

# Independent Telcos Continue Rolling Out Fiber

The latest update of our exclusive survey shows that smaller phone companies across the US – both incumbents and competitive providers – are embracing FTTP with enthusiasm.

By Masha Zager ■ *Telecom Editor, Broadband Properties*

## What Is an Independent Telco?

The “independent” part is easy enough to understand – independents are companies that aren’t Regional Bell Operating Companies, also known as 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 flexible 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, providers like Skype 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: Recently 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’re counting 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 or lease, or were not involved in building.

Independent telcos are the unsung heroes of the FTTP movement. Though few of them have received any publicity outside of their own service areas, they’ve been making significant investments in many new technologies including fiber to the home. Why are they so far ahead of the pack?

Several reasons: As small and agile companies, they often have more decision making flexibility than their larger counterparts. Many of them are cooperatives, and can consider community development needs instead of making decisions strictly “by the numbers.” They’ve benefited from the fact that FTTP technologies were ready to be implemented on a small scale before being ready to be implemented on a large scale. And finally, in some instances Universal Service Fund revenues as well as loans and grants from the USDA Rural Development program have provided crucial funding.

These companies’ motivations for building fiber networks vary enormously depending on their history, mission and present circumstances. Here are some of the reasons for building fiber that we’ve heard in our conversations with independents over the last several years:

- 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 in-

stall than copper but would be less costly to maintain and have a longer useful life.

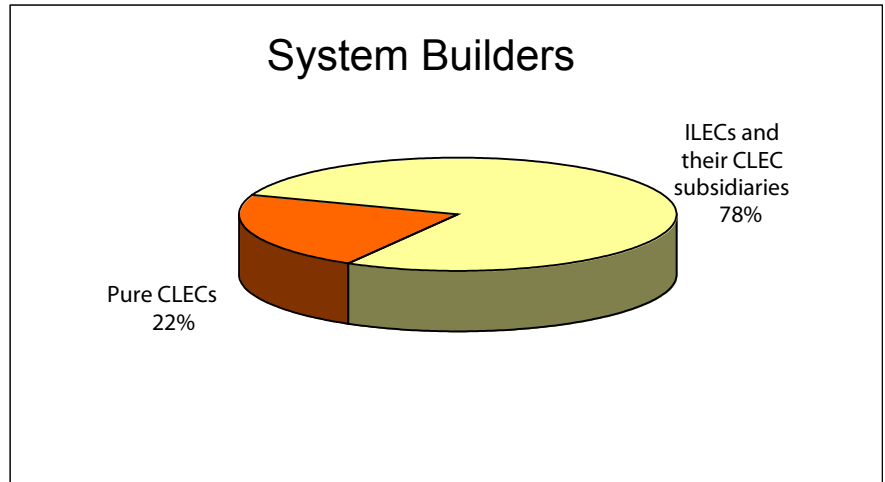
- They wanted to offer video and other advanced services, and decided that DSL had too many limitations.
- Their service areas were losing jobs and population, and they believed fiber would bring more economic opportunities.
- Their service areas were growing rapidly, and new residents moving in from metropolitan areas were attracted to fiber as an amenity.
- 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.

What's the overall trend for FTTP deployments by independent telcos? It's hard to know for sure on the basis of incomplete information. Our data suggests that the number of telcos embarking on fiber projects peaked in 2005 (even adjusting for partial-year data in 2007). But that doesn't tell the whole story.

First, it's likely that more FTTP builds go unreported today, simply because fiber is less remarkable than it was a few years ago. Second, the earliest telcos to build out fiber, with the exception of SureWest, were mostly small. More recently, larger telcos such as Windstream Communications have entered the field. And finally, many telcos started out with small pilot projects and have gone on to build fiber networks throughout their entire service areas or in multiple greenfield developments. Based on anecdotal evidence from our interviews with independent telcos, we feel that the number of homes that independent telcos are passing with fiber is continuing to increase every year.

## What the Numbers Show

### 1. Most of the independent telcos building fiber networks are incumbent providers or subsidiaries of incumbents.



**Fig 1. Independents usually build in their area of incumbency, but often expand into neighboring towns as CLECs.**

More than three quarters of the 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.

