

The network is partially operational and available to citizens of Brigham City, Centerville, Layton, Lindon, Midvale, Murray, Orem, Payson, Tremonton and West Valley City.<sup>604</sup> It intends to expand service to Cedar City, Cedar Hills, Perry, Riverton and Vineyard, but completion has been delayed by ongoing financial difficulties.<sup>605</sup> While the network is operating in many of its intended cities, it is still not 100 percent complete in any individual city; completion rates span from 0 percent in Perry to 96 percent in Brigham City and Tremonton.<sup>606</sup> Planners intended to pass through 141,000 addresses by September of 2007, but the network only passed 62,000 addresses as of June 2012, with 8,240 subscribers, or a 13 percent take rate, far below expectations.<sup>607</sup> UTOPIA had predicted it would have five times that amount by 2007.<sup>608</sup>

As an open access system, UTOPIA relies on local ISPs to provide customers with services. Some ISPs offer service only in one city, while some are systemwide. Brigham-net, for example, offers Internet, television, and telephone service only in Brigham City.<sup>609</sup> Customers can purchase a symmetrical 20 Mbps Internet connection for \$34.95 per month and can upgrade to a 50 Mbps connection for an additional \$5 per month.<sup>610</sup> A bundle including the 20 Mbps connection, television, and telephone costs \$124.90.<sup>611</sup> Several other options are available depending on the city.<sup>612</sup> Several different ISPs offer 1 Gbps connections in select areas.<sup>613</sup> The cost ranges from \$65 to \$75 per month.<sup>614</sup>

UTOPIA continues to operate at a loss, as it has done since its launch over a decade ago.<sup>615</sup> The network's public-private partnership with Macquarie Capital may help alleviate these financial problems, but it cannot recover the system's high startup costs over the past decade.

#### 4.7.4 Community Impact

Despite lofty aspirations about UTOPIA being a broadband utopia for residents and businesses,<sup>616</sup> there is broad agreement this GON has been a financial failure.<sup>617</sup> Criticism of this network has been sharp from residents, media outlets, and elected officials, some of whom were elected on anti-UTOPIA platforms. Brigham City Mayor Dennis Fife, who was elected in 2009 in part because of his criticism of the network, has repeatedly expressed disbelief that there is still support for the system after years of losses and hundreds of millions of dollars of debt.<sup>618</sup> There is a consensus that UTOPIA suffered from over-ambition, wasteful spending, poor planning, and ineffective leadership.

Citizens in particular have voiced criticism about the excessive and ongoing cost of a network that has yet to be fully built and is unable to generate enough revenue to service its debt and fund future deployments.<sup>619</sup> Citizens are particularly anxious about the financial state of UTOPIA because they are ultimately responsible for paying the bill. As discussed above, member cities are obligated to follow through on their pledges to provide sales tax revenue as security for their bonds.<sup>620</sup> This raises the possibility of tax hikes to cover these

604 See UTOPIA, FAQ, <http://www.utopianet.org/faq/>.

605 *Id.*

606 *UTOPIA: Fiber-Optic Nirvana or a Nightmare with No Way Out.*

607 See Utah Telecommunication Open Infrastructure Agency, *Financial Statements*, p. 2, June 20, 2012, UTOPIA, available at [https://web.archive.org/web/20130203105656/http://utopianet.org/uploads/files/177\\_UTOPIA\\_Report\\_2012\\_-\\_Final.pdf](https://web.archive.org/web/20130203105656/http://utopianet.org/uploads/files/177_UTOPIA_Report_2012_-_Final.pdf).

608 *Id.*

609 See Brigham-net, Home, <http://www.brigham.net/>.

610 See Brigham-net, UTOPIA, <http://www.brigham.net/utopia.htm>.

611 *Id.*

612 See UTOPIA, Providers, <http://www.utopianet.org/providers/>.

613 See *UTOPIA Service Providers Reduce Price of Utah's Fastest Internet Connection*, Sept. 15, 2013, UTOPIA Net, available at <http://www.utopianet.org/utopia-service-providers-reduce-price-of-utahs-fastest-internet-connection/>.

614 *Id.*

615 *UTOPIA: Fiber-Optic Nirvana or a Nightmare with No Way Out.*

616 See, e.g., Steven Cherry, *A Broadband Utopia*, April 28, 2006, IEEE Spectrum, available at <http://spectrum.ieee.org/computing/networks/a-broadband-utopia> ("Broadband Utopia").

617 See, e.g., *UTOPIA: Fiber-Optic Nirvana or a Nightmare with No Way Out* (highlighting discontent).

618 *UTOPIA: Fiber-Optic Nirvana or a Nightmare with No Way Out.*

619 *Utopia Audit* at p. 11.

620 *Id.*

costs or a costly default that could devastate some or all of the member cities. Another route, which Orem recently took, is to continue issuing bonds in the hope that the system can turn itself around and implement a profitable business model.<sup>621</sup>

Perhaps the most scathing criticism of UTOPIA was included in a 2012 audit prepared at the request of the Utah state legislature.<sup>622</sup> The analysis concluded that the network had not met any of its expectations, that bond proceeds were used wastefully, and that management had done a poor job of planning and executing.<sup>623</sup> The report stated, “We believe an underlying problem throughout UTOPIA’s expansion is the lack of a carefully prepared development plan and policies to guide the construction of the network,” and when the committee asked to see planning documents for UTOPIA’s expansion, the “staff were unable to produce one.”<sup>624</sup>

#### 4.7.5 Assessment

To date, the failure of UTOPIA offers a number of important lessons for other cities now considering creating a GON. First, with regard to planning and managing expectations, the ambitious nature of the project led to a high-risk undertaking by local officials who were attracted by the promise of a FTTH network. The fanfare around this network, which was poised to be the largest of its kind when the project began, was fed by intense political pressure to deploy the network to every city at once.<sup>625</sup> This decision drove up costs without creating a single revenue-generating city network as a base to sustain future deployments.<sup>626</sup> As the network began to experience problems, this project stranded half-built infrastructure in some cities and left many others without anything to show for their investment.<sup>627</sup>

Second, and related, there was little effort to manage costs and adhere to a budget. Political pressure and the all-in mindset that drove UTOPIA from the start resulted in runaway costs that are now nearing a half-billion dollars. Initial concerns were countered by visions of using the new multi-city broadband network to encourage local economic development and transform these rural towns into competitive global hubs.<sup>628</sup> This has certainly not been the case as the network struggles to add subscribers.

In looking ahead to the future of UTOPIA, there continue to be different opinions as to the likelihood of future success. Some believe the network can be salvaged either by tweaking the business model<sup>629</sup> or continuing to build out in the hope more people will eventually subscribe and generate enough revenue to begin paying down debts.<sup>630</sup> The risk is that such determination to finish what has already been started will result in more debt, which in turn increases the likelihood of either a costly default or large tax hikes to continue servicing a mountain of debt.

UTOPIA’s partnership with Macquarie Capital is a promising step toward getting the network on a more sustainable path and relieving taxpayers of future debt burdens. Nevertheless, the past, in the form of major debt loads and poor planning, weighs heavily on this network and may in due course lead to the conclusion that it failed to achieve its original ambitious objectives.

621 See Emiley Morgan, *Orem Pledges \$24M Bond to Fund UTOPIA Construction*, Feb. 28, 2013, Desert News, available at <http://www.deseretnews.com/article/865574488/Orem-pledges-24M-bond-to-fund-UTOPIA-construction.html?pg=all> (“Orem Pledges”).

622 See generally *Utopia Audit*.

623 *Id.*

624 *Id.* at p. 24.

625 *Id.*

626 *Id.*

627 *Id.* at p. 16.

628 See, e.g., *Broadband Utopia; UTOPIA: Fiber-Optic Nirvana or a Nightmare with No Way Out*.

629 See, e.g., *Orem Pledges* (discussing a recent bond issuance by a member city and the negative response by residents).

630 See, e.g., *UTOPIA: Fiber-Optic Nirvana or a Nightmare with No Way Out* (quoting optimistic UTOPIA executives).

## 4.8 Groton, Connecticut

The government-owned broadband network deployed in Groton offers another example of a failed GON. Built amidst much acclaim and anticipation in the mid-2000s, the network quickly collapsed under the weight of soaring debt and tepid consumer demand. In early 2013, the city sold the system to private investors for \$550,000, representing a loss of over \$30 million. The city and its taxpayers remain responsible for more than \$27 million in loans. This case study examines the motives that drove this GON's deployment and highlights the flawed assumptions that undergirded an unsuccessful financing plan and unrealistic business model.

### 4.8.1 Background

The communications network that would eventually grow into a GON grew out of a strategic plan that the local utility, Groton Utilities, floated in 1999. As a result of declining revenues in its core business, the utility outlined a plan for constructing a 32-mile fiber-optic network, access to which would be sold on a wholesale basis to ISPs.<sup>631</sup> According to a company official, the initial impetus for this endeavor was to "make money" in an effort to offset sagging electricity revenues (at the time, the utility was also "developing plans to begin producing bottled water").<sup>632</sup> Later that year, residents approved a \$6.9 million bond issue to support construction of the network.<sup>633</sup> The municipality prevailed in the legal challenges that followed,<sup>634</sup> and by the early 2000s it began to develop plans for deploying a hybrid fiber/cable network that would extend cable service to residents and thus compete directly in the market for broadband and television.<sup>635</sup>

Those who advocated for a municipal network in Groton were driven, in part, by local dissatisfaction with incumbent ISPs.<sup>636</sup> A survey commissioned by the state found that, of the 400 residents polled in the five towns that would be served by a municipal cable entity, 64 percent indicated they would be "very likely or likely" to

## Groton, Connecticut At-A-Glance



**City Population:** 40,115 (2010)

**Year of Network Launch:** 2004

**Current Status:** Built and Sold

**Number of subscribers:** NA

**Revenues:** NA

**Operating Expenses:** NA

**Note:** Additional information on the Groton network is contained in Table 1 and in Appendix I.

631 See, e.g., Michael Costanza, *Groton Utilities Considering Telecommunications Service*, Oct. 22, 1999, *The Day*, available at <http://news.google.com/newspapers?nid=1915&dat=19991022&id=QQchAAAAIbAJ&sjid=eXYFAAAAIBAJ&pg=5556,4321864> ("*Groton Utilities Considering Telecommunications Service*").

632 *Id.*

633 See Michael Costanza, *Groton City Backs Utilities' Proposal to Provide Telecommunications Service*, Nov. 2, 1999, *The Day*, available at <http://news.google.com/newspapers?nid=1915&dat=19991102&id=RQohAAAAIbAJ&sjid=ynYFAAAAIBAJ&pg=4629,187783>;

634 See e.g., Tara Bahrapour, *Bid to Stop Groton*, June 5, 2001, *N.Y. Times*, available at <http://www.nytimes.com/2001/06/05/nyregion/metro-business-briefing-bid-to-stop-groton.html> (noting that "Southern New England Telecommunications has appealed an April ruling by the Department of Public Utility Control in Connecticut that would allow Groton Utilities to build a 32-mile fiber-optic network providing Internet access and other services in the Groton area.").

635 See Gladys Alcedo, *Hearing Planned On Proposal For New Cable Service*, March 11, 2003, *The Day*, available at <http://www.theday.com/article/20030311/DAYARC/303119938/0/SEARCH> ("*Hearing Planned*").

636 Competition in the U.S. video marketplace was still developing in the late 1990s and early 2000s. Satellite television service was becoming increasingly popular, but market entry by telephone companies had yet to materialize in any significant way. Of course, over the next decade, video choices would proliferate with the continued rise of satellite, the emergence of video services by telecom companies like Verizon and AT&T, and the rapid emergence of IP-enabled video. For additional discussion and analysis of this transformation, Compare *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Eighth Annual Report, 17 FCC Rcd 1244, FCC 01-389 (rel. Jan. 14, 2002), with *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Fifteenth Annual Report, 28 FCC Rcd 10496, FCC 13-99 (rel. July 22, 2013).

switch cable services “if a new competitor entered the market.”<sup>637</sup> In response, incumbent firms argued against municipal entry by noting the many risks to taxpayers associated with owning and maintaining such a vast communications infrastructure.<sup>638</sup> The utility pressed ahead, and in 2003 the Groton City Council approved its plan. It authorized the formation of Thames Valley Communications (TVC), a city-owned taxable stock corporation, and approved a total of \$6.9 million for the development of this new enterprise.<sup>639</sup> TVC was granted a franchise on January 1, 2004,<sup>640</sup> network construction began soon after, and parts of the network went live in May 2004.<sup>641</sup> Construction would stretch over the next few years.

