

# Burlington Telecom Profits from Fiber

*By late 2008, after a decade-long effort, all 39,000 residents of Vermont's largest city will have access to the Burlington Telecom (BT) fiber network and its triple play services. Private, as well as public, service providers can use this open-access system on equal terms*

By Christopher Mitchell ■ *Institute for Local Self-Reliance*

In 1997, Burlington citizens voted for a municipal fiber network. Burlingtonians were frustrated with both their cable company, Adelphia (later purchased by Comcast), and their phone company, Verizon. In contrast, the municipally owned Burlington Electric Department (BED) was held in high regard.

The BED partnered with Aptus Networks in 1999 to build a citywide fiber-to-the-home network. However, the city had not yet secured official permission from the state to create a joint venture. In Vermont, as in about a dozen other states, cities have only the powers expressly granted to them in their municipal charters. Before building the network, Burlington had to change its charter and then gain legislative approval.

On March 7, 2000, Burlington voters supported a charter change and approved \$6.1 million in revenue bonds to build a fiber optic network projected to cost \$21 million. In the referendum, yeas outnumbered nays by 2 to 1. The city's last hurdle was having Vermont's General Assembly approve the change. Despite the House Local Government Committee derailing the proposed telecommunications powers from Burlington's charter change bill, supporters added the provisions back as an amendment on the floor and passed it 68-53. Representatives from Burlington overwhelmingly supported the bill. Following Senate agreement and the Governor's approval, the bill was enacted into law on May 29, 2000.<sup>1</sup>

Though the bill authorized Burlington's joint venture, it also forbade Burlington from supporting any telecommunications network expenses with income from the BED. It required the city to finance the network in such a way that taxpayers, the state of Vermont, and Electric Department ratepayers could not be burdened with either debt or losses arising from the network. In other words, any risk from building the network had to be borne by outside investors.

In the meantime, the dot-com bubble burst and investors began to shy away from telecom projects. On April 8, 2001, both the city and Aptus missed their deadlines for raising the initial funds. Aptus could not come up with \$2.2 million and the city was unable to float enough revenue bonds (now viewed as a risky prospect) to raise its \$2.8 million share.

The fiber project faced an uncertain future and Burlington continued to have few options for citywide high-speed broadband. Adelphia was flirting with bankruptcy, and Verizon was trying to sell off its small-market New England properties. Despite their initial roadblocks, Burlington city officials persisted.

## "The Barn You Can Afford"

The city approached Tim Nulty, a retired telecommunications entrepreneur, to consult on the project. Nulty brought to the

## Burlington Telecom's Goals

1. Universal Access - at reasonable prices to every citizen, business and institution in the city.
2. Open Access - analogous to common carrier public roads, anyone can purchase bandwidth or services.
3. Future Proof - built for the long term to provide flexibility and upgrade capacity.
4. Financially Self-Sustaining - financed by users, not taxpayers.

table a doctorate in economics from Cambridge University and more than 20 years of telecommunications public policy experience, including with the World Bank and US Congress. On the private side, he had made his fortune from telecommunications ventures in Eastern Europe before retiring to Vermont.<sup>2</sup>

Nulty was highly critical of the original build-it-all-at-once plan and developed a multiphased, modular plan entitled "Build the Barn You Can Afford." Inspired by observations of economically wise Vermont farmers, the plan called for building a small network serving the local government's internal needs first (which would also save the city money by aggregating telecom services) and expanding it after demonstrating economic viability. This approach would build out the network more slowly, but with much less risk.

In January 2002, the city agreed and named Nulty general manager of a new city department, Burlington Telecom. He was authorized to spend \$1.6 million on equipment and another \$1 million in

**"I'm very familiar with many government-owned telecom operations throughout the world, over many years, and across many different forms of government, and I can tell you that governments generally do not subsidize publicly owned telecommunications. They milk telecommunications – these systems generate a lot of revenue."**

**Tim Nulty, Director of Burlington Telecom,**

- Former Chief Economist, U.S. Senate Commerce Committee
- Former Chief Economist, U.S. House Energy and Commerce Committee
- Former World Bank Senior Project Manager
- Former Telecommunications Entrepreneur in Eastern Europe

took considerable time and money but the city eventually reached the necessary agreements.