The remaining companies are pure CLECs (facilities-based competitive carriers) with no traditional geographic base. These companies seek out promising territories to overbuild with fiber. Some 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 and 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 Com-

munications, 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 aspire to deliver the "triple play" of voice, data and video services.

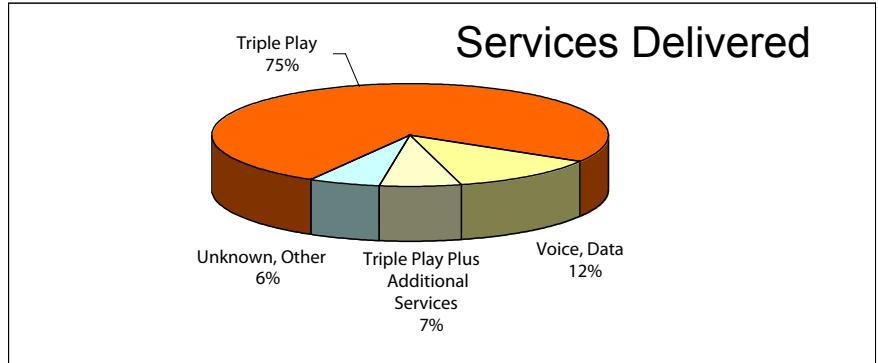
Fiber's bandwidth enables the delivery of "Telco TV," and companies are taking full advantage of it; video is often a motivating factor for the fiber buildout. For many of these companies, however, video is nothing new – unlike the RBOCs, independent telcos often manage cable TV networks alongside their telephone networks. Some have been doing it for a decade or more. By deploying fiber to the home, they can merge the two, reducing network management costs while expanding their video offerings.

Our data actually understates the prevalence of video. Officials at many 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 security monitoring. Gaming, video messaging

## Independent Telcos Deploying FTTP

State	Number of Telcos
TX	19
IA	14
GA	13
MN	13
OH	10
AL	7
KS	7
NC	7
OR	7
IN	6
SC	6
WI	6
FL	5
MI	5
ND	5
AR	4
CA	4
CO	4
ID	4
IL	4
MO	4
AZ	3
KY	3
LA	3
MT	3
NE	3
NM	3
NY	3
SD	3
UT	3
WY	3
OK	2
PA	2
TN	2
WA	2
WV	2
DC	1
HI	1
MD	1
ME	1
MS	1
NV	1
PR	1
VA	1



**Fig 2. Most providers are planning to offer video over their FTTH networks. The “triple play” has become standard.**

and business applications are also being offered by some telcos.

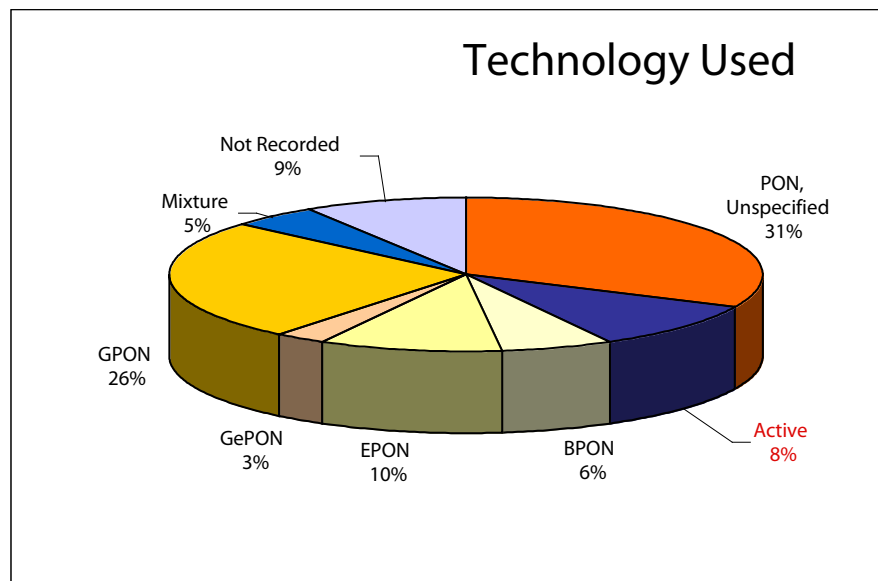
In the last year, more FTTP announcements have mentioned all-IP networks. As mentioned in the sidebar, VoIP is increasingly used in place of traditional switched telephony; in addition, IPTV is beginning to displace RF video. Video-on-demand is also becoming an important aspect of video service – complementary 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 early EPON and one Active Ethernet system. Today, while passive networking remains by far the most popular choice, at least 23 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



**Fig 3. Passive optical networks are far more common than active networks, but active is gaining in popularity. Gigabit PON is also replacing older, slower standards.**

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, told us that it analyzes each new development separately and decides what technology is most suitable. Another factor encouraging the use of multiple access technologies is that they can now often be combined in a single piece of equipment.

