Best Practices: Building a Fiber Network in a Rural Community

Advice on technology, marketing and overall business strategy from one who's done it

By Ashley Phillips ■ *EATEL*

About ten years ago, Ascension Parish in southern Louisiana began to change. What was once a predominantly farming area developed into an attractive bedroom community for Baton Rouge, Louisiana's state capital. Young families from the Baton Rouge area moved into the region, attracted by the low crime rate and top-rated public schools.

By 2003, the parish's population reached 81,000, with an average household income of $44,288. In late 2005 and early 2006, due to the dislocations caused by Hurricane Katrina, the population jumped again to 97,000, making Ascension Parish the fastest-growing parish in Louisiana.

By now, some of the newly built-out areas have a population density roughly half that of suburban areas. These areas have a significant number of businesses that desire extra bandwidth, as well as sophisticated residents who are likely to use multiple communications services.

As the local telephone provider for the part of Ascension Parish that lies east of the Mississippi, as well as for a portion of neighboring Livingston Parish, EATEL decided to meet this new demand for services by building a fiber-to-the-home (FTTH) network, the first sections of which became operational in 2005.

Following is a discussion of the issues we considered in developing our plan.

Revenue

There are three market drivers in a FTTH network build-out: revenue, cost and competition. Any company building a new network needs a plan for generating enough revenue to recoup the build-out costs. To estimate revenues, you first need to know how many customers will be in the service area and where they will be located. Before we started our project, EATEL conducted research on the number of building permits and where they were being issued. We saw that the steady pace of growth – 1,800 greenfield lots per year throughout our entire service area – had increased in late 2005.

To forecast revenues, companies must also decide which services are profitable and marketable, and which ones they will provide over the new network. Fiber optic networks, with their immense capacity, can deliver multiple revenue-generating services to each customer. They also have a cash-flow advantage over other broadband technologies because you can wait to deploy electronics in the field until there is a subscriber revenue stream to support it. But to make sure your offerings will be profitable, you should conduct preliminary research to determine that the services you plan to offer will be desired by a majority of business and residential subscribers.

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In our blind telephone surveys, EATEL found that residents in our service area had a high level of interest in triple-play services (telephone, broadband Internet and television) and that the great majority trusted the local telephone company to deliver television services. We also reviewed industry research suggesting that there would be a high demand for high-definition television. Based on our findings, we decided to deploy – in addition to voice and high-speed Internet – standard and high-definition television, video on demand and digital video recording. In the near future, we plan to launch a TV-based telephone messaging system.

In evaluating the potential revenues from fiber, it's important to compare them with potential revenues from a copper infrastructure. EATEL had already deployed DSL to 93 percent of the service area, and we considered delivering television over DSL, as many companies are now doing. But we decided that FTTH would be a better choice largely because it can deliver more high-definition channels.

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MLS Residential Statistics for 2005 – Ascension Parish

Month	Units Sold	Units Sold YTD
January	90	90
February	99	189
March	157	346
April	136	482
May	156	638
June	194	832
July	166	998
August	144	1142
September	362	1504
October	262	1766
November	142	1908
December	148	2056

* Highlighted areas represent post-Katrina growth.

MLS Residential Statistics for 2006 – Ascension Parish

Month	Units Sold	Units Sold YTD
January	155	155
February	150	305
March	188	493
April	158	651
May	221	872
June	218	1090
July	184	1274
August	207	1481

MLS Residential Statistics for 2005 – Livingston Parish

Month	Units Sold	Units Sold YTD
January	63	63
February	98	161
March	111	272
April	123	395
May	148	543
June	159	702
July	167	869
August	87	956
September	245	1201
October	219	1420
November	137	1557
December	140	1697

* Highlighted areas represent post-Katrina growth.

