most providers are planning to offer video over their FTTH networks. The "triple play" has become standard.

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EPON and one Active Ethernet system. Today, while passive networking remains by far the most popular choice, at least 28 independent telcos are using Active Ethernet for one or more fiber projects.

Gigabit passive networks, both GPON and GePON, have also become more widely used in the last year or so, but the older, slower standards haven't disappeared – some telcos are taking a more conservative approach to deploying fiber.

The number of telcos using multiple types of technologies, while still small, is growing. While many companies find it simpler to stay with the technology (and vendor) they have used successfully, others find that their needs change over time or that requirements vary from one part of their service area to another.

BroadStar, a CLEC that wires greenfield developments, analyzes each new development and decides what technology is most suitable. Another factor encouraging the use of multiple access technologies is that different types of blades can now often be combined in a single chassis (which can serve FTTN access networks as well – as discussed above).

4. More vendors are competing successfully in the independent telco market.

When independent telcos first began deploying fiber, virtually all of them used FTTP electronics from Optical Solutions, Inc. Eventually OSI was bought by Calix, which has maintained its substantial lead in this market. Two-thirds of the telcos on our list use at least some Calix equipment.

However, as the independent telco market grows and as equipment becomes more standardized and interoperable (a trend that Calix has encouraged), other vendors have become increasingly successful at competing in this market. We estimate that 40 percent of the telcos on the list have bought equipment from electronics vendors other than Calix. Wave7 Optics, Pannaway and Occam Networks all have sizable market shares. Several of the vendors have tried to increase their appeal to this market by supporting multiple access technologies.

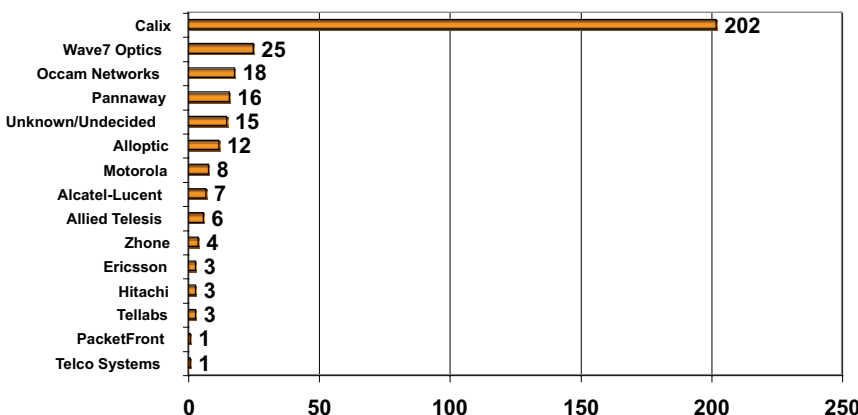
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For the most part, telcos that are dealing with multiple vendors are using different systems in different geographical areas; we haven't seen significant instances of electronics vendors partnering to build networks. **BBP**

About the Author

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Projects Won by Vendor



Calix remains the leading vendor in this market, though several other vendors have substantial numbers of customers.

The table on the following pages is our latest compilation of independent telcos that have constructed FTTP networks or are actively planning them. We've made every effort to update the names of vendors and deployers to reflect mergers and rebrandings. To add to or correct this list, send an e-mail to masha@broadbandproperties.com. We publish updates of this list on a regular basis.