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

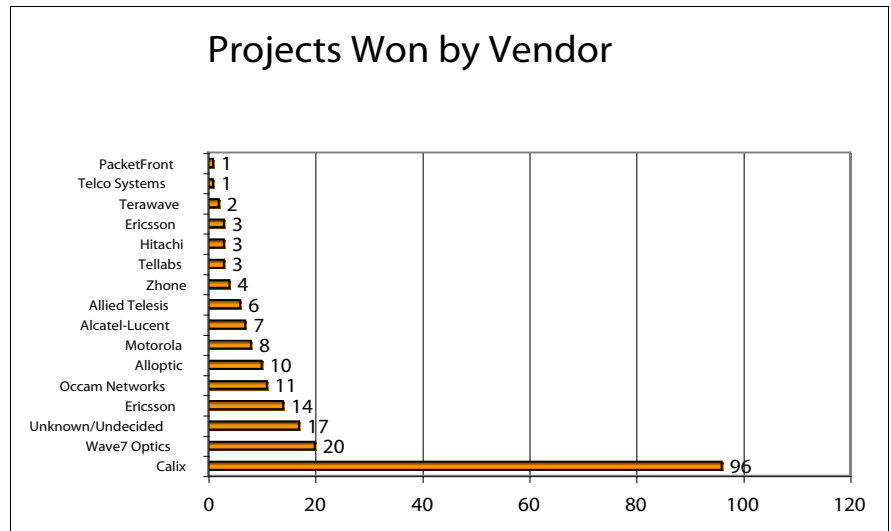
When independent telcos first began deploying fiber, virtually all of them used FTTP electronics from Optical Solutions, Inc. Last year OSI was bought by Calix, which has maintained its lead in this market. More than half of the telcos on our list use at least some Calix equipment, and there is some reason to believe the true percentage may be even higher.

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. More than half of the telcos on the list have bought equipment from electronics vendors other than Calix. Wave7 Optics has a sizable market share, and Pannaway's acquisition of TelStrat's access division creates another strong competitor. (TelStrat and Pannaway have been combined for the purposes of this list.)

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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**Fig 4. While Calix is still the leading vendor in this market, other vendors are gaining ground.**

### About the List: Email Us Your Info

For the last two years, Broadband Properties has been keeping a list of fiber-to-the-premises deployments by independent telephone companies. We've published the list at irregular intervals – this is its fifth iteration – and later this year we plan to begin maintaining it on [www.broadband-properties.com](http://www.broadband-properties.com) so that readers can have access to information as we update it.

Although we've gathered information from as many sources as we can, we know the list is not complete. Some telcos are reticent about publicizing their ventures into FTTP; other projects may simply not have come to our attention at all. To add to the list or to correct any information, please contact [masha@broadbandproperties.com](mailto:masha@broadbandproperties.com).

## Independent Telcos Installing Fiber to the Premises

The table below is our latest compilation of independent telcos that have constructed, or are in the process of constructing, FTTP systems. Some of the companies identified as ILECs are installing FTTP through their CLEC subsidiaries. Where possible, the names of telcos and vendors have been updated to reflect acquisitions and name changes since the original announcements. Is your system missing? E-mail us at [masha@broadbandproperties.com](mailto:masha@broadbandproperties.com) and give us the details.