## 4.8.2 Cost and Financing

The Groton GON was a costly venture for the city, its taxpayers, and its bondholders. Initial startup and construction costs totaled \$16.9 million.<sup>642</sup> The city borrowed \$34.5 million between 2006 and 2008 to build and expand the network.<sup>643</sup> This was substantially more—in terms of total dollars and total debt—than initially estimated by the city officials, who, in 2001, thought the entire network would cost “\$25 million to \$30 million, to be paid with operating revenue from the cable business.”<sup>644</sup>

## 4.8.3 The Network

The network TVC eventually built was capable of delivering telephone, Internet, and cable service to residents and businesses in Groton, Gales Ferry, Stonington, and Pawcatuck.<sup>645</sup> From the beginning, some observers viewed the GON as financially unsustainable. It lost an average of \$2 million a year while owing nearly \$30 million in debt.<sup>646</sup> By 2012, the city decided to sell off the network to private investors. CTP Investors bid for, and eventually won, the right to purchase the GON for \$550,000 in early 2013.<sup>647</sup> As a result of the sale, Groton Utilities will be required to pay off the remaining debt of \$27.5 million via annual installments that began at \$2.6 million and will decrease by about \$100,000 each year over the next 14 years.<sup>648</sup>

The current, privately owned incarnation of TVC offers customers an array of standalone and bundled broadband, television, and telephone services.<sup>649</sup> Its broadband packages range from an asymmetrical 6.6 Mbps

637 *Hearing Planned.*

638 *See Editorial: City Utilities Goes Modern*, July 2, 2001, *The Day*, available at <http://news.google.com/newspapers?id=C5tGAAAA-IBA&sjid=7PgMAAAAIBA&pg=2445,251176&dq=groton+utilities+telecom+network+resident+vote+approve+1999&hl=en> (endorsing the proposed GON but urging caution) (“*Editorial: City Utilities Goes Modern*”).

639 *See City of Groton, Connecticut, General Obligation Bonds, Issues of 2006*, at p. 10, Electronic Municipal Market Access, Municipal Securities Rulemaking Board (Feb. 7, 2006), available at <http://emma.msrb.org/MS244149-MS219457-MD427024.pdf> (“*Groton General Obligation Bonds, Issues of 2006*”).

640 *Id.*

641 *See Utilities Commission Meeting Minutes*, at p. 11, City of Groton (Nov. 23, 2004), available at <http://www.cityofgroton.com/docs/minutes/ucommission/2004/ucommission11-23-04.pdf>.

642 *Groton General Obligation Bonds, Issues of 2006* at p. 10.

643 *See, e.g.,* Deborah Straszheim, *Thames Valley Communications Transfers Ownership of Cable Company*, Feb. 2, 2013, Groton Patch, available at <http://groton.patch.com/groups/politics-and-elections/p/thames-valley-communications-transfers-ownership-of-cbe9bb6eabc>

644 *Hearing Planned.*

645 *See* Thames Valley Communications, About, <http://www.tvconnect.com/about-us>.

646 *See, e.g.,* Greg Smith, *Groton Utilities' Venture Into Cable an Ambitious Idea that Didn't Pan Out*, Dec. 2, 2012, *The Day*, available at <http://www.theday.com/article/20121202/NWS01/312029942/Groton-Utilities%27-venture-into-cable-an-ambitious-idea-that-didn%27t-pan-out> (“*Ambitious Idea that Didn't Pan Out*”).

647 *See* Greg Smith, *Original Bidder to Buy Groton Cable Company, but at Higher Price*, Jan. 15, 2013, *The Day*, available at <http://www.theday.com/article/20130115/NWS01/130119838/1047>.

648 *Id.*

649 *See* TVC, Rate Card, <http://www.tvconnect.com/wp-content/uploads/2013/11/RateCard.pdf>.

connection for \$29.99 per month, to an asymmetrical 55 Mbps connection for \$59.99 per month.<sup>650</sup> As of 2012, TVC had 8,000 customers<sup>651</sup> across a service territory that covered at least 38,000 homes.<sup>652</sup>

#### 4.8.4 Community Impact

Benefits that might have flowed from this GON have been overshadowed by the financial difficulties that have faced this network. It also appears that the network has not had a discernible impact on local employment. Groton's unemployment rate has been largely unchanged since deployment of the network and has generally tracked fluctuations in the national labor market.<sup>653</sup> Its relatively small subscriber base demonstrates the GON did not achieve one of its core goals: to compete directly with incumbent ISPs. On the contrary, the municipal system was weakened by the very competitive forces that the city thought were lacking.<sup>654</sup>

The large amount of debt accrued to build this system has had several negative impacts on residents. First and foremost, the town of Groton, even after selling off its failing asset, remains responsible for paying off tens of millions of dollars in debt. Due to the city's use of general obligation bonds, this onus falls directly on residents, either via increased taxes, fewer municipal services, or higher electricity rates.<sup>655</sup> Second and related, Groton's credit rating has been negatively impacted by the failed network. Moody's downgraded Groton's credit rating as a result of the failing municipal network,<sup>656</sup> and only after selling the GON to CTP was the city's credit outlook upgraded from "negative" to "stable."<sup>657</sup>

#### 4.8.5 Assessment

The rise and fall of the GON in Groton highlights a number of assumptions often made by local officials and others who advocate in favor of municipal broadband deployment.

First, the size of the debt amassed by the city was driven up by the actions of city government and local utility officials, many of whom viewed the GON as a financial panacea that would be able to self-sustain and generate profits to help cross-subsidize other investments. As a result, the reasoning offered in support of the GON became a moving target. Initially, the GON was pitched as a wholesale network that would provide the utility with a new vehicle for making money to offset a decline in electricity revenues.<sup>658</sup> But the network eventually evolved into a commercial enterprise that would compete directly with incumbent ISPs. Such quixotic maneuvering drove up costs and greatly enhanced the risk exposure for residents, whose tax dollars were offered as collateral in exchange for the tens of millions of dollars in bond debt needed to fund deployment.

Second, expectations for the financial sustainability of the Groton GON appeared to be based on a small consumer survey undertaken in 2001, which found a majority of customers would consider switching cable providers if a competitor entered the market.<sup>659</sup> Such apparent pent-up demand for an alternative drove the development of a business plan largely hinged on the GON's ability to attract a substantial portion of these

650 *Id.*

651 Groton's annual report does not make clear which services these customers had purchased. See *Comprehensive Annual Financial Report, Fiscal Year Ending in 2012*, at p. iii, Dept. of Finance, City of Groton, Connecticut, available at <http://emma.msrb.org/ER637248-ER493540-ER896400.pdf>.

652 *Hearing Planned* (the 38,000 home estimate stems from a 2001 assessment by the city regarding the proposed GON).

653 See Groton, Connecticut Unemployment Rates, [http://ycharts.com/indicators/groton\\_ct\\_unemployment\\_rate](http://ycharts.com/indicators/groton_ct_unemployment_rate).

654 See, e.g., *Ambitious Idea that Didn't Pan Out*.

655 *Groton General Obligation Bonds, Issues of 2006* at p. 1.

656 See *Rating Action: Moody's Assigns Aa3 Rating to City of Groton's (CT) \$23.2 million G.O. Bonds, Issue of 2013 Series A and B; Outlook Revised to Stable from Negative*, March 21, 2013, Moody's, available at [https://www.moodys.com/research/Moodys-assigns-Aa3-rating-to-City-of-Groton-CT-232-PR\\_269226](https://www.moodys.com/research/Moodys-assigns-Aa3-rating-to-City-of-Groton-CT-232-PR_269226) ("Outlook Revised to Stable from Negative"). See also *Rating Action: Moody's Downgrades the City of Groton's (CT) Long Term General Obligation Rating to Aa3 from Aa2; Negative Outlook Affirmed*, June 4, 2012, Moody's, available at [https://www.moodys.com/research/Moodys-downgrades-the-City-of-Groton-CT-long-term-general-PR\\_247614](https://www.moodys.com/research/Moodys-downgrades-the-City-of-Groton-CT-long-term-general-PR_247614).

657 *Outlook Revised to Stable from Negative*.

658 *Groton Utilities Considering Telecommunications Service*.

659 *Hearing Planned*.

disillusioned customers and grow a subscriber base that would generate revenues sufficient to cover future deployments. Officials, however, failed to see the many risks inherent in this plan. An editorial in a local paper at the time identified these risks and called for caution: "... there is financial risk involved. Profits are not guaranteed, the business is competitive and market conditions can change dramatically in a short time."<sup>660</sup>

Third, the dynamism in the market proved prescient as the wider communications marketplace began to change in fundamental ways in the early and mid-2000s. Although competition in the market for video and broadband services might have been nascent in 2001, when the utility began to develop its plans for the GON, the advanced communications space began to proliferate in significant and profound ways shortly thereafter.<sup>661</sup> At the time, city officials and the utility were so focused on the promise of a municipal network that they failed to account for the rapid emergence of intermodal competition. Consequently, the resulting business model and the many predictions for success and viability were predicated on a static view of the market. But the marketplace and organic market forces soon addressed whatever shortcomings the city and utility were attempting to "fix" with its GON.

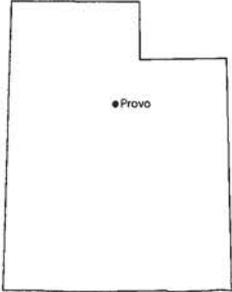
## 4.9 Provo, Utah

The GON in Provo, Utah, will forever be linked with Google, the company that purchased the municipal broadband network in 2013 for one dollar. Many now view the municipal broadband system in Provo as a failure that cost taxpayers about \$60 million. After selling the system to Google, the city remains responsible for paying off nearly \$40 million in debt over the next 12 years. In short, Provo joins the growing list of municipalities that have been forced to cut their losses, abandon their GON, and acknowledge their efforts to compete in the broadband sector did not live up to original expectations and ultimately proved costly to residents.

### 4.9.1 Background

The roots of the FTTH municipal network that would eventually be deployed in Provo date back to 1998, when the city investigated whether and how it might construct a telecommunications system.<sup>662</sup> By 2001, the city successfully built a backbone network consisting of three fiber rings, which connected an array of municipal assets, including electric substations, city buildings, major traffic signals, and schools.<sup>663</sup> Thereafter, the city explored the feasibility of extending the network directly to residents and

### Provo, Utah At-A-Glance



**City Population:** 115,919 (2012)

**Year of Network Launch:** 2001

**Current Status:** Built and Sold

**Number of subscribers:** NA

**Revenues:** \$570 K

**Operating Expenses:** \$1.89 million

**Note:** Additional information on the Provo network is contained in Table 1 and in Appendix I.

<sup>660</sup> Editorial: *City Utilities Goes Modern*.

<sup>661</sup> For additional discussion and analysis, see *supra*, section 3.1.1.

<sup>662</sup> See *The iProvo Timeline*, Apr. 21 2013, Daily Herald, available at [http://www.heraldextra.com/news/local/central/provo/the-iprovo-timeline/article\\_92b618c2-3479-5125-bb89-96cd1e33b269.html](http://www.heraldextra.com/news/local/central/provo/the-iprovo-timeline/article_92b618c2-3479-5125-bb89-96cd1e33b269.html) ("iProvo Timeline").

<sup>663</sup> See *City of Provo, Utah, \$39,500,000 Sales Tax Revenue Bond, Series 2004 Taxable*, at p. 17, Electronic Municipal Market Access, Municipal Securities Rulemaking Board (Feb. 24, 2004), available at <http://emma.msrb.org/MS217839-MS193147-MD374970.pdf> ("Provo \$39,500,000 Sales Tax Revenue Bond, Series 2004").

businesses.<sup>664</sup> Pressure from incumbent ISPs and state legislators, however, pushed city officials to shift their plan for the emerging GON to a wholesale model.<sup>665</sup>

In 2002, the city embarked on the second phase of building, a demonstration project that entailed the construction and operation of a wholesale FTTH network for 300 single-family houses and 30 apartment buildings.<sup>666</sup> The city partnered with retail providers to offer consumers television, telephone, and high-speed data services.<sup>667</sup> The City Council viewed this limited pilot as a success and voted to pursue the entire project in November 2003.<sup>668</sup> The next year, it agreed to issue \$39.5 million in tax revenue bonds to finance the network, dubbed iProvo.<sup>669</sup> These funds would be used to build a fully fiber, open access network that would also be used for an array of internal purposes (e.g., control of traffic, electrical, and water systems; internal communication services).<sup>670</sup> The Council estimated that iProvo would be completed by 2006 and capable of generating a positive cash flow by 2008.<sup>671</sup>

The projected success of iProvo was tied directly to the ability of its primary ISP, HomeNet, to grow a robust subscriber base and generate revenues that could be used to cover the costs of building and maintaining the network. By 2005, less than a year after the network went live, HomeNet and iProvo began to run into trouble. In particular, HomeNet was only able to sign up 2,400 customers at its peak, and by 2005 it had lost one-third of them, dropping iProvo's subscribership to 1,600.<sup>672</sup> Consequently, HomeNet pulled out of its contract in July 2005<sup>673</sup> and filed for Chapter 11 bankruptcy protection.<sup>674</sup> This sent iProvo into a downward financial spiral where it was not gaining enough subscribers and revenues were down.<sup>675</sup> These troubles would only multiply over the next few years.

In 2006, low revenue and even lower subscriber rates forced iProvo to approach the city and request a loan of \$1 million from its electricity reserve fund to cover costs for the next fiscal year.<sup>676</sup> The GON continued borrowing city funds throughout 2006 and 2007.<sup>677</sup> Subscriber and revenue growth, however, remained disappointing. In 2007, the network had initially expected it would be able to sign up an average of 60 subscribers per week; in reality, it was getting only 16.<sup>678</sup> By 2008, the year iProvo was supposed to be profitable, the network was on track to cost the city \$2 million.<sup>679</sup>

It was becoming increasingly clear to the city that iProvo was unsustainable. The city was already investing millions of dollars annually to prop up the network<sup>680</sup> and was on track to lose more than \$15 million in subsequent years if it continued to subsidize the GON.<sup>681</sup> As a result, the iProvo network was sold to a private

664 See Steven Titch, *Spinning its Wheels: An Analysis of Lessons Learned from iProvo's First 18 Months of Municipal Broadband*, at p. 3, Reason Foundation (Dec. 2006), available at <http://reason.org/files/33224c9b01e12f3b969f4257037c057e.pdf> ("Spinning its Wheels").