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/Replace	Technology	Services (Planned or Actual)	RUS Loan	Type
3 Rivers Communications	MT	Calix, Pannaway, Occam Networks	2006		PON, Active Ethernet	Triple play		ILEC
Adak Telephone	AK	Calix			GPON	Triple play		ILEC
Adams Telephone Cooperative	IL	Calix	2006	R	BPON	Triple play		ILEC
Albany Mutual Telephone Association	MN	Pannaway	2006	R	Active Ethernet	Triple play		ILEC
Alenco Communications (Pathway Com-Tel)	TX	Calix	2002	O	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	√	ILEC
Allendale Communications	MI	Pannaway	2005	G	Active Ethernet	Triple play		ILEC
Alliance Communications	SD	Calix	2006	R	BPON	Voice, data		ILEC
Alma Communications	MO	Pannaway	2006	R	GPON	Triple play		ILEC
Alpine Communications	IA	Occam Networks	2007	R	Active Ethernet	Voice, data		ILEC
Arvig Communications (East Otter Tail)	MN	Calix	1995	R, G	BPON	Triple play		ILEC
Astound Broadband	CA	Alloptic	2004	R	EPON	Voice, data		CLEC
ATMC	NC	Motorola	2005	G	BPON	Triple play		ILEC
Aztech Cable	AZ	Calix		O	GPON	Triple play		CLEC
Baldwin Telecom	WI	Calix	2002	G	PON	Triple play	√	ILEC
Baraga Telephone	MN	Calix			BPON	Triple play		ILEC
Barry County Telephone	MI	Calix			GPON			ILEC
Bascom Mutual Telephone Company	OH	Calix	2003	O	BPON	Triple play		ILEC
BEK Communications	ND	Calix	2004	R	GPON	Voice, data		ILEC
Ben Lomand Telephone Co-op	TN	Occam Networks	2006	R	Active Ethernet	Triple play		ILEC
Benton Cooperative Telephone Company (Milaca Local Link)	MN	Calix, Alloptic	2005	G	GPON, GePON	Triple play		ILEC
Big Bend Telephone	TX	Calix, Pannaway	2005	R	GPON	Triple play		ILEC
Bixby Telephone	OK	Calix	2005	G	BPON	Triple play		ILEC
Blair Telephone (HunTel)	NE	Calix			BPON			ILEC
Bloomer Telephone	WI	Calix	2007	R	GPON	Triple play	√	ILEC
Blue Valley Tele-Communications	KS	Tellabs	2007	R	GPON	Triple play		ILEC
Border to Border Communications	TX	Calix, Alloptic	2004	R	BPON, GePON	Triple play	√	ILEC
Brantley Telephone	GA	Calix	2007	R	GPON	Triple play		ILEC
BroadStar	NC	Various	2005	G	Various	Triple play and security		CLEC
Broadweave Networks	UT	Telco Systems	2005	G	Active Ethernet	Triple play and gaming		CLEC
Buckeye Telesystem	OH	Calix	2006	O	PON	Voice, data		CLEC
Buckland Telephone Company	OH	Calix	2005	R	GPON	Triple play		ILEC
Bulloch Telephone Cooperative	GA	Motorola	2005	R	PON	Triple play		ILEC
Calaveras Telephone	CA	Calix	2006	G	BPON	Triple play	√	ILEC
Cal-Ore Communications	OR	Calix	2005	G	GPON	Triple play		ILEC
Cambridge Telephone	ID	Calix	2005	R	BPON	Triple play		ILEC
Cameron Communications	LA	Calix	2004	R	GPON	Triple play		ILEC
Canby Telcom	OR	Calix	2006	G, R	PON	Triple play		ILEC
Cap Rock Telephone Cooperative	TX	Calix	2005	G	GPON	Triple play		ILEC