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/Replace
3 Rivers Communications	MT	Calix, Pannaway, Occam Networks	2006	
Accipiter Communications	AZ	Calix	2005	G
Albany Mutual Telephone Association	MN	Pannaway	2006	R
Alenco Communications (Pathway Com-Tel)	TX	Calix	2002	O
All West Communications	UT	Calix	2004	O
Allband Communications Cooperative	MI	Calix	2005	G
Allendale Communications	MI	Pannaway	2005	G
Alma Communications	MO	Pannaway	2006	R
Alpine Communications	IA	Occam Networks	2007	R
Arvig Communications (East Otter Tail)	MN	Calix	1995	R, G
Astound Broadband	CA	Alloptic	2004	R
ATMC	NC	Motorola	2005	G
Baldwin Telecom	WI	Calix	2002	G
Bascom Mutual Telephone Company	OH	Calix	2003	O
BEK Communications	ND	Calix	2004	R
Ben Lomand Telephone Co-op	TN	Occam Networks	2006	R
Benton Cooperative Telephone Company (Milaca Local Link)	MN	Calix, Alloptic	2005	G
Big Bend Telephone	TX	Calix, Pannaway	2005	R
Bixby Telephone	OK	Calix	2005	G
Blue Valley Tele-Communications	KS	Tellabs	2007	R
Border to Border Communications	TX	Calix, Alloptic	2004	R
Brantley Telephone	GA		2007	R
BroadStar	NC	Various	2005	G
Broadweave Networks	UT	Telco Systems	2005	G
Buckeye Telesystem	OH	Calix	2006	O
Buckland Telephone Company	OH	Calix	2005	R
Bulloch Telephone Cooperative	GA	Motorola	2005	R
Cal-Ore Communications	OR	Calix	2005	G
Cambridge Telephone	ID	Calix	2005	R

	<b>Technology</b>	<b>Partnerships</b>	<b>Services</b>	<b>USDA Rural Development loan</b>	<b>ILEC/CLEC</b>	<b>Potential subscribers</b>
	PON, Active Ethernet		Triple play		ILEC	500
	PON		Voice, data	√	CLEC	
	Active Ethernet		Triple play		ILEC	3000
	PON		Triple play		ILEC	
	GPON		Triple play		ILEC	2500
	GPON		Triple play	√	ILEC	300
	Active Ethernet		Triple play		ILEC	3000
	GPON		Triple play		ILEC	350
	Active Ethernet		Voice, data		ILEC	1600
	PON		Triple play		ILEC	
	EPON		Voice, data		CLEC	Businesses
	BPON	DR Horton and others	Triple play		ILEC	7500
	PON		Triple play	√	ILEC	
	BPON		Triple play		ILEC	
	GPON		Voice, data		ILEC	
	Active Ethernet		Triple play		ILEC	
	GPON, GePON		Triple play		ILEC	
	GPON		Triple play		ILEC	
	BPON		Triple play		ILEC	
	GPON		Triple play		ILEC	
	BPON, GePON		Triple play	√	ILEC	100
			Triple play		ILEC	
	Various	Developers	Triple play and security		CLEC	~10 greenfield communities
	Active Ethernet	Mountain Home Development	Triple play and gaming		CLEC	8000 homes + offices
	PON		Voice, data		CLEC	Businesses
	GPON		Triple play		ILEC	
	PON		Triple play		ILEC	10,000
	GPON		Triple play		ILEC	
	BPON		Triple play		ILEC	

## INDEPENDENT TELCOS

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/ Replace
Cameron Communications	LA	Calix	2004	R
Canby Telcom	OR	Calix	2006	G
Cap Rock Telephone Cooperative	TX	Calix	2005	G
CC Communications	NV	Wave7	2004	R, G
Centennial de Puerto Rico	PR	Occam Networks	2007	R
Central Texas Technologies	TX	Alloptic	2002	G
CenturyTel	AL, CO, MI, MO, WI	Calix		
Chariton Valley Telecom Corporation	MO	Wave7	2003	R, O
Chibardun Telephone Cooperative	WI		2007	R
Cinergy MetroNet	IN	Alcatel-Lucent	2005	O
Citizens Telephone Company of Kecksburg	PA	Calix	2005	R
Citizens Telephone Cooperative	VA	Calix	2004	R
Colo Telephone Company	IA	Calix	2005	R
Columbus Telephone Company	KS	Wave7	2004	R
Comporium Communications	SC	Wave7	2004	G
ComSouth Telecommunications	GA	Calix, Motorola	2005	R, G
ComSpan USA	OR	Hitachi	2005	O
Consolidated Communications Inc.	IL, TX	Zhone Technologies	2007	
Consolidated Telecommunications Company	MN	Calix	2005	O
Cooperative Telephone Exchange	IA	Occam Networks	2006	R
Craigville Telephone Company	IN	Calix	2006	O
CSS Communications	WA	Alloptic	2003	R
Custer Telephone Cooperative	ID	Calix	2006	R
Dakota Central Telecom	ND	Calix	2002	R, O
Dickey Rural Networks	ND	Calix	2004	R
Dumont Telephone Company	IA	Hitachi	2006	R
EasyTel Communications	OK	Calix	2005	O
EATEL	LA	Alcatel-Lucent	2004	R, G
Elkhart Telephone	KS	Wave7	2005	R
Enhanced Telecommunications Corporation	IN	Calix	2004	O
ENMR-Plateau Telecommunications	NM	Calix	2003	R
En-Touch Systems	TX	Wave7	2006	G