665 *Id.*

666 *Id.*

667 *Id.*

668 *iProvo Timeline*.

669 *Provo \$39,500,000 Sales Tax Revenue Bond, Series 2004* at p. 17.

670 *Id.*

671 *Spinning its Wheels* at p. 4.

672 *Id.* at p. 5.

673 *iProvo Timeline*.

674 See Tad Walch, *HomeNet Owes Provo and Other Creditors*, Feb. 3, 2006, *Deseret News*, available at <http://www.deseretnews.com/article/635181385/HomeNet-owes-Provo-and-other-creditors.html?pg=all>.

675 See John Twitchell, *Is iProvo in Trouble?*, July 12, 2005, *Deseret News*, available at <http://www.deseretnews.com/article/600147949/Is-iProvo-in-trouble.html?pg=all>.

676 See Steven Titch, *Provo Revisited: Another Year and Still Struggling*, at p. 3, Reason Foundation (April 2008), available at <http://reason.org/files/33224c9b01e12f3b969f4257037c057e.pdf>.

677 *Id.*

678 See Jens Dana, *Provo Eyes Ways to Fix its Network*, April 22, 2008, *Deseret News*, available at <http://www.deseretnews.com/article/695272699/Provo-eyes-ways-to-fix-its-network.html?pg=all>.

679 *Id.*

680 See Donald W. Meyers, *Veracity, OHIvey Offer Plans to Run iProvo*, May 6, 2011, *Salt Lake Tribune*, available at <http://archive.sltrib.com/article.php?id=14941773&citytype=storyID>.

681 See Jens Dana, *iProvo, Broadweave Nearly Close Deal*, July 1, 2008, *Desert News*, available at <http://www.deseretnews.com/article/700239528/iProvo-Broadweave-nearly-close-deal.html?pg=all>.

company, Broadweave Networks, in May 2008 for \$40.6 million.<sup>682</sup> As a condition of the sale, Broadweave agreed to pay off the \$39.5 million bond that had been issued to build the GON.<sup>683</sup> But less than a year later, after merging with another company to form Veracity Networks,<sup>684</sup> the newly formed entity realized it could not build cash reserves, improve the network, or pay off lingering debt associated with the network.<sup>685</sup> Veracity asked the city to restructure the debt.<sup>686</sup> (To that point, Veracity had been drawing on a \$6 million surety bond while it attempted to “save operating cash.”<sup>687</sup>) In 2011, Veracity defaulted on its purchase agreement; control of the network reverted back to the city.<sup>688</sup> The city settled with Veracity and leased the network back to the company while it looked for a new buyer.<sup>689</sup> Also in 2011, the city “began charging \$5.35 a month on residents’ power bills to pay the bond payment.”<sup>690</sup>

Like many problem GONs, Provo had a difficult time finding a buyer willing to purchase the network for the price of the assets, let alone the cost Provo paid to build the network. In April 2013, Provo finally found a buyer: the city sold the \$40 million network to Google for one dollar.<sup>691</sup>

## 4.9.2 Cost and Financing

The FTTH GON in Provo was financed via a \$39.5 million bond issue.<sup>692</sup> Beyond that, iProvo required about \$2 million in subsidies from the city annually.<sup>693</sup> All told, additional taxpayer subsidization totaled \$19.3 million.<sup>694</sup> The sale of the GON to Google does not remove the burden of debt from taxpayers. The city, and taxpayers by implication, are still responsible for the remaining debt on the original bond.<sup>695</sup> That works out to \$3.3 million “in bond payments per year for the next 12 years.”<sup>696</sup> In addition, the city of Provo will incur additional costs as a result of its deal with Google. It will have to not only retire the debt, but also “buy new equipment so it can operate city services independently from Google, and hire engineers to document the locations of all the fiber in the system.”<sup>697</sup>

682 See Darren Murph, *Provo, Utah Sells iProvo Fiber-Optic Network to Broadweave*, May 9, 2008, Engadget, available at <http://www.engadget.com/2008/05/09/provo-utah-sells-iprovo-fiber-optic-network-to-broadweave/>.

683 See *Comprehensive Annual Financial Report, 2009, City of Provo, Utah, For the Fiscal Year Ended June 30, 2009*, at p. 9-10, Provo City, available at [http://www.provo.org/userfiles/downloads/finance/cafrbook\\_2009.pdf](http://www.provo.org/userfiles/downloads/finance/cafrbook_2009.pdf).

684 *Id.*

685 See Donald W. Meyers, *Broadweave, Veracity Merge Companies, ask Provo to Restructure Payments*, Aug. 18, 2009, Salt Lake Tribune, available at <http://archive.sltrib.com/article.php?id=13152591&ittype=NGPSID>.

686 *Id.*

687 See Donald W. Meyers, *Veracity Asks for More Time on Loan from Provo*, Sept. 2, 2009, Salt Lake Tribune, available at <http://archive.sltrib.com/article.php?id=13255378&ittype=NGPSID>.

688 See Donald W. Meyers, *Provo Takes Back iProvo Network, Leases it to Veracity*, Apr. 18, 2012, Salt Lake Tribune, available at <http://archive.sltrib.com/article.php?id=20654910&ittype=storyID>.

689 *Id.*

690 See Vince Horiuchi, *Provo Googled its Way out Fiber-Optic Network But Costs Live on*, June 3, 2013, Salt Lake Tribune, available at <http://www.sltrib.com/sltrib/money/56288307-79/network-iprovo-provo-google.html.csp>.

691 See Angela Moscaritolo, *Report: Google Buying Provo Fiber Service for \$1*, April 19, 2013, PC Magazine, available at <http://www.pcmag.com/article2/0,2817,2417966,00.asp>.

692 *Provo \$39,500,000 Sales Tax Revenue Bond, Series 2004* at p. 17.

693 See *iProvo: A Requiem*, May 5, 2013, Utah Taxpayer’s Association, available at <http://www.utahtaxpayers.org/wp-content/uploads/2013/05/20-iProvo.pdf> (“iProvo: A Requiem”).

694 *Id.*

695 See, e.g., Benjamin Wood, *Google Fiber Adds Value to Provo Network, But Taxpayer Debt Remains, Mayor Says*, April 18, 2013, Desert News, available at <http://www.deseretnews.com/article/865578530/Google-Fiber-adds-value-to-Provo-network-but-taxpayer-debt-remains-mayor-says.html?pg=all>.

696 See Vince Horiuchi, *Council Approves iProvo Sale to Google*, April 24, 2013, Salt Lake Tribune, available at <http://www.sltrib.com/sltrib/news/56206589-78/google-network-fiber-provo.html.csp>.

697 See *Q&A With Mayor John Curtis, Provo, Utah*, at p. 40, Broadband Communities (May/June 2013), available at [http://www.bbpmag.com/2013mags/may-june/BBC\\_May13\\_Q&AMayorCurtis.pdf](http://www.bbpmag.com/2013mags/may-june/BBC_May13_Q&AMayorCurtis.pdf).

### 4.9.3 The Network

The iProvo network in the city of Provo is operational but not entirely complete. The backbone has been deployed throughout the city, but only one-third of homes are connected to the network.<sup>698</sup> Under the city's management, subscription rates were much lower than anticipated.<sup>699</sup> At its peak, iProvo had about 11,000 subscribers, but churn rates were high.<sup>700</sup>

Prior to its sale to Google, iProvo offered triple-play packages to subscribers through contracted private ISPs. As an example of the services it offered, in 2004 HomeNet, iProvo's original retailer, offered several bundled packages of Internet access (up to 10 Mbps), cable telephone, and VoIP service, which ranged in price from \$89.99 to \$124.99 per month.<sup>701</sup> The services and pricing changed numerous times over the years as the network changed hands between public and private entities. Via Google Fiber, Google will offer subscribers free 5 Mbps service for a \$30 activation fee; 1 Gbps connections will retail for \$70 per month.<sup>702</sup> Google has no plans to offer services to businesses at this point in time.<sup>703</sup> But it has committed to providing "free Gigabit Internet service to 25 local public institutions like schools, hospitals, and libraries."<sup>704</sup>

### 4.9.4 Community Impact

In 2004, then-Mayor of Provo Lewis K. Billings enumerated the many benefits he foresaw for the fledgling FTTH network being in his city. These included "advanced telemedicine services," "interactive distance learning," "remote meter reading," and numerous other "things I can't even comprehend that will be enabled by the immense capacity of our network."<sup>705</sup> Nearly a decade later, few, if any, of these goals have been realized as the Provo GON transitions to yet another owner. Some have touted the benefits of gigabit connectivity in the city's schools, but there is little evidence that the network itself has generated tangible gains in outcomes.<sup>706</sup> Moreover, much of the excitement around educational technology in Provo schools seems to have stemmed more from the introduction of iPads than anything else.<sup>707</sup>

Over the course of its turbulent history, iProvo has been described as an example of government overreach. Residents, journalists, and elected officials alike have been critical of the GON. The Utah Taxpayers Association has characterized Provo's investment as a waste of taxpayer money. Early on, the group questioned, "Why is the city gambling with taxpayer money on a speculative venture when many private companies and cities have failed while attempting the same thing? Shouldn't we as taxpayers be able to vote before risking \$40 million of OUR money?"<sup>708</sup>

698 See Vince Horiuchi, *Provo Will be 3<sup>rd</sup> U.S. Metro Area to Get Speedy Google Fiber*, April 17, 2013, Salt Lake Tribune, available at <http://www.sltrib.com/sltrib/money/56168330-79/google-provo-network-fiber.html.csp>.

699 See, e.g., Jay Evenson, *Google Fiber Rescues Provo; What About UTOPIA?*, April 18, 2013, Deseret News, available at <http://perspectivesonthenews.blogs.deseretnews.com/2013/04/18/google-fiber-rescues-provo-what-about-utopia>.

700 See Jens Dana, *iProvo 'Surpassing Milestones'*, Sept 15, 2008, Deseret News, available at <http://www.deseretnews.com/article/700258928/iProvo-surpassing-milestones.html?pg=all> (reporting on subscription numbers); Jens Dana, *iProvo Experiencing 'Churn'*, Jan. 16, 2008, Deseret News, available at <http://www.deseretnews.com/article/695244527/iProvo-experiencing-churn.html?pg=all> (reporting on customer cancellations).

701 See Chris Somerville, *HomeNet Launches TriplePlay on iProvo*, Dec. 10, 2004, Light Reading, available at <http://www.lightreading.com/cable/homenet-launches-tripleplay-on-iprovo/240029971>.

702 *iProvo: A Requiem*.

703 *Id.*

704 See Google Fiber—*On the Silicon Prairie, the Silicon Hills, and Now the Silicon Slopes*, April 17, 2013, Google Blog, available at <http://googleblog.blogspot.com/2013/04/google-fiber-on-silicon-prairie-silicon.html>.

705 See Lewis K. Billings, *Benefits of a Community Broadband Network*, Oct. 11, 2004, Speech before the American Public Power Association Community Broadband Conference, available at <http://www.provo.org/mayor.broadband.html>.

706 See, e.g., Mayor John Curtis, *What's the Latest on iProvo?*, July 27, 2011, Provo Insider, available at <http://provomayor.com/2011/07/27/whats-the-latest-on-iprovo/>.

707 See Genelle Pugmire, *Veracity Helps Provo Schools go High-Tech*, March 8, 2011, Daily Herald, available at [http://www.heraldextra.com/news/local/central/provo/article\\_d38df969-a74b-5f8b-951d-9600e56fa587.html](http://www.heraldextra.com/news/local/central/provo/article_d38df969-a74b-5f8b-951d-9600e56fa587.html).

708 See Howard Stephenson, *UTOPIA Looks More and More Like a Rube Goldberg Cartoon*, Jan. 12, 2004, Utah Taxpayers Association, available at <http://www.utahtaxpayers.org/?p=643>.

Former Provo Mayor George Stewart, the mentor of the mayor who was responsible for launching iProvo, has been critical of his protégé and the network he built.<sup>709</sup> After a heated exchange during a City Council meeting, Stewart concluded that, “if I had been here two years ago, I would not have proposed iProvo.”<sup>710</sup> The current mayor of Provo, John Curtis, has also been critical of the GON. He has been quoted as saying, “If I could, I would get a plot in the city cemetery and bury it. iProvo is gone, it was sold. I would never like to utter iProvo again.”<sup>711</sup>

#### 4.9.5 Assessment

The sale of iProvo to Google offers several insights that should inform ongoing debates over the efficacy of pursuing a municipal broadband network.

First, the sale to Google does little to erase the legacy of this municipal system. By 2013, iProvo had become a distressed asset that represented a failed foray into a competitive marketplace by the city government. The total cost of the network, estimated at around \$60 million, may far outweigh any benefits that had accrued to the city up to that point.