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Cascade Telephone	IA	Calix			GPON			ILEC
CC Communications	NV	Wave7	2004	R, G	EPON	Triple play		ILEC
Centennial de Puerto Rico	PR	Occam Networks	2007	R	Active Ethernet	Voice, data		CLEC
Central Texas Technologies	TX	Alloptic	2002	G	EPON	Triple play		CLEC
CenturyTel	AL, CO, MI, MO, WI	Calix			PON			ILEC
Champaign Telephone	OH	Calix			GPON			ILEC
Chariton Valley Telecom Corporation	MO	Wave7	2003	R, O	PON	Triple play		ILEC
Chesnee Telephone	SC	Calix			GPON			ILEC
Chibardun Telephone Cooperative	WI	Calix	2007	R	GPON	Triple play		ILEC
Christensen Communications	MN	Calix			BPON, GPON			ILEC
Cinergy MetroNet	IN	Alcatel-Lucent	2005	O	BPON	Triple play	√	CLEC
Citizens Mutual	IA	Calix	2006	R	BPON	Triple play		ILEC
Citizens Telephone Company of Kecksburg	PA	Calix	2005	R	PON	Triple play		ILEC
Citizens Telephone Coop	WI	Calix			BPON			ILEC
Citizens Telephone Cooperative	VA	Calix	2004	R	BPON	Triple play		ILEC
Clarence Telephone	IA	Calix			BPON, GPON			ILEC
Colo Telephone Company	IA	Calix	2005	R	GPON	Triple play	√	ILEC
Columbus Telephone Company	KS	Wave7	2004	R	EPON	Triple play		ILEC
Comporium Communications	SC	Wave7	2004	G	EPON	Triple play and video messaging		ILEC
ComSouth Telecommunications	GA	Calix, Motorola	2005	R, G	PON	Triple play		ILEC
ComSpan USA	OR	Hitachi	2005	O	GPON	Triple play		CLEC
Consolidated Communications Inc.	IL, TX	Zhone Technologies	2007		GPON	Triple play		ILEC
Consolidated Telcom	ND	Calix			BPON			ILEC
Consolidated Telecommunications Company	MN	Calix	2005	O	GPON	Triple play		ILEC
Conxus (Illicom Telecommunications)	IL	Wave7	2001	O	EPON	Triple play		CLEC
Cooperative Telephone Exchange	IA	Occam Networks	2006	R	Active Ethernet	Triple play	√	ILEC
CP-Tel	LA	Calix	2004	G	BPON	Triple play		ILEC
Craigville Telephone Company	IN	Calix	2006	O	PON	Triple play		ILEC
Cross Communications	OK	Calix			GPON	Triple play		ILEC
CSS Communications	WA	Alloptic	2003	R	EPON	Triple play		CLEC
CT Communications	NC	Wave7 Optics	2005	G	EPON	Voice, data		ILEC
Custer Telephone Cooperative	ID	Calix	2006	R	PON	Triple play		ILEC
Dakota Central Telecom	ND	Calix	2002	R, O	PON	Triple play	√	ILEC
Darien Telephone	GA	Calix	GPON	ILEC				
Dickey Rural Networks	ND	Calix	2004	R	GPON	Triple play		ILEC
Direct Communications	OR, WA, ID, UT	Calix		G	BPON, GPON	Voice, data		ILEC
Dobson Telephone	OK	Calix			BPON			ILEC

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Dumont Telephone Company	IA	Hitachi	2006	R	GPON	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 and video messaging		ILEC
Elkhart Telephone	KS	Wave7	2005	R	EPON	Triple play		ILEC
Ellensburg Telephone (Fairpoint)	WA	Calix			GPON			ILEC
EMBARQ	Many States	Calix		G	GPON	Triple play		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	O	PON	Triple play		ILEC
ENMR-Plateau Telecommunications	NM	Calix, Occam	2003	R	PON	Voice, data		ILEC
En-Touch Systems	TX	Wave7	2006	G	EPON	Triple play and security		CLEC
Etex Telephone Cooperative	TX	Calix, Pannaway	2002	O	PON, Active Ethernet	Voice, data		ILEC
F&B Communications	IA	Calix			BPON, GPON			ILEC
FairPoint Communications (possibly adding New England)	WA	Occam Networks		G				ILEC
Falcon Broadband	CO	Wave7, Hitachi	2005	G	EPON, GPON	Triple play		CLEC
Farmers and Merchants Mutual Telephone Company	IA	Calix	2007		BPON, GPON			ILEC
Farmers Mutual	ID	Calix		R	BPON, GPON	Triple play		ILEC
Farmers Mutual	MN	Calix			BPON	Triple play		ILEC
Farmers Telephone Cooperative	SC	Calix			GPON			ILEC
FEC Communications	TX	Calix	2006	G	PON			CLEC
Federated Telephone	MN	Calix	1996	O, R	PON	Triple play		ILEC
Fiber 520-522 LLC	IL		2006	O		Triple play	√	CLEC
Fibernet	WV, OH	Calix	2007		BPON, GPON	Voice, data		CLEC
Fibertech	NY	Calix			BPON, GPON			CLEC
Fidelity Telephone	MO	Calix			BPON			ILEC
Filer Mutual	ID	Calix			GPON			ILEC
Foothills Rural Telephone Coop	KY	Alcatel-Lucent	2004	R, G	BPON	Triple play and video messaging	√	ILEC
Fort Jennings Telephone Company	OH	Calix	2004	O, R	GPON	Triple play		ILEC
Frontier Communications	Multiple States	Calix			BPON, GPON			ILEC
FTTH Communications	MN	Calix	2004	G	GPON	Triple play		CLEC
Garden Valley Telephone	MN	Calix	2005		BPON, GPON	Triple play		ILEC
Gardonville Cooperative Telephone Association		MN	2007	R				ILEC
General Communications	AK	Calix			GPON			ILEC
Gervais Telephone	OR	Calix	2001	O	PON	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		