Technology	Partnerships	Services	USDA Rural Development loan	ILEC/CLEC	Potential subscribers
GPON		Triple play		ILEC	1600
PON		Triple play		ILEC	
GPON		Triple play		ILEC	500
EPON		Triple play		ILEC	13000
Active Ethernet		Voice, data		CLEC	Businesses
EPON		Triple play		CLEC	
PON				ILEC	
PON		Triple play		ILEC	
		Triple play		ILEC	
BPON		Triple play	√	CLEC	75000 (11 communities)
PON		Triple play		ILEC	
PON		Triple play		ILEC	
GPON		Triple play	√	ILEC	386
EPON		Triple play		ILEC	3400
EPON		Triple play		ILEC	large
PON		Triple play		ILEC	
GPON	Acquired by Leducor Technical Services	Triple play		CLEC	
GPON		Triple play		ILEC	
GPON		Triple play		ILEC	15,000
Active Ethernet		Triple play	√	ILEC	500
PON		Triple play		ILEC	
EPON	Partners with several municipalities	Triple play		CLEC	
PON		Triple play		ILEC	
PON		Triple play	√	ILEC	17000 (residents)
GPON		Triple play		ILEC	
GPON		Triple play		ILEC	100
PON		Triple play		CLEC	Businesses
BPON		Triple play and video messaging		ILEC	
EPON		Triple play		ILEC	1400
PON		Triple play		ILEC	2000
PON		Voice, data		ILEC	
EPON		Triple play and security		CLEC	28,000



## INDEPENDENT TELCOS

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/ Replace
Etex Telephone Cooperative	TX	Calix, Pannaway	2002	O
Falcon Broadband	CO	Wave7, Hitachi	2005	G
FEC Communications	TX	Calix	2006	G
Federated Telephone	MN	Calix	1996	O, R
Fiber 520-522 LLC	IL		2006	O
Foothills Rural Telephone Coop	KY	Alcatel-Lucent	2004	R, G
Fort Jennings Telephone Company	OH	Calix	2004	O, R
FTTH Communications	MN	Calix	2004	G
Gardonville Cooperative Telephone Association	MN		2007	R
Gervais Telephone	OR	Calix	2001	O
Golden West Telephone Company	SD		2004	R
Goldfield Telephone Company	IA		2007	O,R
Graceba Total Communications	AL	Wave7	2007	G, R, O
Grand Mound Cooperative Telephone Association	IA	Calix	2006	O, R
Grande Communications	TX	Ericsson	2005	O
Great Plains Communications	NE	Pannaway	2007	G, R
Greenfield Communications	AZ, CA	Calix	2005	G
Guadalupe Valley Telecommunications Cooperative	TX	Calix	2004	G, R
Hancock Telecom	IN	Wave7	2004	G
Hargray Communications	SC	Alloptic	2004	G
Hawaiian Telecom	HI	Alcatel-Lucent	2006	G, R
Hiawatha Broadband	MN	Calix	2005	O
Highland Telephone Cooperative	VA	Pannaway	2007	
Home Telephone	SC	Calix	2001	G
Home Town Telephone (Home Town Cable Plus)	FL	Calix	2004	G
Hood Canal Telephone Company	WA	Motorola	2004	R
Horry Telephone Coop	SC	Motorola	2004	G
Huxley Telephone	IA	Calix	2001	O, R
iCornerstone	GA	Alloptic	2004	G
IdeaOne Telecom Group	ND	Calix	2002	O
Indiantown Telephone System	FL	Calix	2006	G