BT brought in Koch Financial Corp. to finance the network and lease it back to the city via a tax-exempt municipal capital lease – an arrangement much like a mortgage on a house. The city will own the

on board may have helped secure a lower rate from investors. Other important factors to the investors were the incremental nature of the plan and having the network backed by a commitment from the city to purchase its services from BT (as an anchor tenant).

The first phase of this four-phase project connected 500 employees in 38 government offices with Internet and voice services.<sup>4</sup> When over half of Phase 1 was completed, the city terminated its existing building-by-building Internet contracts and issued a single RFP to provide the entire network with bandwidth.

As Phase 1 neared completion, the city contracted with TelCove, a Pennsylvania-based telco, for wholesale voice services. Over two months, Burlington

**Once the city fully pays off the debt, BT's net income could provide more than 20 percent of the city's general fund requirements.**

startup and operation costs. The project has received strong support from the City Council as well as from former Governor Howard Dean, a Democrat, and current Governor Jim Douglas, a Republican.

The \$2.6 million price tag for the first phase, a 16.5-mile fiber optic system (144-strand single mode)<sup>3</sup> was relatively low because Burlington owned the 2.5 miles of underground conduit and 33 percent of the poles needed for aerial cables. The city was partial owner (55 percent) with Verizon on the rest of the poles. Negotiating with Verizon

network at the end of the payment schedule. If the network does not succeed, the city is not liable for the remaining debt but Koch gets the network.

They agreed to a 15-year lease with an attractive interest rate of 5.63 percent. Having Nulty, a highly regarded telecommunications entrepreneur,



## Vendor Spotlight

BT did much of the design for its system in-house and has made a point of purchasing standards-compliant equipment. Among the vendors involved with the project are:

ADTRAN (networking equipment)	www.adtran.com
Amino (set-top boxes)	www.aminocom.com
Calix (FTTH electronics)	www.calix.com
Cisco (networking equipment)	www.cisco.com
Genband (VoIP equipment)	www.genband.com
Motorola (video headend integrator)	www.motorola.com
Taqua (voice switches)	www.taqua.com

switched its nearly 1,000 Verizon voice lines over to TelCove, expecting a savings of 28 percent. It realized a savings of between 35 and 40 percent. Three months later, in September 2003, BT completed the Phase 1 network and contracted with TelCove to provide Internet bandwidth as well.<sup>5</sup>

Phase 2 added a few carefully selected large businesses to the network. By offering services only to businesses near the existing network, BT had to budget only \$750,000 for this expansion.

Burlington Telecom then approached local banks for a line of credit, again using the network rather than the city of Burlington's full faith and credit to secure it. Although the line of credit was approved, it proved unnecessary and BT never used it. More than 30 businesses have since joined the Phase 2 network, but they signed up slowly. The incremental nature of the sign-ups is due to the fact that businesses frequently have long-term contracts for telecommunications services that must expire before they can join a new network even if it offers superior services.

After the demonstrated success of the initial phase of the project, Koch Financial agreed to provide the \$20 million for phases 3 and 4 with another 15-year repayment schedule and a lower interest rate of 5.17 percent. In addition to the loans from Koch, the city later needed to secure an additional \$7 to \$8 million to finish the project, in large part

because of Adelphia's unsuccessful legal challenges to BT's plans.<sup>6</sup>

In 2006, the third phase began, expanding the network to more businesses while also creating a support staff to deal with the problems inherent in scaling a network from a few customers to many. BT is currently implementing the fourth and final phase – providing a universal fiber-to-the-home service.

By mid-2006, BT had more than 350 customers. Average revenue per residential user was \$77, while business users averaged \$243 each month. As of August 2007, BT had 1,800 subscribers and was adding 40 more every week. On the expense side of the equation are more than \$2 million in debt service and \$2 million in operating costs each year.

