

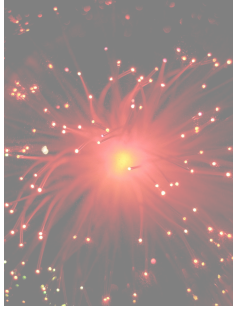
# Burlington Telecom Case Study

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Broadband networks will play as crucial a role in the future as canals, roads and the electrical grid have in our past. The Telecommunications as Commons Initiative investigates the benefits of public ownership as a means to guarantee universal access, network neutrality and community control when it comes to access to information.

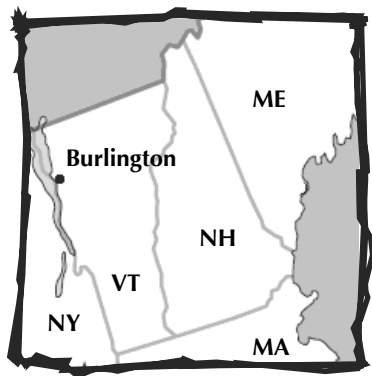
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Population: 39,000  
Area: 15 sq mi

*“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,  
...

*By early 2008, all 39,000 residents of Vermont’s largest city will have access to the Burlington Telecom (BT) fiber network and its triple play services of video, voice, and fast Internet access. Those who wish to use a different service provider may do so – the network is a common carrier, like the roads. Private, as well as public, service providers can use it on equal terms.*

### **Building the System**

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.

In 1999, the BED partnered with Aptus Networks to build a citywide fiber to the home network. However, the City had not yet secured permission from the state to officially create a joint venture. In Vermont, along with about a dozen other states, cities have only the powers expressly granted to them in their municipal charter. 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. Referendum Yeas outnumbered Nays by 2 to 1. The City’s last hurdle was having Vermont’s General Assembly approve the change. Despite a 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 (H.856) 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 must be born by outside investors.

### **Burlington Telecom’s Four 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.

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 to raise 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 city wide high-speed broadband. Adelfia flirted with bankruptcy and Verizon was trying to sell off its small market New England properties. Despite their initial roadblocks, Burlington city officials persisted.

The City approached Tim Nulty, a retired telecommunications entrepreneur, to consult on the project. Nulty brought to the table a PhD in economics from Cambridge University and over 20 years of telecommunications public policy experience, including with the World Bank and U.S. Congress. On the private side, he made his fortune from telecommunications ventures in Eastern Europe before retiring to Vermont.<sup>2</sup>

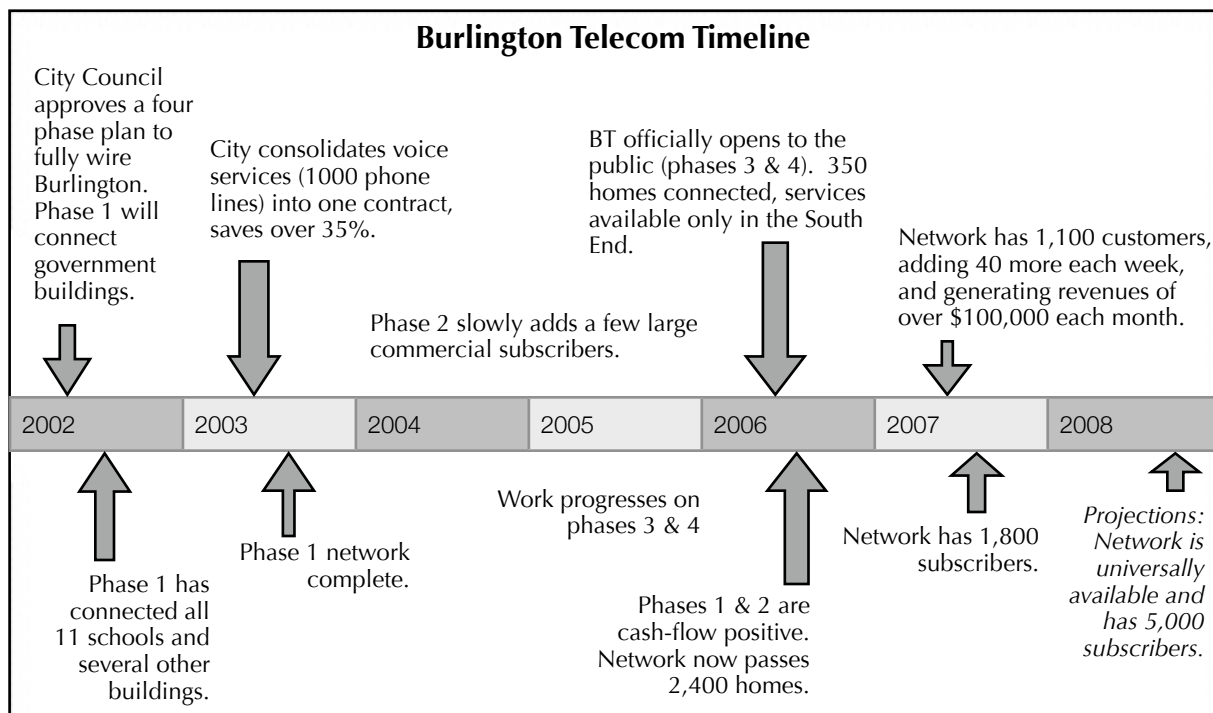
Nulty was highly critical of the original build-everything-at-once plan and developed a multi-phased, modular plan entitled "Build the Barn You Can Afford." Inspired by observations of