	Technology	Partnerships	Services	USDA Rural Development loan	ILEC/CLEC	Potential subscribers
	PON, Active Ethernet		Voice, data		ILEC	
	EPON, GPON	Partners with several developers	Triple play		CLEC	22,000
	PON				CLEC	
	PON		Triple play		ILEC	
			Triple play	√	CLEC	34,000
	BPON		Triple play and video messaging	√	ILEC	
	GPON		Triple play		ILEC	
	GPON	CPDC	Triple play		CLEC	
					ILEC	
	PON		Triple play		ILEC	
			Voice, data		ILEC	
			Triple play	√	ILEC	4,000
	EPON		Triple play and business applications		ILEC	1,500
	PON				ILEC	
	PON		Triple play		CLEC	23000
	GPON		Voice, data		ILEC	800 in Phase 1
	GPON	Partners with several developers	Triple play		CLEC	75,000 in 17 communities
	GPON		Triple play and security		ILEC	
	EPON		Triple play		ILEC	3000
	EPON	Crescent Resources	Triple play		ILEC	resort
	GPON	Developers	Triple play		ILEC	
	PON		Triple play		CLEC	1,200
	GPON		Triple play		ILEC	1,600 in Phase 1
	PON		Triple play		ILEC	
	PON		Triple play and security		CLEC	25,000
	PON		Triple play	√	ILEC	
	PON	Burroughs & Chapin	Triple play		ILEC	2100
	PON		Triple play		ILEC	
	EPON	Owned by developer	Triple play		CLEC	
	PON		Triple play and business services		CLEC	
	PON				ILEC	

## INDEPENDENT TELCOS

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/ Replace
Jaguar Communications	MN		2006	O
Kaplan Telephone	LA		2005	R
Knology	AL	Ericsson	2005	G, R
LaHarpe Telephone	KS	Calix	2006	R
Laurel Highland Telephone Company	PA	Calix	2003	R
Lavalle Telephone Cooperative	WI	Occam Networks	2006	G
LISCO	IA	Occam Networks	2005	O
Litestream Technologies	FL	Calix	2002	G
Long Lines	NE	Wave7	2007	O
Mabel Telephone Cooperative	MN	Pannaway	2006	R
Mahaska Communications Group	IA	Calix	2004	O
McClure Telephone Company	OH		2006	R
McDonough Telephone Cooperative	IL	Calix	2007	R
Metrostat Communications	NC	Alloptic	2006	O
Missouri Telephone	MO	Allied Telesis	2006	G
Molalla Communications Company	OR	Calix	2004	G
Momentum	AL	Alcatel-Lucent	2007	G
Monticello Wayne County Telecommunications Board	KY		2006	R
New Hope Telephone Cooperative	AL	Calix	2006	R
New Knoxville Telephone Company	OH	Wave7	2004	R
North Dakota Telephone Company	ND	Allied Telesis	2005	R
Northeast Florida Communication	FL	Calix	2005	G
NTELOS	VA	Alcatel-Lucent, Tellabs	2006	R
NTS Communications	TX	Calix	2003	G, O
Openband	VA, MD, DC	Calix	2005	O
Oxford Networks	ME	Calix	2003	O
Panora Cooperative Telephone Association	IA	Calix	2002	O
Parker FiberNet	GA	Terawave	2006	R
Pathway Com-Tel	TX	Calix	1998	G
Paul Bunyan Rural Telephone Cooperative	MN	Calix, Allied Telesis	2004	O, R
PAXIO	CA	PacketFront	2004	G, O
PBT Telecom	SC	Motorola	2005	G