Second, the sale of iProvo to Google is not the end of the story. Although the city and its mayor succeeded in its goal of selling the failing GON, Google was able to extract a favorable deal that might end up benefiting the company more than the residents it will serve. Google has committed to investing in upgrading the existing infrastructure to support gigabit connections and building out the network to all homes,<sup>712</sup> but it did not assume the nearly \$40 million in debt that the city had previously tried to transfer on to its original private purchaser, Broadweave.<sup>713</sup>

The recent deal with Google requires Provo to spend upwards of \$1.7 million on an array of items related to the transfer of ownership to Google.<sup>714</sup> Moreover, with much uncertainty surrounding Google’s actual motivations for its small-scale gigabit fiber deployments, Provo residents could find themselves in another ambitious broadband experiment.<sup>715</sup>

709 See Ace Stryker, *George Stewart: Man on a Mission*, Dec. 27, 2008, Daily Herald, available at [http://www.heraldextra.com/news/local/george-stewart-man-on-a-mission/article\\_36913666-f18b-552d-b4f4-73a7b53056c4.html](http://www.heraldextra.com/news/local/george-stewart-man-on-a-mission/article_36913666-f18b-552d-b4f4-73a7b53056c4.html).

710 See *Off the Agenda: A Royal Rumpus: King George vs. Prince Lewis*, March 12, 2006, Salt Lake Tribune, available at <http://archive.sltrib.com/printfriendly.php?id=3594292&itype=ngpsid>.

711 See Genelle Pugmire, *Provo Mayor Gives Update on City’s Economic Development, iProvo*, Oct. 1 2010, Herald Extra, available at [http://www.heraldextra.com/news/local/article\\_e3ace13e-ea4f-51e4-a5d3-ad64adae91e6.html](http://www.heraldextra.com/news/local/article_e3ace13e-ea4f-51e4-a5d3-ad64adae91e6.html).

712 See *Google Fiber—On the Silicon Prairie, the Silicon Hills, and Now the Silicon Slopes*, April 17, 2013, Google Blog, available at <http://googleblog.blogspot.com/2013/04/google-fiber-on-silicon-prairie-silicon.html>.

713 Cyrus Farviar, *Provo Doesn’t Know Where its Fiber is, Google Makes City Spend \$500,000 to Find It*, April 24, 2013, Ars Technica, available at <http://arstechnica.com/business/2013/04/provo-doesnt-know-where-its-fiber-is-google-makes-city-spend-500000-to-find-it/>.

714 *Id.*

715 For an interesting analysis of possible motives, see Andres Cardenal, *Google Fiber: Unprofitable and Smart*, April 17, 2013, The Motley Fool, available at <http://beta.fool.com/acardenal/2013/04/17/google-fiber-unprofitable-and-smart/31412/> (observing that “It’s essential for Google to make sure users will have access to the internet at a decent speed and a fair price, so they can actively use services like search and YouTube as much as they like, and Google gets to deliver more and better ads to that population...Not only that, every time someone uses one of Google’s services the company learns from that information and uses it to deliver better search results and more efficient advertising. Google needs us to be online as much as possible, both to make money by selling ads and to improve the quality of its services.”).

## 4.10 Wilson, North Carolina

In April 2013, Wilson, North Carolina, became a “gig city.”<sup>716</sup> After several years of competing with private ISPs in the market for Internet access, television, and telephone service, the city’s GON was upgraded to a gigabit network in the expectation it would set a new standard for innovation and competition going forward. Today, the perceived success of the GON in Wilson is not clear-cut. Significant uncertainty surrounds many aspects of this network.

### 4.10.1 Background

Beginning in the late 1980s, the city of Wilson, North Carolina, actively explored the possibility of entering the communications market as a service provider. In 1989, the city set aside \$4 million to study the viability of creating or acquiring a cable company.<sup>717</sup> The primary motive of the city was to address what it saw as local discontent with the services offered by incumbents. In April 2001, Wilson took another step forward in its march toward a GON when it tried and failed to purchase outright the network of a local cable provider.<sup>718</sup> Later, Wilson sought to partner with incumbent ISPs in the construction of a FTTH network, but there was little interest in assuming the huge risks associated with building a network in the absence of any real demand.<sup>719</sup>

In November 2006, Wilson decided to go it alone. The City Council voted to authorize the issuance of \$28 million in debt to build the FTTH network that city officials had long desired.<sup>720</sup> The network, dubbed Greenlight, began to connect some neighborhoods in 2008, and by 2009 the network went citywide.<sup>721</sup> As of January 2012, the network succeeded in passing 20,634 premises.<sup>722</sup> Later that year, the network began to expand into the surrounding county.

In response to concerns raised by a number of stakeholders, including incumbent ISPs, the state legislature passed a bill that sought to maintain a level playing field between public and private service providers (Wilson was exempt).<sup>723</sup> In particular, the bill, reflecting the enormous risk associated with such projects, required municipalities to hold hearings and a special election to approve projects, fund networks solely from revenues, and send a portion of revenues to the state’s general fund.<sup>724</sup> The bill became law in May 2011.<sup>725</sup>

## Wilson, North Carolina At-A-Glance



**City Population:** 49,610 (2012)

**Year of Network Launch:** 2008

**Current Status:** Built

**Number of subscribers:** 6,000

**Revenues:** \$11.42 million

**Operating Expenses:** \$11.42 million

**Note:** Additional information on the Wilson network is contained in Table 1 and in Appendix I.

716 See Press Release, *City of Wilson to Offer Gigabit Internet Service to Customers by July*, April 19, 2013, GreenlightNC, available at [http://www.greenlightnc.com/gigabit\\_press\\_release.php](http://www.greenlightnc.com/gigabit_press_release.php).

717 See Todd O’Boyle & Christopher Mitchell, *Carolina’s Connected Community: Wilson Gives Greenlight to Fast Internet*, at p. 3, Common Cause and Institute of Local Self Reliance (Dec. 2012), available at <http://www.ilsr.org/wp-content/uploads/2012/12/wilson-greenlight.pdf> (“*Carolina’s Connected Community*”).

718 *Id.* at p. 1-2.

719 *Id.* at p. 2.

720 *Id.*

721 *Id.*

722 See Masha Zager, *Municipal FTTH Deployment Snapshot: Greenlight-Wilson, N.C.*, *Broadband Communities Magazine* (Jan. 2012), available at <http://www.bbpmag.com/snapshot/snap0112.php>.

723 See *An Act to Protect Jobs and Investment by Regulating Local Government Competition with Private Business*, H.B. 129, Feb. 21, 2011, available at <http://www.ncga.state.nc.us/Sessions/2011/Bills/House/PDF/H129v3.pdf>.

724 *Id.*

725 See Jim Barthold, *Governor Won’t Sign Bill, So N.C. Broadband Restrictions Become Law*, May 23, 2011, *Fierce Cable*, available at <http://www.fiercecable.com/story/governor-wont-sign-bill-so-nc-broadband-restrictions-become-law/2011-05-23>.

## 4.10.2 Cost and Financing

Greenlight was largely funded through borrowing. In 2008, the City Council approved the issuance of \$33,710,000 worth of certificates of participation (COPs).<sup>726</sup> COPs are typically used in lieu of bonds in an effort to circumvent debt limits.<sup>727</sup> They are akin to revenue bonds.<sup>728</sup> Debt from these certificates was payable from 2009 to 2033 at interest rates of between three and five percent (depending on the year).<sup>729</sup> The COPs are secured by a lease on the network's equipment; in the event of default, creditors can foreclose on the secured properties.<sup>730</sup> The city borrowed an additional \$4.75 million from Wells Fargo in 2010.<sup>731</sup>

Operating expenses for the network are high. In 2013, Greenlight's total cost of operations was about \$11,420,000.<sup>732</sup>

## 4.10.3 The Network

The Greenlight FTTH network is owned and operated by the city of Wilson, North Carolina.<sup>733</sup> It is operational and continues to expand.<sup>734</sup> The cost of continued construction is about \$1,237,176 annually.<sup>735</sup> The network is not permitted to expand service or infrastructure beyond the Wilson county line.<sup>736</sup> Greenlight also offers an open Wi-Fi network in some parts of the city.<sup>737</sup> As of 2012, Greenlight amassed nearly 6,000 customers,<sup>738</sup> representing about 30 percent of the Wilson market.<sup>739</sup> Of these 6,000 customers, about 5,400 subscribe to some form of broadband services.<sup>740</sup>

Greenlight offers broadband, television, and telephone services, which can be purchased separately or in a bundle.<sup>741</sup> Bundled plans range in cost from \$102.95 per month to \$160.90 per month; all bundles come with a symmetrical 20 Mbps Internet connection.<sup>742</sup> As a stand-alone service, a symmetrical 20 Mbps broadband connection can be purchased for \$39.95 a month, while a symmetrical 1 Gbps connection costs \$154.95 per month.<sup>743</sup>

Greenlight's overall financial viability remains in question. While there is some evidence that the network is profitable,<sup>744</sup> operating revenues have not yet surpassed operating expenses.<sup>745</sup> Debt servicing and asset

726 See generally *Wilson, North Carolina, Certificates of Participation Series 2008*, Electronic Municipal Market Access, Municipal Securities Rulemaking Board (May 1, 2008), available at <http://emma.msrb.org/MS273964-MS271292-MD541860.pdf> ("Wilson Certificates of Participation Series 2008").

727 COPs are defined as "A type of financing where an investor purchases a share of the lease revenues of a program rather than the bond being secured by those revenues." See Investopedia, Certificate of Participation, <http://www.investopedia.com/terms/c/certificateofparticipation.asp>.

728 See, e.g., Christopher Mitchell & Todd O'Boyle, *Wilson Gives the Greenlight to Fast Internet*, at p. 50, *Broadband Communities* (Jan./Feb. 2013), available at [http://www.bbpmag.com/2013mags/jan-feb/BBC\\_Jan13\\_Greenlight.pdf](http://www.bbpmag.com/2013mags/jan-feb/BBC_Jan13_Greenlight.pdf) ("Wilson Gives the Greenlight to Fast Internet").

729 *Wilson Certificates of Participation Series 2008*.

730 *Id.* at p. 19.

731 *Carolina's Connected Community* at p. 8.

732 Per an email from Kim Hands, Director of Finance, Wilson, NC.

733 See Wilson Greenlight, FAQ, <http://www.wilsonnc.org/living/fiberopticnetwork/greenlightfaq/>.

734 *Carolina's Connected Community* at p. 16.

735 See *Comprehensive Annual Financial Report*, at p. 11, Wilson, North Carolina (June 30, 2012), available at <http://www.wilsonnc.org/attachments/pages/597/Complete%20CAFR%20Report%202012.pdf> ("*Comprehensive Annual Financial Report—Wilson*").

736 *Carolina's Connected Community* at p. 16.

737 See, e.g., Wilson, Greenlight—About, <http://www.wilsonnc.org/departments/greenlightITS/>.

738 *Comprehensive Annual Financial Report—Wilson* at p. 253.

739 *Carolina's Connected Community* at p. 9.

740 *Id.*

741 See Greenlight, Packages, <http://greenlightnc.com/packages/>.

742 *Id.*

743 See Greenlight, About: Internet, <http://greenlightnc.com/about/internet/>.

744 See, e.g., *Carolina's Connected Community* at p. 9.

745 Email from Kim Hands, Director of Finance, Wilson, NC. Operating expenses do not include payments related to debt service, taxes, or other such expenses that arise as a result of operating a business.

depreciation, coupled with higher than expected expenses, may impact on its long-term sustainability.<sup>746</sup> In 2012, the network had an operating loss of \$220,956.<sup>747</sup>

#### 4.10.4 Community Impact

Local officials and GONs proponents assert that the primary benefit of the Greenlight network has been its ability to impose price discipline on incumbent ISPs.<sup>748</sup> Proponents have also asserted the city's entrance into the marketplace spurred incumbents to upgrade their networks in an effort to compete with Greenlight's speeds.<sup>749</sup> Additional benefits cited by supporters include using the GON to support a more robust security camera network throughout the city and serving as another community asset to lure new businesses.<sup>750</sup>

Claims about spurring competition should be evaluated in view of the larger dynamics at play in the broadband space. As discussed in **section 3.1**, the long-term trend in the U.S. broadband market has been toward faster speeds, lower prices, and more robust intermodal competition as consumers embrace mobile alternatives. Moreover, as has been observed in other contexts (e.g., Monticello), local governments have shown limited capability to engage in sustainable competition with private-sector firms.<sup>751</sup> Even if a GON does help to spur price adjustments among ISPs in the short-term, the pace and intensity of subsequent competition may tend to outstrip the ability of a local government to keep up in the long run.

The impact of Greenlight on local economic development is unclear at this point. The unemployment rate in Wilson County, for which Wilson city serves as the seat, has risen steadily in recent years (it was 9 percent in December 2013) and continues to be above statewide and national averages.<sup>752</sup> In addition, Wilson's leading employers tend to be manufacturing firms, which typically do not require gigabit broadband to operate.<sup>753</sup> If Wilson intends to use Greenlight to diversify its local economy (e.g., by attempting to shift it to become more technology-focused), it is likely to face numerous barriers on the demand side of the connectivity equation.