economically-wise Vermont farmers, it 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 start-up/operation costs. The project has received strong support from the City Council as well as from former Governor Howard Dean (Dem.) and current Governor Jim Douglas (Rep.).

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% of the poles needed for aerial cables. The City was partial owner (55%) with Verizon on the rest of the poles. Negotiating with Verizon took considerable time and money but the City 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 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%. Having Nulty, a highly regarded telecommunications entrepreneur, 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 38 government offices (500 employees) with Internet and voice services.<sup>4</sup> With over half of phase 1 completed, the City terminated existing Internet contracts with individual service providers for each building and issued a single RFP to provide the entire network with bandwidth.

As phase 1 neared completion, the City contracted with TelCove, a PA-based telco, for wholesale voice services. Over two months, Burlington switched its nearly 1,000 Verizon voice lines over to TelCove, expecting a savings of 28%. They realized a savings of between 35 and 40%. 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 those businesses near the existing network, BT had to budget only \$750,000 for this expansion.

Burlington Telecom 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%. In addition to the loans from Koch, the City later needed to secure an additional \$7-8 million to finish the project, in large part because of Adelphia's unsuccessful legal challenges to BT's plans.<sup>6</sup>

*BT is projecting a positive revenue flow by the end of 2009. BT's Director of Sales, Richard Donnelly, reports they have a 30% take rate among passed houses.*

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 taking 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 over 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 expenses side of the equation are more than \$2 million in debt servicing 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% of passed houses are subscribing. By early 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, 1Mbps 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

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

Internet, Comcast may be able to match BT's downstream, but having a symmetrical connection is the key to video conferencing and other applications that require a fast upstream.

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 they have far more slots for channels than they can fill. This policy brought the al-Jazeera International channel to Burlington. BT has taken some heat for offering it, 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 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 (PEG)), but BT goes above and beyond. 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 for the City. Once the City fully pays off the debt, BT's net income (predicted to be around \$15 million/yr) could provide more than 20% 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 BT's services.

*Once the City fully pays off the debt, BT's net income could provide more than 20% of the City's General Fund requirements.*

In 2006, the school district switched from Internet services provided by BT to Vermont Telephone (VTel). Prior to the switch, BT was charging the schools a rate equal to its internal cost of offering the bandwidth, approximately \$1000/month. When VTel offered to provide free

bandwidth, BT supported the arrangement. The VTel deal was only available to Vermont schools that were already wired for fiber.

Though BT provides the vast majority of services to the customers using 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 as 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 networks have not succeeded but BT plans

to begin providing wireless 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 1). In a phone interview, Nulty explained that universal availability is the only fair way to offer these services because any availability premised upon willingness/ability-to-pay will divide the community.

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

1. 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.
2. A design/build/operate contract with Burlington Telecom.
3. A contract whereby 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 two parts: a) a flat fee equal to the cost of servicing the town's debt; and, b) 50 percent of the profits generated by the services provided 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.

### **References**

<sup>1</sup> Relevant Text - available at <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.

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

<sup>3</sup> Full network technical details available: <http://www.burlingtontelecom.net/aboutus/tech/>

<sup>4</sup> 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.

<sup>5</sup> The contract called for between 6 and 45 mbps depending on city needs.

<sup>6</sup> 3/4 of the delay resulted from Adelphia's challenging BT's certificate of public good – needed to offer video services on the network.

<sup>7</sup> 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.

<sup>8</sup> Vermont League of Cities and Towns News (June 2007)



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