Technology	Partnerships	Services	USDA Rural Development loan	ILEC/CLEC	Potential subscribers
		Triple play	√	CLEC	6000
		Triple play		ILEC	
		Triple play		CLEC	2400
GPON		Triple play		ILEC	500
GPON		Triple play		ILEC	5400
Active Ethernet		Triple play	√	ILEC	
Active Ethernet		Triple play	√	CLEC	4000
PON		Triple play and security		CLEC	
GePON		Triple play		ILEC	
PON		Triple play		ILEC	1800
PON		Triple play		CLEC	
		Triple play	√	ILEC	800
GPON		Triple play		ILEC	80 (pilot project)
GePON		Voice, data		CLEC	Businesses
Active Ethernet		Triple play		ILEC	1000
GPON		Voice, data		ILEC	100
GPON	Developers	Triple play and security		CLEC	2000
		Triple play	√	MUNI	2,000
PON		Triple play	√	ILEC	
EPON		Triple play		ILEC	1000
Active Ethernet		Triple play		ILEC	
GPON		Voice, data		ILEC	~400
GPON		Triple play		ILEC	
GPON		Triple play		CLEC	40,000
PON		Triple play and security		CLEC	
PON		Triple play		ILEC	~6000
PON		Triple play		ILEC	
PON		Voice, data, private line services		CLEC	Businesses
PON		Triple play		CLEC	
GPON, EPON, Active Ethernet		Triple play	√	ILEC	7500
Active Ethernet	Pulte Homes, AboveNet	Voice, data		CLEC	
PON		Triple play		ILEC	

## INDEPENDENT TELCOS

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/ Replace
Pembroke Telephone Company	GA	Calix	2004	G
Pineland Telephone Cooperative	GA		2006	
Pinnacle Communications	AR	Calix	2005	R
Planters Telephone Company	GA	Calix	2006	G
Poka Lambro Telephone Company	TX	Calix	2005	O
Prairie Grove Telephone Company	AR	Occam Networks	2007	R
PrimeLink (Champlain Telephone Company)	NY	Calix, Alloptic	2002	O
Project Mutual Telephone Co-op	ID	Calix	2005	O?
Public Service Telephone Company	GA	Calix	2005	G
Randolph Telephone	NC	Calix	2005	G
Richland-Grant Telephone Cooperative	WI	Occam Networks	2006	G
Ridgeville Telephone Company	OH	Wave7	2006	O
Ringgold Telephone	GA	Wave7	2004	G
Ritter Communications	AR	Pannaway	2006	G, O
Rochester Telephone Company	IN	Wave7	2002	R
Rockwell Cooperative Telephone Association	IA	Pannaway	2007	R
Royal Telephone Company	IA	Calix	2005	R
RT Communications	WY	Pannaway	2006	R
Runestone Telephone Association	MN	Calix	2007	R
Rural Telephone (Nex-Tech)	KS	Calix	2001	O
Rye Telephone Company	CO	Calix	2002	R
San Isabel Telecom	CO	Calix	2002	G
Santa Rosa Telephone Cooperative	TX	Calix	2005	O
Santel Communications	SD	Wave7	2005	O
Scio Mutual Telephone Association	OR	Calix	2004	R
Scott County Telephone Coop	VA	Wave7	2004	R
Shenandoah Telecommunications	VA, WV	Wave7, Motorola	2006	G
Sherwood Mutual Telephone Association	OH	Calix	2005	R
Sigecom/Wow	IN	Motorola, Terawave	2001	O
Silver Star Communications	WY	Calix	2005	G
Skyline Membership Corporation	NC	Allied Telesis, Calix	2004	R
South Central Communications	UT	Calix	2002	G
Stratford Mutual Telephone Company	IA	Zhone Technologies	2005	R
SureWest Communications	CA	Calix, Allied Telesis	2001	O,R,G
T2 Communications	MI		2005	G, O

Technology	Partnerships	Services	USDA Rural Development loan	ILEC/CLEC	Potential subscribers
GPON		Triple play	√	ILEC	~300
PON		Triple play		ILEC	
GPON		Triple play		ILEC	1800
BPON		Triple play		ILEC	
GPON		Voice, data		ILEC	1700
Active Ethernet		Triple play		ILEC	10,000
GePON		Triple play		ILEC	
GPON		Triple play		ILEC	38000
GPON		Triple play		ILEC	
BPON		Triple play		ILEC	
Active Ethernet		Triple play	√	ILEC	
GePON		Triple play		ILEC	
EPON		Triple play		ILEC	
Active Ethernet		Voice, data		ILEC	Businesses
PON		Triple play		ILEC	6000
GPON		Triple play		ILEC	500
GPON		Triple play		ILEC	325
GPON		Voice, data		ILEC	
BPON		Triple play		ILEC	5000
PON		Triple play		ILEC	
PON		Triple play		ILEC	2000
PON		Triple play		CLEC	3000
GPON		Triple play		ILEC	
EPON		Triple play	√	ILEC	15000
GPON		Triple play		ILEC	200
EPON		Triple play	√	ILEC	
EPON	RCMS/Legacy Homes	Triple play and security		ILEC	1000
PON		Triple play		ILEC	
PON		Triple play		CLEC	88000
GPON		Triple play		ILEC	1500
PON		Triple play		ILEC	
PON		Voice, data		ILEC	
PON		Triple play	√	ILEC	
PON, Active Ethernet	Pulte Homes	Triple play		ILEC	90000
		Triple play		CLEC	