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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
Graceba Total Communications	AL	Wave7	2007	G, R, O	EPON	Triple play and business applications		ILEC
Grand Mound Cooperative Telephone Association	IA	Calix	2005	O, R	PON		√	ILEC
Grande Communications	TX	Ericsson	2005	O	PON	Triple play		CLEC
Great Plains Communications	NE	Pannaway	2007	G, R	GPON	Voice, data		ILEC
Greenfield Communications	AZ, CA	Calix, Alloptic	2005	G	GPON, GePON	Triple play		CLEC
Gridley Telephone	IL	Calix	2006		BPON	Triple play		ILEC
Guadalupe Valley Telecommunications Cooperative	TX	Calix	2004	G, R, O	GPON	Triple play and security		ILEC
Hancock Telecom	IN	Wave7	2004	G	EPON	Triple play		ILEC
Hargray Communications	SC	Alloptic	2004	G	EPON	Triple play		ILEC
Harrisonville Telephone	IL	Calix	2007	G	BPON, GPON	Triple play		ILEC
Hawaiian Telecom	HI	Alcatel-Lucent	2006	G, R	GPON	Triple play		ILEC
Heart of Iowa Communications Cooperative	IA	Calix	2005	R	BPON, GPON	Triple play		ILEC
Hiawatha Broadband	MN	Calix	2005	O	PON	Triple play		CLEC
HickoryTech	MN	Calix			BPON, GPON			ILEC
Highland Telephone Cooperative	VA	Pannaway	2007		GPON	Triple play		ILEC
Hinton Telephone	OK	Calix						ILEC
Home Telephone	SC	Calix	2001	G	PON	Triple play		ILEC
Home Town Telephone (Home Town Cable Plus)	FL	Calix	2004	G	PON	Triple play and security		CLEC
Hood Canal Telephone Company	WA	Motorola	2004	R	PON	Triple play	√	ILEC
Horizon Chillicothe Telephone	OH	ADTRAN	2007		GPON	Triple play	√	ILEC
Horry Telephone Coop	SC	Motorola	2004	G	PON	Triple play		ILEC
Hotwire Communications	FL	Calix		G, O	GPON	Triple play and home automation		CLEC
Huxley Telephone	IA	Calix	2001	O, R	PON	Triple play		ILEC
iCornerstone	GA	Alloptic	2004	G	EPON	Triple play		CLEC
IdeaOne Telecom Group	ND	Calix	2002	O	PON	Triple play and business services		CLEC
Indiantown Telephone System	FL	Calix	2006	G	PON	Triple play		ILEC
Interstate Telecommunications Cooperative (was SS Telecom)	SD	Calix	2006	O, R	BPON, GPON	Triple play		ILEC
Jaguar Communications		Calix	2006	O	GPON	Triple play	√	CLEC
Kalida Telephone	OH	Calix			BPON			ILEC
Kaplan Telephone	LA	Calix	2005	R	GPON	Triple play		ILEC
Kerman Telephone Company	CA							ILEC
Knology	AL	Ericsson	2005	G, R		Triple play		CLEC