Phases 1 and 2 are revenue-positive but BT is still building out the citywide network. BT projects an overall positive revenue flow by 2009. As of mid July 2007, BT's Director of Sales, Richard Donnelly, reports that 30 percent of passed houses are subscribing. By late 2008, all Burlington citizens will have access to the network.

## Services and Community Benefits

BT has decided not to offer subsidized service to Burlington's low-income citizens. Instead, it offers low-priced basic services to everyone and has created a triple play service at half the cost of Comcast's. BT's lowest cost triple play provides 20 channels, 1 Mbps symmetrical Internet service, and \$.02/min local phone calls. Verizon's cheapest triple play option was \$99 as of August 2007.

Verizon and BT price their most basic phone service at similar rates. When it comes to high-speed Internet, Comcast may be able to match BT's downstream speeds, but symmetrical connections are key to videoconferencing and other applications that require fast upstream speeds.

Nulty views fiber as offering virtually limitless capacity. When it comes to video, BT chooses channels based on what the competition offers. In addition, BT will offer any channel that provides free content because it has far more slots for channels than it can fill. This policy brought the al-Jazeera International channel to Burlington – a decision for which BT has taken some heat, though mostly from blogs and people outside of Burlington.

Though it certainly has the authority, the City Council has been quite clear that it wants no role in choosing what channels to offer. Nulty believes the Council would sooner find a way to wall itself off from

Service	BT	Incumbent Carrier
Basic Service	\$15	\$13.50
Cheapest Triple Play	\$43	\$99
Internet - 8M / 8M	\$72	-
Internet - 8M / 768k	-	\$68

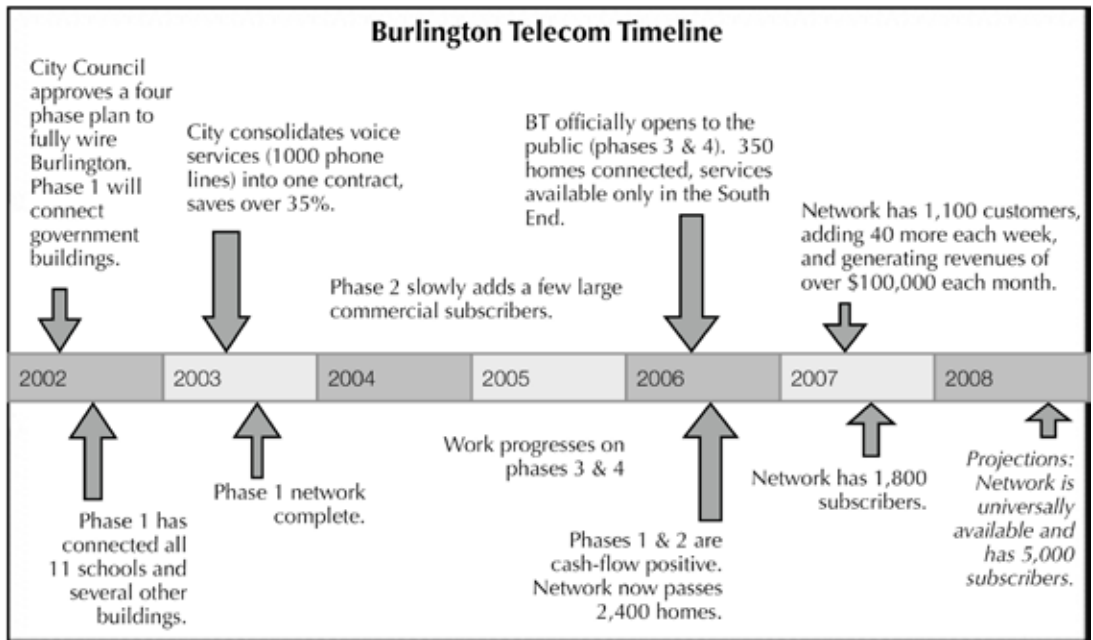
those decisions than become involved in them if problems arise in the future.