## INDEPENDENT TELCOS

Company	State	Primary Vendor (for electronics)	Announced or Started	Greenfield/Overbuild/ Replace
Taylor Telephone Cooperative	TX	Zhone Technologies	2007	
TDS Telecom	WI	Calix, Ericsson	2005	
Tech Valley Communications	NY	Calix	2006	O
TelAtlantic	WV	Tellabs	2006	G
Telepak Networks	MS	Calix	2005	O
Teton Telecom	ID	Calix	2004	G
Tri County Telephone	WY	Calix	2004	R
Triangle Telephone Cooperative	MT		2007	R
TSC	OH	Calix	2003	O
Tularosa Basin Telephone Company	NM	Occam Networks	2006	R
Twin Valley Telephone	KS	Allied Telesis	2006	R
Union Springs Telephone	AL	Calix	2001	R
United Telephone Company	TN	Calix	2004	G
United Telesystems	GA	Alcatel-Lucent	2003	O
US SONET	IL	Wave7	2003	O
Valley Telecom Group	AZ	Wave7	2005	R
Venture Communications Cooperative	SD		2006	R
Vivid Networks	MT	Calix	2002	G
Wabash Mutual Telephone	OH	Wave7	2005	O
Waitsfield and Champlain Valley Telecom	VT	Pannaway	2007	G
Wamego Telecommunications	KS	Calix	2002	R
Warwick Valley Telephone Communications	NY	Pannaway	2006	O
Webster-Calhoun Cooperative Telephone Association	IA		2005	R
West Central Telephone	MN	Calix	2005	R
West Plains Telecommunications	TX	Alloptic	2006	
West Texas Rural Telephone Cooperative	TX		2007	O
Westphalia Telephone	MI	Occam Networks	2006	O
Wilkes Telephone & Electric	GA	Calix	2006	R
Windstream Communications	AL, AR, FL, GA, KY, NE, NC, SC, TX		2006	G
Windwave Communications	OR	Calix	2004	O
Yadkin Valley Telecom	NC	Zhone Technologies	2007	
Yucca Telecom	NM	Calix	2005	R

	Technology	Partnerships	Services	USDA Rural Development loan	ILEC/CLEC	Potential subscribers
	GPON		Voice, data		ILEC	
	PON		Triple play		ILEC	
	GPON		Voice, data		CLEC	Businesses
	BPON		Triple play		ILEC	
	GPON		Triple play		ILEC	~3000
	GPON		Triple play		ILEC	
	PON		Triple play		ILEC	
					ILEC	
	GPON		Triple play		ILEC	8500
	Active Ethernet		Triple play	√	ILEC	3,000
	Active Ethernet and GePON		Triple play		ILEC	7400 (includes some ASDL2)
	PON		Triple play		ILEC	1750
	GPON		Triple play		ILEC	2000
	BPON		Triple play		CLEC	
	PON		Triple play		CLEC	
	EPON		Triple play	√	ILEC	7000
					ILEC	
	PON	Big Sky Communications and Cable	Triple play		CLEC	
	EPON		Triple play		ILEC	
	Active Ethernet		Voice, data		ILEC	
	PON		Triple play		ILEC	
	Active Ethernet		Triple play		ILEC	
					ILEC	
	PON		Triple play		ILEC	
	GePON				ILEC	
			Triple play		ILEC	
	Active Ethernet				ILEC	
	PON		Triple play		ILEC	
			Voice, data		ILEC	24,000
	PON		Triple play		CLEC	
	GPON		Triple play		ILEC	
	PON		Voice, data	√	ILEC	