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LaHarpe Telephone	KS	Calix	2006	R	GPON	Triple play		ILEC
Laurel Highland Telephone Company	PA	Calix	2003	R	GPON	Triple play		ILEC
Lavalle Telephone Cooperative	WI	Occam Networks	2006	G	Active Ethernet	Triple play	√	ILEC
Lehigh Valley Cooperative Telephone Association	IA	Calix			BPON			ILEC
Lemonweir Valley Telephone	WI	Calix			BPON			ILEC
Lexcom	NC	Alloptic, Wave7 Optics	2007	R	RF PON, GePON	Triple play		ILEC
Liberty Communications	IA	Calix	2008	R	BPON	Triple play		ILEC
Lightnex Communications (formerly Vivid)		Calix	2002	G	BPON	Triple play		CLEC
Lincoln Telephone	MT	Calix			BPON			ILEC
LISCO	IA	Occam Networks	2005	O	Active Ethernet	Triple play	√	CLEC
Litestream Technologies	FL	Calix	2002	G	PON	Triple play and security		CLEC
Long Lines	NE	Wave7	2007	O	GePON	Triple play		ILEC
Lonsdale Telephone	MN	Calix			BPON			ILEC
Lost Nation-Elwood Telephone	IA	Calix			BPON			ILEC
Mabel Telephone Cooperative	MN	Pannaway	2006	R	PON	Triple play		ILEC
Mahaska Communications Group	IA	Calix	2004	O	PON	Triple play		CLEC
Matanuska Telephone	AK	Calix			BPON, GPON			ILEC
McClure Telephone Company	OH	Wave7 Optics	2006	R	GPON	Triple play	√	ILEC
McCook Cooperative	SD	Calix			BPON			ILEC
McDonough Telephone Cooperative	IL	Calix	2007	R	GPON	Triple play		ILEC
Medicine Park Telephone Company	OK							ILEC
Metrostat Communications	NC	Alloptic	2006	O	GePON	Voice, data		CLEC
Midstate Telephone	ND	Calix			GPON			ILEC
Midvale Telephone	AZ	Calix			BPON, GPON			ILEC
Minburn Telephone	IA	Calix		R	BPON, GPON	Triple play		ILEC
Minnesota Valley Telephone	MN	Calix			GPON			ILEC
Missouri Telephone	MO	Allied Telesis	2006	G	Active Ethernet	Triple play	ILEC	
Mokan Dial	KS	Calix			BPON			ILEC
Molalla Communications Company	OR	Calix	2004	G	GPON	Voice, data	ILEC	
Momentum	AL	Alcatel-Lucent	2007	G	GPON	Triple play and security		CLEC
Mosinee Telephone	WI	Calix			GPON			ILEC
Mountain View Telephone	AR	Calix			GPON			ILEC
Nehalem Telecommunications	OR	Calix			BPON, GPON			ILEC
Nemont Telephone Cooperative	MT	Calix	2006	R	BPON			ILEC
New Hope Telephone Cooperative	AL	Calix, Occam	2006	R	PON	Triple play	√	ILEC
New Knoxville Telephone Company	OH	Wave7	2004	R	EPON	Triple play		ILEC
Nortex Communications	TX	Calix	2007	R	BPON	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 State Communications	NC	Calix	2005	G	BPON, GPON	Voice, data		ILEC
Northeast Florida Telephone Company	FL	Calix	2005	G	GPON	Voice, data		ILEC