When some subscribers complained about the titles of adult programs being available for anyone to see, BT worked with them to continue offering adult content only to those who desired it while blocking even the channel listing for the rest.<sup>7</sup>

Strong local roots and an accountability to the community set BT apart from private companies like Comcast. Both comply with the law by providing funding and channel access (public access, educational, and government, so-called "PEG"), but BT goes above and beyond mere compliance. When the community asked for additional channels for live coverage of events and a video-on-demand option for local programming, BT worked with them to provide it. Working with Comcast would have been considerably more difficult – so much so that residents did not even bother. Instead, they called the publicly owned BT.

Nulty sees more potential for local channels in the future. Some residents have proposed a local arts channel and a channel dedicated to advertising and promoting local businesses. Unlimited channel availability is such a new idea that few are ready to take advantage of it. In time, local communities will find ways to leverage the added capacity.

More channels and order-of-magnitude faster broadband speeds are not the only justifications for Burlington's investment; it will also generate significant revenue. Once the city fully pays off the debt, BT's net income (predicted to be around \$15 million per year) could provide



more than 20 percent of the city's general fund requirements.

For a city like Burlington, the promise of greater future revenues is crucial because its density already retards the tax base growth potential. On the cost side of the equation, Burlington once faced massively growing telecommunications expenditures. It now views the telecommunications sector as an important source of new revenues.

**Open Access**

BT runs an open-access, common carrier network, allowing others to compete against its services. In 2006, the school district switched from Internet services provided by BT to Vermont Telephone (VTel). Prior to the switch, BT was



Photos Courtesy of Burlington Telecom

**Placing fiber was relatively inexpensive because BT already owned both underground conduit and utility poles.**

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**BT workers install an optical network terminal at the home of the 2000th subscriber.**

charging the schools a rate equal to its internal cost of offering the bandwidth, approximately \$1000 per month. When VTel offered to provide free bandwidth, BT supported the arrangement. The VTel deal was available only to Vermont schools that were already wired for fiber.

Though BT provides the vast majority of services to the customers that use the fiber network, some Internet service providers have started to compete on the network. In the long term, Nulty says that he would not mind being driven out of the service provider business because BT is ultimately focused on the transport layer. In the short term, however, BT depends on revenues from those services to pay its debt.

Some entrepreneurs have worked with BT to use its network as backhaul for wireless networks. These wireless networks have not succeeded but BT plans to begin providing wireless service itself once the fiber network is complete.

**Beyond Burlington**

Several nearby towns are negotiating with BT to gain access to its network. Burlington is one of the few areas with enough households and businesses to support the high initial costs of starting a network. Joining an existing network, however, is within the budget of surrounding communities like Montpelier, Rutland, and cooperative groups of even smaller communities.

In 2007, Nulty discussed expansion options with the Directors of the Vermont League of Cities & Towns. Any additions to the network would require a commitment by new parties to BT's four goals (listed in a box on page 76). In a phone interview, Nulty explained that universal availability is the only fair way to offer these services because any availability premised upon willingness and ability to pay will divide the community.

If BT expands the network to other towns, it would insist on three types of contracts:

- A financing contract between the town and a financier that results, eventually, in the town owning the local network and the connecting link to Burlington Telecom.
- A design/build/operate contract with Burlington Telecom.
- A contract by which Burlington Telecom would rent the town's infrastructure to deliver cable television, voice telephone and high-speed Internet to subscribers in that town. The rent would consist of a flat fee equal to the cost of servicing the town's debt and 50 percent of the profits generated by the services provided



**Bringing fiber to a multiple dwelling unit.**

**Late-Breaking News:**

BT recently connected its 2000th subscriber and is now operationally cash positive. Current projections call for it to be fully revenue-positive, including debt service payments, by the time it connects its 5000th customer in early 2009. The city recently refinanced the entire operation on significantly better terms than its original financing plan, reflecting what Nulty calls "a vote of confidence" by the financial community.

by Burlington Telecom in the town. After the Burlington Telecom rental contract expires, towns would be free to continue with Burlington Telecom or choose another provider.<sup>8</sup>