#### 4.10.5 Assessment

Despite a number of perceived positive impacts, there is much uncertainty about the future of this GON. The debt structure of Greenlight is troubling. It has been asserted that Wilson's use of COPs was acknowledgment that the municipality was intentionally circumventing state law and the will of local residents. Article 5, section 4 of North Carolina's state constitution prohibits local governments from "contract[ing] debts secured by a pledge of its faith and credit unless approved by a majority of the qualified voters of the unit who vote thereon."<sup>754</sup> Greenlight's financing model was not approved by a referendum. It was, as discussed above, initiated by a City Council vote. In addition, the use of COPs has done little to mitigate the risk for taxpayers. The COP agreement states that if revenue derived from the network is not enough to make payments, the city will use taxpayer money from the city's general fund to cover those obligations.<sup>755</sup>

Perhaps more important is that this GON was built in an area with low consumer demand for and use of broadband. Deploying a broadband network in such an area not only jeopardizes the ability of the system

<sup>746</sup> *Comprehensive Annual Financial Report* at p. 11.

<sup>747</sup> *Id.* at 24.

<sup>748</sup> *See, e.g., Wilson Gives Greenlight To Fast Internet* at p. 52.

<sup>749</sup> *Id.*

<sup>750</sup> *See, e.g., Lisa Gonzalez, Wilson's Greenlight Getting the Publicity It Deserves*, July 24, 2013, Community Broadband Networks, Institute for Local Self-Reliance, available at <http://www.muninetworks.org/content/wilsons-greenlight-getting-publicity-it-deserves>.

<sup>751</sup> *See supra*, section 4.4, for additional discussion.

<sup>752</sup> *See Unemployment Rate in Wilson County, NC*, Federal Reserve Bank of St. Louis (July 30, 2013), available at <http://research.stlouisfed.org/fred2/series/NCWILS0URN>.

<sup>753</sup> *See, e.g., Table 3: Major Employers*, Wilson Economic Development Council, available at [http://www.wilsonedc.com/wp-content/uploads/2011/04/Wilson\\_NC\\_Data\\_Standards\\_Table\\_3.pdf](http://www.wilsonedc.com/wp-content/uploads/2011/04/Wilson_NC_Data_Standards_Table_3.pdf).

<sup>754</sup> *See* Art. V, § 4, North Carolina Constitution, <http://www.ncga.state.nc.us/legislation/constitution/nconstitution.html>.

<sup>755</sup> *Wilson Certificates of Participation Series 2008* at p. 15.

to become profitable and self-sustaining, it also serves as another example of the seemingly myopic focus on supply side issues in the broadband space. As noted elsewhere, North Carolina is tied with Mississippi as the least connected state in the country.<sup>756</sup>

Some advocates, who argue that low adoption is the result of overly expensive and uncompetitive broadband in these states, have attempted to position GONs like Greenlight as possible effective approaches capable of driving down prices and thus increasing take-rates.<sup>757</sup> As discussed in **section 3.1.2**, this view of broadband adoption fails to account for the many nuances associated with bolstering connectivity in under-adopting areas. There is significant evidence to suggest that efforts focused on key demand side issues are capable of closing connectivity gaps in areas that are similar to Wilson.<sup>758</sup> In other words, a GON is unlikely to solve the connectivity crisis in Wilson or in North Carolina.

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756 See, e.g., Christopher Mitchell & Todd O'Boyle, *At the Bottom of the Broadband Barrel*, Jan. 28, 2013, News Observer, available at <http://www.newsobserver.com/2013/01/28/2639486/at-the-bottom-of-the-broadband.html>.

757 *Id.*

758 Numerous examples are provided in section 6, *infra*. However, one leading example of a successful public-private approach to bolstering broadband connectivity in rural and poorer areas is ConnectKentucky. For an overview, see Ann Carrns, *Faster and Stronger*, July 28, 2008, Wall St. Journal (describing the program as working "to expand the availability and use of broadband Internet connections in the state's rural areas." Moreover, "According to ConnectKentucky, [as of July 2008] 95% of the state's households can... buy high-speed Internet service, up from 60% in 2004. ConnectKentucky's efforts, funded 90% by the state and 10% by private businesses and foundations, show how public-private partnerships, as well as a willingness by local governments to work with less-established telecommunications providers, can drive increased access to high-speed Internet service and spur economic development.").

# 5

## Conclusions About the Efficacy of GONs in the United States

The case studies in **section 4**, coupled with quantitative and qualitative analyses included in **sections 2 and 3**, support a range of conclusions about GONs in the United States. The following findings expand on these conclusions by tying together the data and observations from previous sections. Taken together, these findings make a strong case for approaching GONs proposals with skepticism.

### Findings About GONs

**Finding One:** Failed and failing GONs offer much-needed perspective about the complexities and challenges associated with building and deploying advanced communications networks.

**Finding Two:** Many GONs raise fundamental concerns regarding sustainability, fair competition, and consumer welfare.

**Finding Three:** Calls for achieving subjective speed benchmarks should not supplant actual consumer demand as the primary driving force shaping the broadband ecosystem.

**Finding Four:** The direct economic impact of GONs, especially around job creation, is difficult to measure given the many other contributing factors.

**Finding Five:** Governments are not well-equipped to compete in dynamic markets.

**Finding Six:** The substantial costs of building, maintaining, and operating GONs mitigate perceived benefits.

**Finding Seven:** Pursuit of a GON often diverts scarce public resources from more pressing priorities.

**Finding Eight:** A GON will not spawn the next Silicon Valley.

**Finding Nine:** GONs are not remedies for perceived or actual broadband connectivity challenges.

**Finding Ten:** State-level policy makers have important roles to play in the GONs context.

### 5.1 **Finding One: Failed and failing GONs offer much-needed perspective about the complexities and challenges associated with building and deploying advanced communications networks.**

For policy makers considering whether to pursue a GON, the failed and failing GONs offer a more instructive perspective about the complexities and challenges of building and deploying advanced communications networks than the apparent successes do.

First, municipal networks viewed as successful generally had their genesis in unique circumstances that are extremely difficult to replicate. The gigabit network in Chattanooga, for example, benefited immensely from a

one-time \$111 million federal grant that was part of a much larger policy response to the Great Recession.<sup>759</sup> This allocation, which was substantially larger on a per capita basis than any other smart grid-related grant made by the federal government, enabled the municipal utility to “build its [fiber-optic communications] system in three years instead of 10.”<sup>760</sup> Similarly, the GON in Bristol, Virginia, benefited from the infusion of tens of millions of dollars in grants from the state’s Tobacco Commission. In addition, historically low interest rates enabled some municipalities to either refinance outstanding GON debt or issue new bonds with even lower rates.<sup>761</sup> These conditions are unlikely to persist over the long term: interest rates, even on municipal bonds, are expected to begin rising soon,<sup>762</sup> and public funding of all kinds is likely to be cut back substantially in response to calls for deficit reduction and balancing budgets.<sup>763</sup>

Second, many initial successes have not endured. Thus, using a particular municipal broadband project as a model for other cities to replicate should be undertaken with caution. As discussed in section 2, municipal Wi-Fi advocates immediately pointed to troubled projects in cities like Philadelphia when making the case for similar projects in other cities. Many of these networks failed, though, either in the near term (e.g., as in Philadelphia and Orlando) or over the long term (e.g., a city Wi-Fi network in Seattle, Washington, was shut down in 2012; policy makers in Riverside, California, are seriously considering cancelling its municipal service<sup>764</sup>). Similar enthusiasm abounded during initial deployment of GONs that eventually faltered in places like Burlington, Vermont;<sup>765</sup> Dunnellon, Florida;<sup>766</sup> Monticello, Minnesota;<sup>767</sup> Quincy, Florida;<sup>768</sup> and the many cities that make up the UTOPIA consortium.<sup>769</sup> Some of these systems were seen as strong evidence that “communities can build a telecommunications network to provide better services at a lower cost while

759 See *supra*, section 4.1, for additional discussion. See also Brian Fung, *How Chattanooga Beat Google Fiber by Half a Decade*, Sept. 17, 2013, *The Switch*, Wash. Post, available at <http://www.washingtonpost.com/blogs/the-switch/wp/2013/09/17/how-chattanooga-beat-google-fiber-by-half-a-decade/>.

760 See *Smart Grid Grant Catapults City into Lead Position*, Nov. 30, 2009, *Times Free Press*, available at <http://www.timesfreepress.com/news/2009/nov/30/smart-grid-grant-catapults-city-lead-position/>.

761 For an overview of general municipal bond activity in the wake of the Great Recession, see *Understanding the Great Recession's Impact on City Bond Issuances*, Issue Brief, American Cities Project, Pew Charitable Trusts (Aug. 2013), available at [http://www.pew-states.org/uploadedFiles/PCS\\_Assets/2013/Municipal\\_Bonds\\_Report\\_Final.PDF](http://www.pew-states.org/uploadedFiles/PCS_Assets/2013/Municipal_Bonds_Report_Final.PDF).

762 See, e.g., Martin Feldstein, *The Rise and Rise of U.S. Interest Rates*, Sept. 9, 2013, *Business Standard*, available at [http://www.business-standard.com/article/opinion/martin-feldstein-the-rise-and-rise-of-us-interest-rates-113090900893\\_1.html](http://www.business-standard.com/article/opinion/martin-feldstein-the-rise-and-rise-of-us-interest-rates-113090900893_1.html) (discussing likely rises in interest rates over the short and long terms); Lisa Lambert, *Talk of Interest Rate Rise Rocks U.S. Municipal Bond Market*, June 20, 2013, *Reuters*, available at <http://www.reuters.com/article/2013/06/20/us-markets-municipals-idUSBRE95J19S20130620> (reporting on the relationship between higher interest rates and declines in the municipal bond market).

763 See *supra*, section 3.2.1, for additional discussion and analysis regarding the many pressures on public funding.

764 See, e.g., Brier Dudley, *Seattle Pulls Plug on its Broadband Network*, May 6, 2012, *Seattle Times*, available at [http://seattletimes.com/html/business/20118149915\\_brier07.html](http://seattletimes.com/html/business/20118149915_brier07.html) (describing the city’s many failed attempts to construct and support municipally-owned broadband networks, including its Wi-Fi system); Alicia Robinson, *Riverside: Citywide Wireless Internet Service Could End*, Sept. 4, 2013, *The Press-Enterprise*, available at <http://www.pe.com/local-news/riverside-county/riverside/riverside-headlines-index/20130904-riverside-citywide-wireless-internet-service-could-end.ece> (noting that the city is looking to cancel the service to save money); Colin Wood, *Muni Wi-Fi: Another One Bites the Dust?*, Feb. 4, 2014, *GovTech.com*, available at <http://www.govtech.com/network/Muni-Wi-Fi-Another-One-Bites-the-Dust.html> (reporting on further discussions around winding down the municipal wireless network).

765 See, e.g., *The Promise of Municipal Broadband*.

766 See, e.g., Lisa Gonzalez, *Dunnellon, Florida's Fiber Dreams Now a Reality*, Aug. 8, 2012, *MuniNetworks.org*, available at <http://www.muninetworks.org/content/dunnellon-floridas-fiber-dreams-now-reality> (noting that the city was finally moving ahead with plans to “invest in its own fiber network to spur economic development and provide the services Comcast and AT&T considered unprofitable in the rural area.”). Cf. *Editorial: Dunnellon's Disastrous Deal*, Oct. 29, 2013, *Ocala Star Banner*, available at <http://www.ocala.com/article/2013131029665> (“Greenlight [the name of the city’s GON] has only attracted 500 customers, not the 1,700 needed for profitability. Last Wednesday night, the City Council voted to sell Greenlight for \$1 million to Florida Cable Inc., a company that operates systems in 17 counties. Mayor Nathan Whitt said before the meeting, “Our goal is to get out of this as quickly as we can. It’s crucial to stop the bleeding” — the bleeding being the \$60,000 a month Greenlight has been costing the city...But the bleeding is far from stopped. The city must still deal with \$7 million in debt, a monumental task for a city of 1,700 people with an annual municipal operating budget this year of \$3.1 million.”).

767 See, e.g., Tom Meersman, *Monticello's Model Broadband Effort in Peril*, June 7, 2012, *Star Tribune*, available at <http://www.startribune.com/local/west/157992065.html> (noting that the GON in Monticello was “once seen as a national model” for other municipal broadband projects).

768 See *infra*, section 5.10, for additional discussion.

769 See, e.g., *Broadband Utopia*.

raising revenue.<sup>770</sup> And it appears that support for these systems as possible models for other cities interested in pursuing a GON has persisted even after it became clear these networks failed or were beginning to fail.<sup>771</sup>

Third, for policy making purposes, it is notable that many of the reasons for failure tend to be similar. As discussed in **section 4.1**, many GONs have been plagued with high levels of debt and low levels of consumer demand for and use of municipal broadband services. These two core factors undermine many municipal broadband networks. Such was the case in Groton, Provo, UTOPIA, Dunnellon, Quincy, Monticello, and numerous other cities. These problems were compounded by the local government's general inability to keep pace with other ISPs in the broadband market.<sup>772</sup>

For local and state policy makers considering a municipal network, the experiences of other GONs should be critically examined. Two fundamental questions to ask are—

- Is a success an “enduring” success that can inform future projects?
- Was the success a function of unique factors that cannot be easily replicated?

A healthy degree of skepticism is warranted because, throughout the history of GONs in the United States, proponents have argued that municipal broadband has been fruitful even though there is significant evidence pointing to problems, financial and implementation, encountered by many jurisdictions undertaking a GON.<sup>773</sup>

## 5.2 Finding Two: Many GONs raise fundamental concerns regarding sustainability, fair competition, and consumer welfare.