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Northwest Communications Cooperative	ND	Calix			BPON			ILEC
Nsight	WI	Pannaway	2003	G	Active Ethernet	Triple play		ILEC
NTELOS	VA	Alcatel-Lucent, Tellabs	2006	R	GPON	Triple play		ILEC
NTS Communications	TX	Calix	2003	G, O	GPON	Triple play	√	CLEC
Omnilec	IL	Calix			BPON			CLEC
Openband	VA, MD, DC	Calix	2005	O	PON	Triple play and security		CLEC
Oregon Telephone	OR	Calix	2006	R	BPON			ILEC
Orlando Telephone Company	FL	Wave7 Optics	2007	O	GePON	Triple play		CLEC
Oxford Networks	ME	Calix	2001	O, R	PON	Triple play		ILEC
Panora Cooperative Telephone Association (Guthrie Center)	IA	Calix	2002	O	PON	Triple play		ILEC
Parker FiberNet	GA	Occam	2006	R	PON	Voice, data, private line services		CLEC
Pathway Com-Tel	TX	Calix	1998	G	PON	Triple play		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	PON	Triple play		ILEC
Pembroke Telephone Company	GA	Calix	2004	G	GPON	Triple play	√	ILEC
Peñasco Valley Telecommunications	NM	Calix			GPON			ILEC
Pine Tree Networks	ME	Calix			BPON			ILEC
Pineland Telephone Cooperative	GA	Calix	2006		GPON	Triple play		ILEC
Pinnacle Communications	AR	Calix	2005	R	GPON	Triple play		ILEC
Pioneer Telephone Cooperative	OR	Calix			BPON			ILEC
Plant Telephone	GA	Calix			BPON			ILEC
Planters Telephone Company	GA	Calix	2006	G	BPON	Triple play		ILEC
Poka Lambro Telephone Company	TX	Calix	2005	O	GPON	Voice, data		ILEC
Prairie Grove Telephone Company	AR	Occam Networks	2007	R	Active Ethernet	Triple play		ILEC
Premier Communications	IA	Calix			BPON			ILEC
PrimeLink (Champlain Telephone Company)	NY	Calix, Alloptic	2002	O	GePON	Triple play		ILEC
Project Mutual Telephone Co-op	ID	Calix	2005	O?	GPON	Triple play		ILEC
Public Service Telephone Company	GA	Calix	2005	G	GPON	Triple play		ILEC
Randolph Telephone	NC	Calix	2005	G	BPON	Triple play		ILEC
Range Telephone Cooperative	MT	Calix		O	GPON	Triple play		ILEC
Red River Telephone	ND	Calix	2005	R	GPON	Voice, data		ILEC
Reliance Connects (Rio Virgin Telephone/Cascade Utilities)	NV	Calix			GPON	Triple play		ILEC
Richland-Grant Telephone Cooperative	WI	Occam Networks	2006	G	Active Ethernet	Triple play	√	ILEC
Ridgeville Telephone Company	OH	Wave7	2006	O	GePON	Triple play		ILEC
Ringgold Telephone	GA	Wave7	2004	G	EPON	Triple play		ILEC
Ritter Communications	AR	Pannaway	2006	G, O	Active Ethernet	Voice, data		ILEC
Roberts County Telephone Cooperative Association (RC Communications)	SD		2004			Triple play	√	ILEC

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Rochester Telephone Company	IN	Wave7	2002	R	PON	Triple play		ILEC
Rockwell Cooperative Telephone Association	IA	Pannaway	2007	R	GPON	Triple play		ILEC
Ronan Telephone	MT	Calix			BPON			ILEC
Royal Telephone Company	IA	Calix	2005	R	GPON	Triple play		ILEC
RT Communications	WY	Pannaway	2006	R	GPON	Voice, data		ILEC
Runestone Telephone Association	MN	Calix	2007	R	BPON	Triple play		ILEC
Rural Telephone (Nex-Tech)	KS	Calix	2001	O, R	PON, Active Ethernet	Triple play	√	ILEC
Rye Telephone Company	CO	Calix	2002	R	BPON	Triple play		ILEC
San Carlos Apache Telecom	AZ	Calix			BPON			ILEC
San Isabel Telecom	CO	Calix	2002	G	PON	Triple play		CLEC
Sandwich Isles Telecom	HI	Calix			BPON			ILEC
Santa Rosa Telephone Cooperative	TX	Calix	2005	O	GPON	Triple play		ILEC
Santel Communications	SD	Wave7	2005	O	EPON	Triple play	√	ILEC
Scio Mutual Telephone Association	OR	Calix	2004	R	GPON	Triple play		ILEC
Scott County Telephone Coop	VA	Wave7	2004	R	EPON	Triple play	√	ILEC
Shenandoah Telecommunications	VA, WV	Wave7, Motorola	2006	G	EPON	Triple play and security		ILEC
Sherwood Mutual Telephone Association	OH	Calix		R	PON	Triple play		ILEC
Sigecom/Wow	IN	Motorola, Occam Networks	2001	O	PON	Triple play		CLEC
Silver Star Communications	WY	Calix	2005	G	GPON	Triple play		ILEC
Siskiyou Telephone	CA			R				ILEC
Skyline Membership Corporation	NC	Allied Telesis, Calix	2004	R	PON	Triple play		ILEC
Smart City	FL	Calix		G	BPON, GPON	Triple play		ILEC
Smithville Telephone	IN	Calix			BPON			ILEC
South Central Communications	UT	Calix	2002	G	PON	Voice, data		ILEC
South Plains Telephone Cooperative	TX	Calix		G	BPON			ILEC
South Slope Cooperative Communications	IA	Calix		R	GPON	Triple play		ILEC
Southwest Michigan Communications	MI	Calix		O	BPON	Triple play		CLEC
Spring Grove Communications	MN		2007	R		Triple play		ILEC
Stratford Mutual Telephone Company	IA	Zhone Technologies	2005	R	PON	Triple play	√	ILEC
SureWest Communications	CA	Calix, Allied Telesis	2001	O,R,G	PON, Active Ethernet	Triple play		ILEC
T2 Communications	MI	Calix	2005	G, O	GPON	Triple play		CLEC
Taylor Telephone Cooperative	TX	Zhone Technologies	2007		GPON	Voice, data		ILEC
TDS Telecom	WI	Calix, Ericsson	2005		PON	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
Teton Telecom	ID	Calix	2004	G	GPON	Triple play		ILEC
Thacker-Grigsby Telephone	KY	Calix			BPON			ILEC
Toledo Telephone	WA	Calix	2006	O	BPON	Triple play		ILEC
Tri County Telephone	WY	Calix	2004	R	PON	Triple play		ILEC