Burlington Telecom has demonstrated that no community needs to wait for a private company to provide broadband. Communities can build a telecommunications network to provide better services at a lower cost while raising revenue. **BBP**

**(Endnotes)**

1 Relevant text available at [www.leg.state.vt.us/DOCS/2000/bills/passed/h-856.htm](http://www.leg.state.vt.us/DOCS/2000/bills/passed/h-856.htm): If the city exercises its authority under subdivision 431(4) or section 449 of this title, the public service board, in considering any application for a certificate of public good, shall ensure that any and all losses from these businesses, and, in the event these businesses are abandoned or curtailed, any and all costs associated with investment in cable television, fiber optic and telecommunications network and telecommunications business-related facilities, are borne by the investors in such business, and in no event are borne by the city's taxpayers, the state of Vermont or are recovered in rates from electric ratepayers. Any certificate of public good issued shall contain terms or conditions that are consistent with both the statutory requirements of Chapter 13 of Title 30 and the establishment of competitive neutrality between incumbents and new entrants, after the evaluation of factors that include but are not limited to the payment of pole attachment rental fees, and the provision of public access channels, equipment and facilities....

In addition to the authority granted under otherwise applicable law, the city has the power and is authorized to establish a joint venture or any other business relationship with one or more third parties to provide telecommunications or cable television services within or without the corporate limits of the city; provided that before such joint venture or business relationship may sell telecommunications or cable television services, it shall obtain whatever regulatory approvals are necessary and shall pay all taxes, franchise fees, and similar charges assessed by the city on an incumbent.

2 Read more about Nulty at Business People - Vermont: <http://businesspeoplevermont.com/2007/01-jan/burtel.htm>.

3 Full network technical details are available at [www.burlingtontelecom.net/aboutus/tech](http://www.burlingtontelecom.net/aboutus/tech).

4 BT used RUS procedures for bidding, contracts, and network specs for reasons of convenience and transparency. The original plan called for connecting fewer buildings, but falling equipment prices saved enough money to expand the project.

5 The contract called for between 6 and 45 mbps depending on city needs.

6 Three quarters of the delay resulted from Adelphia's challenging BT's certificate of public good, which was needed to offer video services on the network.

7 Adult content is locked down to prevent minors from accessing it, but the titles of the programs were visible

to minors until BT modified the system. Now even the titles of adult programs are inaccessible to minors.

8 Vermont League of Cities and Towns News (June 2007).

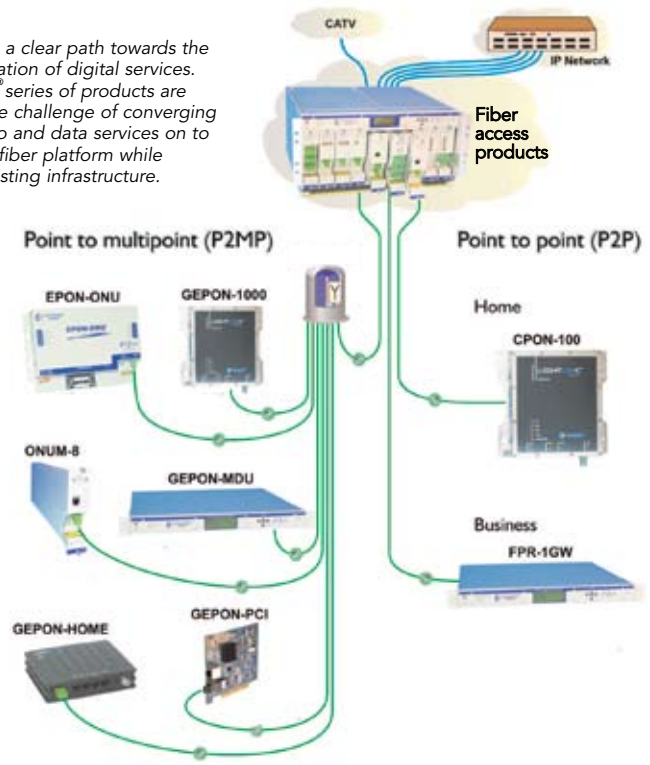
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