The prevailing narrative advanced by supporters of government-owned broadband networks is in large part based on ideas about local self-reliance and a desire to radically reformulate the traditional market-based model of providing Internet access.<sup>774</sup> The rationale is that municipal broadband networks are more attuned to local needs and thus able to achieve specific local goals.<sup>775</sup> But contrary to these assertions, the fact is that many GONs actually arise from “mission creep” of local utilities.

More specifically, many municipal broadband projects represent extensions of existing communications networks built for the exclusive use of municipal utilities. Of the 10 GONs profiled, networks in seven cities—Chattanooga, Bristol, Lafayette, Cedar Falls, Danville, Groton, and Provo—grew out of communications infrastructure (e.g., fiber rings) installed to enhance specific utility functions (e.g., connect electrical substations).<sup>776</sup>

770 *Burlington Telecom Profits from Fiber* at p. 81.

771 *See, e.g., Burlington Telecom Fact Sheet*, at p. 3, Institute for Local-Self-Reliance (updated: April 2010), available at <http://www.ilsr.org/wp-content/uploads/files/btfacts.pdf> (touting meager cost savings generated by Burlington Telecom despite mounting evidence that the GON was failing due to mismanagement and low levels of consumer demand for and adoption of the service); Christopher Mitchell, *Provo's Publicly Owned Broadband Network Attracts 98 Jobs*, July 13, 2012, Community Broadband Networks, available at <http://www.muninetworks.org/content/provos-publicly-owned-broadband-network-attracts-98-jobs> (arguing that, despite clear evidence that the GON in Provo was a failure, it “Nonetheless [is] making positive contributions to the community”); *Monticello Moves Closer to Settlement with Bondholders* (expressing continued support for the GON in Monticello even after the municipality was unable to make a series of bond payments); Chris Mitchell, *Monticello Fiber Price War Offers Key Lessons for Broadband Competition*, Sept. 19, 2013, Community Broadband Networks, Institute for Local Self-Reliance, available <http://www.muninetworks.org/content/monticello-fiber-price-war-offers-key-lessons-broadband-competition> (trying to make the argument that, “...whatever [the Monticello] network may end up costing city taxpayers, it will likely be less than the savings from all of these lower prices and indirect benefits such as not losing employers that could not be competitive when only having last-generation Internet access from unreliable DSL. That doesn't help the City to make its debt payments, but it sure makes Monticello a better place to live.”).

772 *See supra*, section 5.5, for additional discussion.

773 *See, e.g., Brian Heaton, Local Governments Pursue Independent Broadband Despite Challenges*, Nov. 21, 2012, *Governing*, available at <http://www.governing.com/blogs/view/gov-local-governments-pursue-independent-broadband.html> (discussing how some who support GONs are reframing their advocacy in light of recent municipal broadband network failures) (“*Local Governments Pursue Independent Broadband Despite Challenges*”).

774 *See supra*, section 2, for additional discussion. *See also Evaluating the Rationales for Government-Owned Broadband Networks* at p. 9-17 (evaluating and rebutting these and other rationales advanced by GONs supporters).

775 *See, e.g., Craig Settles, Building the Gigabit City*, Ch. 3 (2013), available at <https://www.smashwords.com/books/download/313806/1/latest/0/0/building-the-gigabit-city.pdf> (discussing these and related motivations) (“*Building the Gigabit City*”).

776 *See supra*, sections 4.1—4.10, for additional discussion.

Numerous others, including existing networks in Burlington, Vermont,<sup>777</sup> and Chanute, Kansas,<sup>778</sup> as well as a recently approved GON in Longmont, Colorado,<sup>779</sup> have followed or will follow this model. In addition to undermining several core aspects of GONs advocacy, such “mission creep” by local utilities raises a number of concerns regarding sustainability, fair competition, and consumer welfare.

With regard to sustainability, local governments and municipal utilities have poor track records vis-à-vis responding to consumer demand, which bodes poorly for the long-term prospects of any venture in such a dynamic space.<sup>780</sup> Equally important, utilities generally have had limited success with realizing positive returns on investment in new technologies, especially advanced communications services meant to enhance their operations. For example, over the last several decades, utilities of all sizes invested billions of dollars in deploying communications networks and services that have done little to actually drive down rates or strengthen the electric grid.<sup>781</sup> The fact that many utilities have sought to extend these networks for commercial purposes underscores the extent to which these tools have been underused.

Regarding competition policy generally, local utilities that extend proprietary communications networks for commercial purposes have a number of potentially unfair advantages over private service providers. Utilities in some states can explicitly cross-subsidize their communications division with revenues derived from their electric business or implicitly accomplish this via low-interest or interest free inter-divisional loans.<sup>782</sup> In other instances, municipally owned utilities that have deployed GONs have received generous support from local government to prop up networks that might fail on their own. Some combination of these methods has been used in numerous instances, including in Chattanooga,<sup>783</sup> Lafayette,<sup>784</sup> Cedar Falls,<sup>785</sup> Provo,<sup>786</sup> and Burlington,<sup>787</sup> among many others. Such practices are concerning because many operate more as a hidden tax on all residents and businesses than as one-off subsidies aimed at achieving discrete goals (e.g., encouraging economic development).

In sum, there is a wide gap between the rhetoric of many GONs advocates and the details of these networks’ actual construction. In many instances, municipal utilities often see these systems as a new line of business, not as a symbol of local self-reliance. Moreover, as regulated monopolists, municipal utilities operate according to a distinct set of incentives relative to private firms in this space, which informs their behavior in ways that, over the long term, tend to result in innovative stagnation and actions that are not always consumer-focused.<sup>788</sup>

777 See *supra*, section 2.3, for additional discussion.

778 See, e.g., Lisa Gonzalez & Christopher Mitchell, *Chanute’s Gig*, at p. 1, Institute for Local Self-Reliance (Oct. 2012), available at <http://www.ilsr.org/wp-content/uploads/2012/10/Chanute-Muni-BB.pdf>.

779 See *Ballot Question 2B: Revenue Bond Funding for Broadband Fiber Optic Network Expansion Throughout Longmont*, Ballot Brochure, Election Day, Nov. 5, 2013, City of Longmont, Colorado, available at [http://www.ci.longmont.co.us/lpc/TC/documents/ballotbrochure\\_web2.pdf](http://www.ci.longmont.co.us/lpc/TC/documents/ballotbrochure_web2.pdf). This measure was approved by a two-to-one margin. See *Final Official 2013 Coordinated Election Results for Boulder County, City of Longmont Ballot Question 2B*, Nov. 5, 2013, Boulder County, CO, available at <http://webpubapps.bouldercounty.org/clerk/voterresults2013/IssueResults.aspx?issue=V36>.

780 See *infra*, section 5.5, for additional discussion.

781 See, e.g., *Realizing the Smart Grid Imperative* at p. 9-10, 14-22 (discussing some of these services and observing that these investments have done little to bolster reliability or drive down the price of electricity in the U.S.).

782 Several states prohibit this type of cross-subsidization. These include Florida and North Carolina. See, e.g., *Wi-Fi Everywhere* at p. 1768-1769 (providing examples); Jeff Stricker, *Note: Casting a Wider Net: How and Why State Laws Restricting Municipal Broadband Networks Must be Modified*, 81 *George Wash. L. Rev.* 591, 615-616 (2013) (same).

783 See *supra*, section 4.1 (discussing the use of intra-utility loans in support of this GON).

784 See, e.g., *LUS Fiber on its Way to “Self-Sufficiency”*, May 20, 2013, KATC, available at [http://www.katc.com/news/lus-fiber-on-it-s-way-to-self-sufficiency-/#\\_](http://www.katc.com/news/lus-fiber-on-it-s-way-to-self-sufficiency-/#_) (“Here’s how it works: LUS Fiber, because it’s a public entity does not pay taxes like private business. Instead, it makes payments to the Lafayette Utilities System. LUS then loans that money back to the fiber operation. It is that loan that helped LUS to be cash positive this year.”).

785 See *supra*, section 4.5 (noting a loan from the electric division of the utility in support of the GON).

786 See *supra*, section 4.9 (noting loans from the city in support of this failed GON).

787 See *supra*, section 2.3 (discussing the controversy surrounding improper loans from the city in support of this failed GON).

788 See, e.g., *Realizing the Smart Grid Imperative*.

### 5.3 Finding Three: Calls for achieving subjective speed benchmarks should not supplant actual consumer demand as the primary driving force shaping the broadband ecosystem.

Calls for achieving subjective speed benchmarks, like universal gigabit broadband connectivity, should be carefully evaluated in the context of actual consumer demand for high-speed Internet access.<sup>789</sup> As noted throughout the case studies, the number of residents and businesses subscribing to gigabit broadband service in the “gig cities”—including Chattanooga, Bristol, Wilson, some of the UTOPIA cities, and Cedar Falls—remains low. More generally, there is scant evidence that such ultra-high-speed services are actually attractive to the vast majority of users, who, as noted in section 3, have demonstrated a clear preference for Internet connections in the 5-20 Mbps range.<sup>790</sup> In fact, even though more than half of the U.S. population has access to broadband connections in excess of 100 Mbps,<sup>791</sup> there were only 97,000 residential connections of 100 Mbps (downstream) or more in December 2012.<sup>792</sup> Take-rates for gigabit connections are even lower. By one estimate, there were only about 4,000 such connections in the United States in April 2013,<sup>793</sup> representing a tiny fraction of the nearly 215 million residential high-speed Internet connections in service across the country.<sup>794</sup>

To date, the supply of bandwidth and the speeds of Internet connections have been shaped by consumer demand and actual usage patterns.<sup>795</sup> Surveys measuring customer satisfaction generally confirm the vast majority of users are content with their current broadband connection’s reliability and speed.<sup>796</sup> Moreover, there is no evidence demonstrating that ultra-high-speed connections are useful to the average consumer. Conversely, there is considerable skepticism about the extent to which average Internet users can benefit from super-fast connections.<sup>797</sup> Some who have used gigabit connections in the U.S. for example have reported that, in practice, they are “totally unnecessary.”<sup>798</sup> Efforts to “max out” gigabit connections have mostly come up empty; even streaming multiple high-definition movies at once leaves significant bandwidth unused.<sup>799</sup> Part of the reason is that most other parts of the Internet ecosystem—from computing devices to routers and other aspects of the physical infrastructure—are incapable of processing such fast speeds, further underscoring that consumer demand has yet to justify enormous investments in upgrading to gigabit speeds.<sup>800</sup>

789 See *supra*, section 2.3 (noting how GONs advocacy has shifted in recent years to embrace all-fiber gigabit broadband networks and evaluating the motives behind this reframing).

790 See *supra*, section 3.1.1 (observing trends in how consumers are embracing higher-speed Internet connections).

791 See National Broadband Map, Summarize: Nationwide (as of Dec. 31, 2012), <http://www.broadbandmap.gov/summarize/nationwide>.

792 *Internet Access Services: Status as of Dec. 31, 2012* at Table 11.

793 At the time, this was likely an over-estimate. See Stacey Higginbotham, *How Many People Have a Gigabit Connection? Fewer Than you Think*, April 23, 2013, GigaOm, available at <http://gigaom.com/2013/04/23/how-many-people-have-a-gigabit-connection-fewer-than-you-think/> (reporting on data from Ookla and noting that “the numbers provided by Ookla actually measure customers with speeds of above 800 Mbps, which is what it classifies as a gigabit.”)

794 *Internet Access Services: Status as of Dec. 31, 2012* at Table 11.

795 See *supra*, section 3.1.1, for additional discussion and supporting data.

796 See, e.g., *Broadband Satisfaction: What Consumers Report* (finding that 91 percent of consumers in 2010 were “very” or “some-what” satisfied with the speed of their Internet connection); Press Release, 2012 U.S. Residential Internet Service Provider Satisfaction Study, Oct. 15, 2012, J.D. Power, available at <http://www.jdpower.com/content/press-release/ogrbZkU/2012-u-s-residential-internet-service-provider-satisfaction-study.htm> (finding that customers are generally satisfied with their connections).

797 See, e.g., David Talbot, *Not so Fast: A Google Fiber One-Gigabit Mystery*, Sept. 20, 2013, Tech. Review, available at <http://www.technologyreview.com/view/519466/not-so-fast-a-google-fiber-1-gigabit-mystery/> (“But what’s still far from clear is any of us need gigabit service, how many people are actually taking it, and whether they can do anything with it (after, say, the first 100 megabits, allowing plenty of room for multiple video streams and Wi-Fi losses inside the home).”).

798 See Farhad Manjoo, *What Do You Do with the World’s Fastest Internet Service?* March 12, 2013, Slate, available at [http://www.slate.com/articles/technology/technology/2013/03/google\\_fiber\\_review\\_nobody\\_knows\\_what\\_to\\_do\\_with\\_the\\_world\\_s\\_fastest\\_internet.html?fb\\_ref=sm\\_fb\\_share\\_toolbar](http://www.slate.com/articles/technology/technology/2013/03/google_fiber_review_nobody_knows_what_to_do_with_the_world_s_fastest_internet.html?fb_ref=sm_fb_share_toolbar).