MLS Residential Statistics for 2006 – Livingston Parish

Month	Units Sold	Units Sold YTD
January	155	155
February	134	289
March	179	468
April	128	596
May	167	763
June	144	907
July	135	1042
August	130	1172

New Home Starts - Permits issued in Ascension and Livingston Parishes

	Ascension		Livingston	
Month	2005	2006	2005	2006
January	124	122	64	124
February	71	173	96	116
March	139	184	95	224
April	90	122	115	193
May	110	151	94	140
June	117	140	94	133
July	103	150	92	136
August	111	122	114	219
September	248		144	
October	155		93	
November	153		104	
December	101		99	
TOTAL	**1,522**	**1,164**	**1,204**	**1,285**

[Sources: Greater Baton Rouge Association of REALTORS, Real Estate Research Institute of Louisiana State, Capital Region Builders Association]

A large part of construction cost involves laying fiber cables, and in order to develop a cost estimate you need to decide whether you will build aerial, underground or hybrid plant. Although it is more expensive to go underground, South Louisiana is in a hurricane-prone area and the ground is soft; therefore, EATEL's decision to put most lines underground was not a difficult one. Approximately 70 percent of the build-out is underground and 30 percent aerial.

that FTTH would be a better choice largely because it can deliver more high-definition channels. In general, as the prices of new bandwidth-intensive products decrease, consumers will quickly begin to adopt those products into their homes and businesses. Because the new technology is beginning to put significant strains on the old copper system, the time will come when copper will no longer offer the benefits readily available with a "future-proof" FTTH installation – regardless of how rural an area is being served.

Cost and Operational Issues

Once you decide what services will be offered over the new network, you can select a vendor. It is important to use care in choosing the right vendor. Research the vendor's reputation and verify the promises they are making. Find out their level of service, reliability and cost.

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Hurricanes aren't the only reason to place fiber underground. For aesthetic reasons, most developers and prospective residents want utilities buried in new construction areas. Fiber installers also prefer buried networks because digging trenches is less hazardous and burdensome than climbing poles.

You can minimize the cost of cabling by planning ahead. Since incumbent phone companies are obligated to build out infrastructure in their service areas, EATEL made a decision early on to plan for the fiber future. About 12 years ago, we began adding an extra duct for fiber when putting in new phone services. By the time we started building the fiber

network, about half of our service area had these extra ducts, and we only had to blow the fiber through them.

Being prepared for fiber allowed us to build out the network quickly and inexpensively. Not having to dig trenches was also more convenient for the customer. In many cases, we only needed to dig around the pedestal to pull the fiber through, so that the appearance of the homeowner's yard was back to normal by the time they returned from work.

Labor is the biggest expenditure in a FTTH network build-out. Although contractors did much of the build, we had to train our own installation, repair and central office teams to work with this new technology and get them fiber certified. We also had to train staff to deal with customers.

A strategic part of making FTTH accepted and successful in the market is streamlining the installation process on the customer premises end by making the installation a hands-on customer experience. Installers no longer just enter a home and connect services. The "new brand" of fiber-certified technicians educates the customer about the full capabilities of the fiber technology. They make certain all televisions and computers are fully optimized for the new service and that the customer knows how to use features like high-definition TV and video on demand.

In order to add experience and depth in customer service and the field staff, the human resources department developed new job descriptions for high-level customer service personnel, technicians and engineers. We were able to get training from vendors and develop in-house expertise so that we could meet our customers' expectations for service.

Well-trained staff will also help market the new services. Don't expect the "build it and they will come" effect; you'll have to allocate marketing dollars every year to educate potential customers about fiber optic technology and tell them what they can do with each of the services provided. Sales teams will need new sales materials and must be educated about the product's features and benefits. In fact, everyone in the company, from installers and sales staff to engineers and customer service reps, should receive demonstrations of new products and services and ongoing training.

Major EATEL Vendors:

Alcatel	Fiber electronics and ONTs	www.alcatel.com
Scientific Atlanta (A Cisco Company)	Headend and set-top boxes	www.scientificatlanta.com
ADC	Some of the fiber cabling, crossboxes and racking equipment	www.adc.com
Charles Industries	Pedestals	www.charlesindustries.com

Decreasing costs can also be realized by employing experienced network installers and project management and utilizing innovative installation techniques that reduce labor requirements – for example, just-in-time staging to optimize the time it takes to install new lines.