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Triangle Telephone Cooperative	MT		2007	R		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 Valley Telephone	KS	Allied Telesis	2006	R, O	Active Ethernet and GePON	Triple play		ILEC
UBTA-UBET Communications	UT	Calix, Occam Networks	2007	G	BPON, Active Ethernet	Voice, data		ILEC
Union Springs Telephone	AL	Calix	2001	R	PON	Triple play		ILEC
Union Telephone	NH		2007	R				ILEC
United Telephone Company	TN	Calix	2004	G	GPON	Triple play		ILEC
United Telesystems	GA	Alcatel-Lucent	2003	O	BPON	Triple play		CLEC
US SONET	IL	Wave7	2003	O	PON	Triple play		CLEC
Valley Telecom Group	AZ	Wave7	2005	R	EPON	Triple play	√	ILEC
Valley Telephone Cooperative	TX	Pannaway	2007	G	GPON	Triple play		ILEC
Venture Communications Cooperative	SD	Calix	2006	R	GPON			ILEC
Vermont Telephone	VT	Calix	2007	R	BPON, GPON			ILEC
Wabash Mutual Telephone	OH	Wave7	2005	O	EPON	Triple play		ILEC
Waitsfield and Champlain Valley Telecom	VT	Pannaway	2007	G	Active Ethernet	Voice, data		ILEC
Wamego Telecommunications	KS	Calix	2002	R	PON	Triple play		ILEC
Warwick Valley Telephone Communications	NY	Pannaway	2006	O	Active Ethernet	Triple play		ILEC
Webster-Calhoun Cooperative Telephone Association	IA	Calix	2005	R	GPON	Triple play		ILEC
West Central Telephone	MN	Calix	2005	R	PON	Triple play		ILEC
West Plains Telecommunications	TX	Alloptic	2006		GePON			ILEC
West River Cooperative Telephone Company	SD	Calix	2007	R	GPON			ILEC
West Texas Rural Telephone Cooperative	TX		2007	O		Triple play		ILEC
West Wisconsin Telcom Cooperative	WI	Calix	2007	R	BPON			ILEC
Westel Fiber	ID			G		Triple play		CLEC
Westphalia Telephone	MI	Occam Networks	2006	O	Active Ethernet			ILEC
Wilkes Telephone & Electric	GA	Calix	2006	R	PON	Triple play		ILEC
Windstream Communications	AL, AR, FL, GA, KY, NE, NC, SC, TX	Calix	2006	G	BPON	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	Calix			BPON			ILEC
Wittenberg Telephone	WI	Calix			BPON			ILEC
Yadkin Valley Telecom	NC	Zhone Technologies	2007		GPON	Triple play		ILEC
Yucca Telecom	NM	Calix	2005	R	PON	Voice, data	√	ILEC
Zona Communications	AZ	Calix	2005	G	GPON	Voice, data	√	ILEC