799 *Id.* (“To be sure, this was pretty cool. And yet it wasn’t mind-blowing. Indeed, it felt a little underwhelming. After all, who needs to play five HD videos at the same time? If that’s Google’s best demo of its superfast service, what does it suggest about what regular people will do with it? What’s more, the demo didn’t even begin to approach the limits of Google Fiber—with five HD videos playing simultaneously there were still hundreds of megabits left on the pipe. When I got back home a few days later, I replicated the same test on my home broadband line and experienced only a few hiccups.”). See also Cyrus Farivar, *Ars Asks: Help us Max Out Google Fiber*, Nov. 28, 2012, *Ars Technica*, available at <http://arstechnica.com/business/2012/11/ars-asks-help-us-max-out-google-fiber/> (“*Help us Max Out Google Fiber*”).

800 *Help us Max Out Google Fiber* (“In other words, so far, it seems like a gigabit connection really only gets close to such high speeds if you have something on the other end to serve it adequately and not throttle or otherwise slow it down.”).

Ultimately, calls for achieving subjective speed benchmarks should not supplant actual consumer demand as the primary driving force of innovation in the broadband ecosystem. Such an unrelenting focus on speed obscures more practical assessments made by users, many of whom are focused on whether their connection allows them to accomplish what they want or need to accomplish.<sup>801</sup> Those dismissing the actual needs of consumers as a barrier to realizing amorphous goals around innovation and economic development appear to be more hubristic than futuristic in their thinking, rhetoric, and advocacy.<sup>802</sup>

#### 5.4 Finding Four: The direct economic impact of GONs, especially around job creation, is difficult to measure given the many other contributing factors.

A leading rationale offered in support of GONs is that these networks will have significant, measurable, sustainable impacts on local economic development.<sup>803</sup> In the abstract, GONs advocates assert that municipal broadband networks are uniquely positioned to “help[] local businesses, not extract[] monopoly profits,” generating economic gains that can be reaped locally.<sup>804</sup> Projected benefits tend to focus primarily around jobs—GONs are seen as a way to retain and grow local companies, attract new firms, and serve as the foundation for creating entire new industries from scratch.<sup>805</sup> More broadly, some see GONs, and gigabit networks generally, as essential to the long-term economic viability of the United States.<sup>806</sup> To date, there is little credible evidence to support any of these claims.

In many of the case studies—and in numerous other cities across the country that have deployed a GON—the economic gains attributed to a particular municipal network were rarely the result of the type of straight-forward cause-and-effect depicted by advocates, i.e., that the mere presence of the network led to specific economic benefits. On the contrary, most benefits, to the extent that any manifested, tend to be the result of numerous other, non-technological factors (e.g., traditional economic incentives to relocate or launch a new business) that, together, subordinate the role the network played in realizing these gains.

801 See, e.g., *Real Benefits of Gigabit Networks Have Nothing to Do with Speed* at p. 1 (noting that “Speed is but one of many broadband quality attributes” and that “no evidence yet suggests that slow speeds are a barrier to innovation”).

802 This analysis is focused on individual consumer demand, which is typically measured at the household level. In other contexts, calls for ultra-high-speed broadband connectivity might be more practical. For example, there is growing support for increasing bandwidth to schools and libraries across the country. To date, even though most schools in the U.S. have broadband access, bandwidth per student is low. For these and many other reasons, the President and the FCC, along with school officials and others, have called for public-private efforts focused on improving broadband connectivity, digital literacy, and professional development resources in schools across the country. For an overview of relevant proceedings and analyses, see Press Release, *President Obama Unveils ConnectED Initiative to Bring America's Students into Digital Age*, June 6, 2013, The White House, available at <http://www.whitehouse.gov/the-press-office/2013/06/06/president-obama-unveils-connected-initiative-bring-america-s-students-di> (detailing ConnectED, the President's initiative to bolster broadband connectivity in schools); *In the Matter of Modernizing the E-Rate Program for Schools and Libraries*, Notice of Proposed Rulemaking, FCC 13-100, WC Docket 13-184 (rel. July 23, 2013) (proposing a range of changes to the federal E-rate program in an effort to provide more funding for broadband connections in schools and libraries); *The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs*, SETDA (2012), available at [http://www.setda.org/wp-content/uploads/2013/09/Broadband\\_Trifold.pdf](http://www.setda.org/wp-content/uploads/2013/09/Broadband_Trifold.pdf) (calling for 1 gigabit per second per 1,000 students/staff in every school by 2018); Charles M. Davidson and Michael J. Santorelli, *The Impact of Broadband on Education*, a Report to the U.S. Chamber of Commerce (Dec. 2010), available at <http://www.nyls.edu/advanced-communications-law-and-policy-institute/wp-content/uploads/sites/169/2013/08/Davidson-Santorelli-The-Impact-of-Broadband-in-Education-December-2010-FINAL.pdf>.

803 See, e.g., *Evaluating the Rationales for Government-Owned Broadband Networks* at p. 13-16; *Local Governments Pursue Independent Broadband Despite Challenges*.

804 *Community Broadband Creates Jobs*.

805 *Id.* See also *Local Governments Pursue Independent Broadband Despite Challenges* (encouraging GONs advocates and supporters to cite to potential economic development gains when promoting a municipal network); *Building the Gigabit City* at Ch. 16 (describing expected economic gains of gigabit GONs).

806 See, e.g., THE POLITICS OF ABUNDANCE; CAPTIVE AUDIENCE. For additional discussion, see *supra*, sections 2.2, 2.3, and 3.1.1.

With regard to job creation, further analysis of employment data—including official data collected by the U.S. Bureau of Labor Statistics (BLS) and unofficial anecdotal data reported by municipal officials—yields a mixed to negative picture regarding the impacts of a GON on job creation in the “information” industries.<sup>807</sup>

- Officials in **Chattanooga** assert the gigabit GON there “created about 1,000 jobs in the last three years.”<sup>808</sup> The cost of building the fiber network totals about \$390 million, which means it cost the city upwards of \$390,000 to “create” each job. Even assuming these data are accurate, the overall trend in job growth in Chattanooga’s information industry has been mixed. According to BLS data, the total number of jobs in this sector decreased by 22.2% between 2010, when the GON launched, and 2013.<sup>809</sup>
- In **Lafayette**, a primary goal of the GON was to attract new businesses that would benefit from ultra-high-speed connectivity.<sup>810</sup> BLS data, however, demonstrate the GON did not meet this goal. In particular, employment in the information sector in Lafayette decreased by 24.2 percent between 2008 and 2013.<sup>811</sup>
- Similarly, in **Burlington**, BLS data indicate a 21.4 percent decrease in local information sector employment since 2008.<sup>812</sup>
- In **Provo**, though, the information sector is blossoming despite the significant problems its GON has faced in recent years. More specifically, overall employment in this sector grew by about 20 percent since 2009.<sup>813</sup> This corresponds with robust economic growth across the state,<sup>814</sup> as well as the organic emergence of a vibrant high-tech cluster in what some have dubbed the “Silicon Slopes.”<sup>815</sup> It appears that these developments stem primarily from the favorable business climate created by the state, as well as the presence of a major research institution (Brigham Young University).<sup>816</sup>

Nationally, employment in the information sector has been essentially static for the last few years (it decreased by four percent between 2009 and 2013).<sup>817</sup> Even so, one would expect at least some growth in information sector jobs in areas with a GON. Yet much of the sector’s job growth is concentrated in areas without a GON: between 2009 and 2013, information sector jobs grew by 18.3 percent in and around Austin, Texas,<sup>818</sup>

807 The U.S. Bureau of Labor Statistics defines the “information” sector as follows:

“The Information sector comprises establishments engaged in the following processes: (a) producing and distributing information and cultural products, (b) providing the means to transmit or distribute these products as well as data or communications, and (c) processing data.

“The main components of this sector are the publishing industries, including software publishing, and both traditional publishing and publishing exclusively on the Internet; the motion picture and sound recording industries; the broadcasting industries, including traditional broadcasting and those broadcasting exclusively over the Internet; the telecommunications industries; Web search portals, data processing industries, and the information services industries.

“The Information sector groups three types of establishments: (1) those engaged in producing and distributing information and cultural products; (2) those that provide the means to transmit or distribute these products as well as data or communications; and (3) those that process data.”

See U.S. Bureau of Labor Statistics, *Industries at a Glance: Information*, <http://www.bls.gov/iag/tgs/iag51.htm>.

808 *Chattanooga’s New Locomotive*.

809 BLS data regarding information sector jobs for Chattanooga, TN, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

810 See *supra*, section 4.3. See also *Louisiana City Blazes High-Speed Web Trail*.

811 BLS data regarding information sector jobs for Lafayette, LA, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

812 BLS data regarding information sector jobs for Burlington, VT, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

813 BLS data regarding information sector jobs for Provo-Orem, UT, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

814 See, e.g., Utah Governor Gary Herbert, *Technology’s new home located in ‘Silicon Slopes,’ Utah*, July 9, 2013, CNBC.com, available at <http://www.cnbc.com/id/100860405> (discussing the array items—e.g., favorable taxes, streamlined regulatory approach to business, good quality of life, etc.—that has contributed to robust job growth throughout the state) (“*Technology’s new home located in ‘Silicon Slopes’*”).

815 *Id.* See also Jasen Lee, *Salt Lake Metro Becoming Tech Hub*, Jan. 13, 2013, *Deseret News*, available at <http://www.deseretnews.com/article/765620136/Salt-Lake-metro-becoming-tech-hub.html?pg=all>.

816 *Technology’s new home located in ‘Silicon Slopes’*.

817 BLS data regarding information sector jobs for the entire U.S. for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

818 BLS data regarding information sector jobs for Austin-Round Rock-San Marcos, TX, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

6.6 percent in and around Boston, Massachusetts;<sup>819</sup> 8.1 percent in New York City;<sup>820</sup> 33.7 percent in Silicon Valley;<sup>821</sup> and 30.8 percent in and around San Francisco.<sup>822</sup> As discussed in more detail below, creating a successful and sustainable high-tech cluster—and a healthy information sector generally—is extremely difficult and involves many more factors than just the presence of an ultra-high-speed broadband network.

In sum, data do not indicate GONs serve as the nucleus of renewed economic activity in cities and towns across the country. On the contrary, they appear to be playing minor roles in creating relatively few new jobs as companies continue to respond more favorably to other more practical and prosaic enticements (e.g., tax breaks). Conversely, the debt burden resulting from many GONs is harming the short- and long-term economic prospects of cities. Indeed, in some cases—e.g., Burlington, Chattanooga, Cedar Falls, Groton, and Monticello—excessive debt generated as a result of building a GON led to credit downgrades, which serve only to increase the costs of borrowing money to finance other, arguably more pressing municipal projects.<sup>823</sup> It can be argued that GONs are seldom the economic panacea that many advocates assert.

## 5.5 Finding Five: Governments are not well-equipped to compete in dynamic markets.

Governments—and government-run utilities by extension—are ill-equipped to participate in dynamic markets or sectors characterized by constant innovation. Especially with regard to new technologies, municipal governments have a poor record of keeping pace with recent advances and otherwise shaping policies that reflect prevailing consumer preferences. Public schools, for example, remain littered with out-of-date computers and other antiquated technological gadgets that overly enthusiastic government officials purchased with the expectation that their use would improve outcomes.<sup>824</sup> Similarly, many public computing centers in cities across the country, launched in the late 1990s to great fanfare, are still operating with out-of-date computers and inferior Internet connections.<sup>825</sup> Even most voting machines in districts across the country remain analog, despite the emergence of more efficient and cost-effective digital alternatives.<sup>826</sup>

This dynamic is especially evident in the GONs context. Local governments in Groton and the UTOPIA cities, for instance, inaccurately construed consumer demand for new broadband services in advance of building their municipal networks. In the case of Groton, a limited consumer survey about the appeal of a possible municipal network was used to justify the construction of the GON.<sup>827</sup> In the case of UTOPIA, officials put

819 BLS data regarding information sector jobs for Boston-Cambridge-Quincy, MA (NECTA Div.), for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

820 BLS data regarding information sector jobs for New York, NY, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

821 BLS data regarding information sector jobs for San Jose-Sunnyvale-Santa Clara, CA, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

822 BLS data regarding information sector jobs for San Francisco-San Mateo-Redwood City, CA Metropolitan Division, for the period of 2004–2014 (not seasonally adjusted). Data on file with the authors.

823 These other imperatives, in particular the need to shore up crumbling local infrastructure, were discussed *supra*, section 3.2.

824 See, e.g., Debra Donston-Miller, *Common Core Meets Aging Education Technology*, July 22, 2013, Information Week, available at <http://www.informationweek.com/education/policy/common-core-meets-aging-education-techno/240158684> (observing the difficulty in implementing new education standards with the outdated technology that exists in many schools); *Catching on at Last*, June 29, 2013, *The Economist*, available at <http://www.economist.com/news/briefing/21580136-new-technology-poised-disrupt-americas-schools-and-then-worlds-catching-last> (“The idea that technology can revolutionise education is not new. In the 20<sup>th</sup> century almost every new invention was supposed to have big implications for schools. Companies promoting typewriters, moving pictures, film projectors, educational television, computers and CD-ROMS have all promised to improve student performance. A great deal of money went into computers for education in the dot.com boom of the late 1990s, to little avail, though big claims were advanced for the difference they would make.”).

825 In recognition of the antiquated nature of many of these facilities, the federal stimulus program for broadband allocated about \$200 million to public computing centers across the country in an effort to modernize these facilities and bolster training programs. For an overview, see *BroadbandUSA, Grants Awarded: Public Computer Center Projects*, <http://www2.ntia.doc.gov/computercenters>.