As EATEL worked through the initial problems, challenges and successes that we encountered in the first installs, the build-out team developed an efficient punchlist for both residential and business customers.

Beta testing and engineer testing of new products and services should be factored into product rollout decisions. EATEL has found it useful to launch new products to employees and "friendlies" for three months prior to public launch. Employees try out the new products at their homes or, if fiber hasn't been installed in their neighborhoods yet, at the office.

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Future cost savings should also be taken into account. Although their initial installation costs are higher, FTTH networks require less maintenance over the long term, so that costs associated with field activities should decrease.

Through this process, all departments, from engineering to marketing and customer service, now work together to provide the best customer experience.

We also created new contractor service agreements with landscaping companies, plumbers, painters and builders in the event that the build-out or installation disrupted anything on the residential or business property.

Competition

Even in a rural area, a local telephone company may face competition from cable, satellite, Internet and wireless providers, as well as from competitive telcos. The first question a company should ask is, "How vulnerable are we in a rural service area if we don't build a fiber network?"

Pay attention to what's going on in the community and region, and don't wait for the bleeding to start. Are the competitor's local offices closing and the infrastructure becoming more regionalized? Has their customer billing address changed? Is the consumer advertising campaign consistent between markets? Where are their service trucks situated each week? Don't rely on company Web sites to learn what your competitor is doing. Create strong relationships with builders and developers and with real estate brokers and agents. Read and listen to the local print and broadcast news on a daily basis, and become an active participant in the Chamber of Commerce and other economic development, business and community organizations.

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Where to Build the FTTH Network

What area should the FTTH network cover? To make this decision, look separately at the brownfield areas – existing residential and commercial construction – and greenfield areas – new subdivisions and new shopping centers. Building in brownfield areas, where you are retooling from copper to fiber, tends to be more expensive and require more resources; for greenfield applications, labor and equipment costs are lower and deployment is faster. In greenfield areas, trenching tends to be less expensive, cumbersome and time-consuming than boring. Also, the company usually doesn't have to worry about damaging and replacing sewer lines, driveways and landscaping. Taking the time to build strong relationships with developers will help in planning and budgeting for both greenfield and brownfield applications.

Regulatory issues are also significant. If your FTTH plan depends on selling video services, you need to know that you will be able to obtain video franchises everywhere in the build-out area.

EATEL made the decision to build out the FTTH network in most of its service area, but not in all of it. We don't yet have plans to bring fiber to the most rural and slow-growing parts of Livingston Parish. We also decided to be flexible about bringing fiber to new businesses in the build-out area. Because businesses are less likely to subscribe to video services than residences are, copper infrastructure often provides sufficient bandwidth, and is also less expensive because no optical network terminal is required at the customer premises.

We also made the decision, for now, not to extend the network outside our ILEC territory. The western part of Ascension Parish, for example, is also suitable for development and might be a good market for FTTH, but extending the network across the Mississippi River was a technical challenge and obtaining video franchises there would be more difficult than obtaining them in our ILEC area.

Conclusion

The public has an insatiable appetite for communications services ranging from landline and wireless voice to high-speed Internet and video. People want access to high-bandwidth communications regardless of where they live.

Fiber technology has an inherent ability to maximize bandwidth to the home or business.

It nearly future-proofs a network, provides superior network reliability, increases customer satisfaction, expands service capability and improves network operational expenses.

Effective sales and marketing, efficient customer services and smart pricing structures can all improve penetration rates further.

A fiber-powered community has a significant competitive advantage in fueling its economic development by offering a wide range of communications services to potential new businesses and residents.

Although the need for high-speed broadband services may be low during the initial build-out phases, the availability of such services could mean the difference between keeping or attracting businesses to rural communities or watching them move to a place where the telecommunications network can handle their data needs.

Therefore, community interest dictates that rural telcos deploy last-mile broadband technology to remain competitive. **BBP**

About the Author

Ashley Phillips is Director of Network Engineering/Operations at EATEL.