

# To Reduce Network Operating Expenses, Choose FTTH

New research by the Fiber Broadband Association shows that all-fiber networks are much less expensive to operate than cable or copper networks.

By Masha Zager / *Broadband Communities*

**F**or two decades, fiber optic network deployers have reported that fiber, even if sometimes more expensive to deploy than copper or coax (and always more expensive than *not* building new infrastructure), costs less to operate than other wired networks. Fiber's resistance to damage and deterioration and its ability to transmit signals unamplified for very long distances are great benefits to network operators.

Some individual deployers have tried to quantify fiber's operational savings – for example, Verizon has cited a 60 percent savings for FTTH relative to DSL (copper). Some smaller providers, in response to surveys, have estimated savings of about 40 percent relative to DSL or hybrid fiber-coax (HFC), but most of these measurements were informal.

Until recently, however, there was no good industrywide measurement. And without a clear measure, deployers had a hard time justifying additional capex. If fiber cost, say, 10 percent more to deploy, would it pay for itself in a year? A decade? A century?

A new study by the Fiber Broadband Association (FBA) makes a major contribution toward answering these questions. The study finds that operational expenses for a typical FTTH network amount to \$53 per year per home passed, compared with \$107 per year per home passed for an HFC network and \$144 per year per home passed for DSL. By switching

from HFC to FTTH, an operator can save \$54 per year per home passed, and by switching from DSL to FTTH, it can save \$91 per year per home passed. This translates to 50 percent savings for FTTH relative to HFC and 63 percent relative to DSL.

## IT'S NOT THE POWER

The sources of these savings were somewhat surprising. The most commonly cited operational advantage of fiber networks is that they use little power. Usually, all components of an FTTH network between the central office and the subscriber premises – which may be located up to about 12 miles from the central office – are passive, or unpowered. Copper and HFC networks, by contrast, require powered equipment in the field. In addition, the powered amplifiers and other active electronics in copper and HFC networks must be inspected and repaired, and backup batteries or generators must be periodically replaced.

The researchers confirmed that FTTH networks are indeed more energy-efficient than copper and coax networks; HFC networks use twice as much power as FTTH. The disparity may increase in future years as extreme weather events become more frequent and powered field components have to be replaced more often.

However, it turns out that power doesn't contribute much to total cost. Power accounts for only about 2 percent of operational expenses

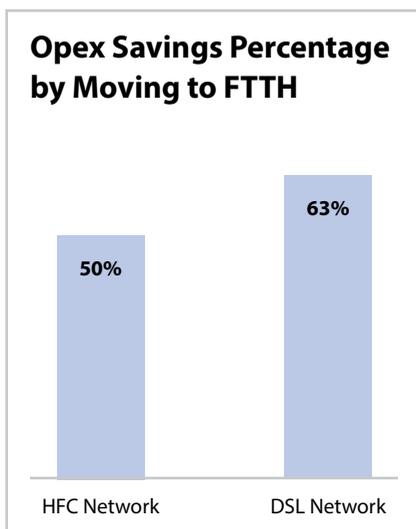
across all technologies, and maintaining powered equipment accounts for less than 1 percent. So fiber's enormous advantage in this category doesn't translate to much saving.

Much more important to total cost is fiber's reliability. Fiber simply doesn't fail as often as copper or coax. That yields two major operational savings: First, operators don't have to spend as much time or effort fixing network problems. And second, because customers don't become frustrated by network instability, operators don't have to spend as much money acquiring customers.

### THE BIGGEST COST FACTOR: NETWORK ISSUES

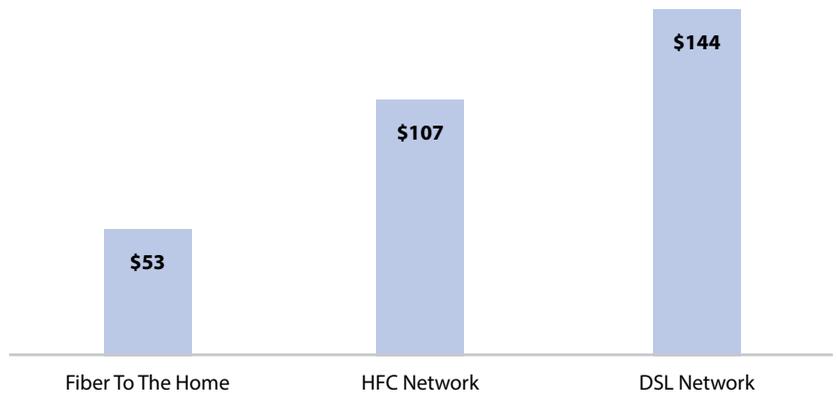
The FBA researchers analyzed the number of trouble tickets concerning network issues (other than those relating to in-home Wi-Fi) for FTTH, DSL and HFC networks. These tickets may be generated either by customer calls or by automated fault detection software. Operators spend much less per customer resolving these issues for FTTH networks than for copper or HFC networks. DSL has the highest issue-resolution costs, with HFC in the middle.

Trouble calls that can be resolved from the network operating center cost about three times as much per customer in DSL networks as in FTTH



Courtesy of the Fiber Broadband Association

### Total Opex Per Home Passed Per Year



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networks. But the most significant cost burden is posed by problems that can't be resolved remotely, for which the operator must dispatch a technician in a truck. Truck rolls are three to four times more expensive than remote resolutions, and because of the higher number of truck rolls needed, the cost per customer for truck rolls is more than three times higher in a DSL network than in an FTTH network.

Trouble ticket resolution, with or without truck rolls, accounts for an average of 61 percent of operational expenses across all technologies, so fiber's advantage in this category translates into a huge advantage in cost savings.

### CUSTOMER CHURN

Customer churn – adding new subscribers and removing those who cancel their subscriptions – accounts for about 37 percent of operating expenses. Provisioning and deprovisioning customers takes work on the part of customer service reps and technicians; in addition, network operators incur marketing costs in acquiring new customers, and they lose revenue when customers churn out faster than they churn in.

A certain amount of churn is inevitable because customers move in or out of service areas, establish new

households or die. In areas that have broadband competition, churn is also influenced by customer satisfaction with offerings, prices and reliability. Over many years, surveys of broadband customers have consistently shown that FTTH subscribers are more satisfied with network performance and reliability than either cable or DSL subscribers. This difference is borne out in the relative costs of churn, which are lowest for FTTH and highest for DSL.

DSL operators incur per-customer churn costs about two and a half times those of FTTH operators, with HFC operators in the middle. As more than a third of operational expenses across all technologies are related to churn, this amounts to a substantial savings for FTTH.

The report concludes that “fiber to the home is without question the answer to reducing operational expenditures in the access network.” ❖

*The full report, “Operational Expenses for All-Fiber Networks are Far Lower Than for Other Access Networks,” is available from the Fiber Broadband Association.*

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