826 See, e.g., Timothy B. Lee, *Paper Prophets: Why E-Voting is on the Decline in the United States*, Oct. 22, 2012, *Ars Technica*, available at <http://arstechnica.com/features/2012/10/paper-prophets-why-e-voting-is-on-the-decline-in-the-united-states/> (“A decade ago, there was a great deal of momentum toward paperless electronic voting. Spooked by the chaos of the 2000 presidential election in Florida, Congress unleashed a torrent of money to buy new high-tech machines. Today, momentum is in the opposite direction.”).

827 See *supra*, section 4.7, for additional discussion.

forward overly optimistic estimates for deployment and adoption of the new network that, when viewed in the abstract, seemed to justify the investment of tens of millions of dollars in the FTTH system.<sup>828</sup> In both cases, the projections proved incorrect. More generally, these and other GONs are typically plagued by some combination of poor planning, undisciplined spending, fraud, and a willingness to sacrifice long-term sustainability to realize short-term goals.<sup>829</sup>

In the GONs arena, government entities also face a number of challenges tied to how public services are regulated and delivered. For instance, the electricity sector's prevailing regulatory framework has created an intentionally conservative, risk-averse culture of incremental change.<sup>830</sup> More generally, because of the various interests always at play in government policy making and decision-making and other factors like institutional inertia, government is not well-equipped to act quickly or be a driver of the type of creative destruction evident throughout the broadband ecosystem.<sup>831</sup> Many governments, especially at the local level, still struggle with maintaining their websites and other basic IT infrastructure.<sup>832</sup> For government, even assuming abundant resources, the responsibility of building, maintaining, and upgrading a robust broadband network presents fundamental challenges. Even those that build "future-proof" fiber networks are not immune from the vagaries of the marketplace, as network deployment is only one component associated with operating and maintaining such a complex, multifaceted, and dynamic infrastructure.

Finally, the increasing use of public-private partnerships and the privatization of many municipal functions evince a growing recognition by government entities that there are viable alternatives to "going it alone." Municipalities are increasingly partnering with private entities—in the infrastructure context and elsewhere—to tap into the expertise of these firms and to spread the many risks associated with investing scarce public resources in a major project.<sup>833</sup> Moreover, a growing number of local governments are seeking to privatize government services that could be more efficiently delivered via the private sector. These range from the administration of parking meters to the outsourcing of back-office administrative functions.<sup>834</sup>

These public-private hybrid approaches to delivering core city services have been immensely successful, and, as a result, the "average American city [now] works with private partners to perform 23 out of 65 basic municipal services."<sup>835</sup> With the clear trend toward engaging and collaborating with the private sector on a range of activities, including the deployment of broadband networks to unserved and underserved areas,<sup>836</sup> cities that persist in deploying and maintaining a GON may be assuming significant, unnecessary risk. **Section 6** further discusses the trend toward public-private partnerships and presents a series of examples of such partnerships.

## 5.6 Finding Six: The substantial costs of building, maintaining, and operating GONs mitigate perceived benefits.

More than a decade into the GONs movement, considerable uncertainty remains regarding whether the benefits outweigh the enormous costs of building and maintaining these networks. Many of the positive economic

828 See *supra*, section 4.8, for additional discussion.

829 Unburdening sectors from these constraints and encouraging the development of a competitive private sector were core animating forces of the campaign to deregulate major industries like trucking, railroads, and the airlines in the 1970s. For an overview, see generally PAUL A. LONDON, *THE COMPETITION SOLUTION* 78-81 (AEI Press 2005). For a discussion of the negative impacts of government intervention into competitive markets—something that deregulation attempts to correct—see generally CLIFFORD WINSTON, *GOVERNMENT FAILURE VERSUS MARKET FAILURE* (2006).

830 See, e.g., *Realizing the Smart Grid Imperative* at p. 14-17 (discussing the framework and the risk-averse culture).

831 *Barriers to Broadband Adoption* at p. 84-99.

832 *Id.*

833 See *supra*, section 3.2.2, for additional discussion.

834 See, e.g., David Segal, *A Georgia Town Takes the People's Business Private*, June 23, 2012, N.Y. Times (discussing the broad privatization efforts of Sandy Springs, Georgia); Ted Mann, *City Explores Private Deal for Meters*, May 13, 2012, Wall St. Journal (discussing how some larger cities have begun to privatize parking meters).

835 See Stephanie Rozsa and Caitlin Geary, *Privatizing Municipal Services*, at p. 1, Municipal Action Guide, National League of Cities (2010), available at <http://www.nlc.org/documents/Find%20City%20Solutions/Research%20Innovation/Economic%20Development/privatizing-municipal-services-gid-10.pdf> (quoting a report by the National Council of Public-Private Partnerships).

836 See *infra*, section 6.1, for additional discussion and examples.

impacts claimed by GONs supporters, especially those around job creation, remain questionable.<sup>837</sup> More broadly, there is a dearth of empirical evidence to demonstrate a clear causal relationship between a particular municipal network and distinct economic or social gains that would not have arisen but for the GON.

While GONs supporters offer no shortage of anecdotal evidence about the perceived benefits of municipal broadband, these tend to be easily rebuttable and attributable to other factors. The absence of empirical data raises important questions around the opportunity costs associated with a decision to pursue a GON, namely whether the money spent on the network could have been better spent elsewhere. In the context of working to improve broadband connectivity, an essential inquiry by policy makers weighing a GON proposal is whether public funding could be more wisely invested in either forging a PPP in support of bolstering local broadband infrastructure or supporting targeted demand side activities in an effort to increase adoption rates. These two alternative paths, discussed in greater detail in **section 6**, tend to yield more sustainable benefits than electing to build a municipal broadband network.

Policy makers evaluating GONs proposals should weigh the costs of building a network from scratch against the possibility of using municipal authority to facilitate the deployment of new private networks or encourage incumbent ISPs to upgrade or expand existing infrastructure, or both. Municipalities retain exclusive jurisdiction over local rights-of-way, zoning laws, and related broadband infrastructure inputs to create new incentives or enticements for private firms to enhance their offerings.<sup>838</sup> In addition, the simple act of consulting with ISPs, nonprofits, and other relevant organizations to develop policies that can help realize mutually shared goals vis-à-vis broadband has yielded benefits on both the supply side and demand side in a number of cities across the country.<sup>839</sup> With so many viable alternatives to GONs, municipal leaders—and policy makers generally—should closely examine proposals to build a municipal network by themselves.<sup>840</sup>

## **5.7 Finding Seven: Pursuit of a GON often diverts scarce public resources from more pressing priorities.**

The decision to build a GON locks municipalities into a substantial long-term commitment that can divert resources—monetary and otherwise—from more pressing priorities.

In general, opting to build a GON requires a municipality to assume additional debt (only a small number of networks are built on a pay-as-you-go basis or in a manner that does not result in the accumulation of debt<sup>841</sup>). Many states have laws limiting the amount of debt a municipality can accrue, which means cities contemplating a municipal system will have to determine whether and to what extent debt assumed as a result of a GON will leave room for additional bond issuances in support of other projects.<sup>842</sup> If these limits are reached, municipalities could be forced to use alternative budget measures, including a mix of budget cuts and tax increases, to fund other undertakings. While it is difficult to identify specific trade-offs made in the context of particular GON evaluations, there is evidence that pursuing a municipal network shifted priorities in some cities.<sup>843</sup>

837 See *supra*, section 5.4.

838 For a discussion of these resources, see, e.g., *Rationalizing the Municipal Broadband Debate*. Specific examples of how a municipality might use these resources for these purposes are provided *infra*, section 6.1.

839 Specific examples are provided *infra*, section 6.1.

840 For a check list to guide policy makers through this process, see *supra*.

841 Danville has used a pay-as-you-go approach to incrementally build out its GON. For additional discussion, see *supra*, section 4.6

842 Most states limit the amount of debt municipalities can accrue. See, e.g., 2005 Illinois 65 ILCS 5, Sec. 8-5-1, available at <http://law.justia.com/codes/illinois/2005/chapter14/43597.html> (“...no municipality having a population of less than 500,000 shall become indebted in any manner or for any purpose, to an amount, including existing indebtedness in the aggregate exceeding 8.625% on the value of the taxable property therein...”). But many states also have exclusions and methods for exceeding the debt limit, often-times by holding a referendum. See, e.g., *id.* at Sec. 8-5-15 (setting forth the process for holding a referendum on exceeding the debt limit); Exclusion From Debt Limit; Broadband Infrastructure, NH Rev Stat § 33:6-f (2012), available at <http://law.justia.com/codes/new-hampshire/2012/title-iii/chapter-33/section-33-6-f> (“Municipalities may incur debt for broadband infrastructure...by the issue of bonds or notes authorized under this chapter. Any debt incurred for this purpose shall be outside the debt limit prescribed in this chapter”).

843 For examples, see *supra*, sections 4.1, 4.3, and 4.5.

Pursuing a GON is not a zero-sum endeavor. Choosing to construct a municipal network by assuming millions in debt does not automatically foreclose other projects that require additional funding. But in light of the complexity inherent in building dynamic broadband infrastructure, as well as the controversy that typically attends even the mere utterance that a city is considering a GON, these particular undertakings necessitate real trade-offs that undermine core aspects of local governance.

## 5.8 Finding Eight: A GON will not spawn the next Silicon Valley.

Implicit in many of the arguments in favor of GONs—especially those that deliver gigabit speeds—is that these networks will serve as the foundation for new high-tech clusters. Some go further and argue that, “without [such] fast nationwide fiber infrastructure . . . America will not be the country that produces the next big idea, the next Google.”<sup>844</sup> The stakes are thus very high for those communities that rationalize a gigabit GON as necessary to encourage economic development and position their cities as new hubs for high-tech innovation.<sup>845</sup> But despite these lofty expectations for and confidence in municipal networks’ ability to realize these ambitious goals, there is much evidence to support the contrary position—that the mere presence of an ultra-fast communications network is not a factor in creating high-tech clusters.

In recent years, policy makers from across the country and around the world experimented with ways to build from scratch or synthesize from existing assets the “next Silicon Valley.”<sup>846</sup> These ranged from multi-billion dollar investments in the construction of multiple inputs (e.g., universities and office space) thought to be necessary precursors for general high-tech innovation, to the channeling of hundreds of millions of dollars in public funding to support a particular high-tech industry (e.g., quantum computing).<sup>847</sup> In many cases, these efforts failed to generate expected benefits because of the unpredictable nature of innovation and the uncertainty surrounding the factors that contribute to successful high-tech clusters and startup communities. But one takeaway from these experiences garnered broad support: top-down industrial planning by government tends to impede, rather than foster, growth in this space. It has been observed that, “The problem for governments is that they often try to define where and when innovation will occur.”<sup>848</sup> In short, there is no formula that can guarantee success in these industries.

In the United States, there are numerous examples of high-tech clusters sprouting in response to a complex alchemy of public policies, market forces, and luck. Many such clusters emerged in cities with strong research universities that produce deep pools of technical talent. The high-tech corridor in Boston and the startup sector in Austin are two leading examples of the interplay between local universities and a private sector that is eager to commercialize the research emanating from these campuses.<sup>849</sup> The rapidly growing startup sector in New York City—dubbed Silicon Alley—has become a hub for entrepreneurs and innovators interested in applying new technologies in “creative ways to offer new products and services,” especially

844 CAPTIVE AUDIENCE at p. 264.

845 This approach to framing the need for gigabit GONs was evident in the FCC’s “Gigabit City Challenge” that was issued in January 2013. See, e.g., Marguerite Reardon, *FCC Pushes for Gigabit Broadband in All 50 States by 2015*, Jan. 18, 2013, CNET News, available at [http://news.cnet.com/8301-13578\\_3-57564815-38/fcc-pushes-for-gigabit-broadband-in-all-50-states-by-2015/](http://news.cnet.com/8301-13578_3-57564815-38/fcc-pushes-for-gigabit-broadband-in-all-50-states-by-2015/) (reporting that the goal of the challenge is to encourage cities to deploy gigabit networks in an effort to “turn themselves into innovation hubs that would create valuable jobs for its citizens.”).

846 There is also a long history of failed attempts by other states to replicate Silicon Valley. For an overview, see Vivek Wadhwa, *Silicon Valley Can’t be Copied*, July 3, 2013, Technology Review, available at <http://www.technologyreview.com/news/516506/silicon-valley-cant-be-copied/>.

847 See Antonio Regalado, *In Innovation Quest, Regions Seek Critical Mass*, July 1, 2013, Technology Review, available at <http://www.technologyreview.com/news/516501/in-innovation-quest-regions-seek-critical-mass/> (providing examples of such investments in Russia and Canada) (“*In Innovation Quest, Regions Seek Critical Mass*”).

848 *Id.*

849 See, e.g., Paul Judge, *Boston’s Route 128: Complementing Silicon Valley*, Aug. 13, 1997, Business Week, available at <http://www.businessweek.com/1997/34/b354197.htm> (discussing the early years of Boston’s high-tech corridor); *In Innovation Quest, Regions Seek Critical Mass* (discussing recent startup activity in and around Boston); Pike Powers, *Building the Austin Technology Cluster: The Role of Government & Community Collaboration in the Human Capital*, p. 53-71, Proceedings—Rural Conferences (spring 2004), Federal Reserve Bank of Kansas City, available at <http://www.kc.frb.org/PUBLICAT/newgovernance04/Powers04.pdf>.