

Carolina's Connected Community:



Wilson Gives Greenlight to Fast Internet

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Executive Summary

Following the collapse of key industries, a mid-size town in eastern North Carolina had to make a hard choice. It wanted to support existing businesses and attract new ones but the cable and telephone companies were not interested in upgrading their networks for cutting edge capacity. After years of deliberation, it decided to build its own fiber optic network, earning praise from local businesses that have a new edge over competitors in the digital economy.

Located about one hour east of North Carolina's capital Raleigh and the world famous Triangle Research Park, the city of Wilson launched Greenlight, a telecommunications utility owned and operated by the municipality.

Wilson has nearly 50,000 residents; with just over 1 in 4 of them living below the poverty line, the city has been hard hit by the decline of tobacco and traditional manufacturing industries. But it also has a strong history of public investments in essential infrastructure, starting in 1890 with its own water and power utilities. The city utility added natural gas in 1912 and made a large investment in a reservoir in the 1990's to protect the water supply.

Residents and businesses had long expressed frustration with telecommunications services provided by Sprint (then Embarq, now CenturyLink) and Time Warner Cable. In 2006, the City Council unanimously voted to build a Fiber-to-the-Home system that would be owned by Wilson Utilities, offering telephone, television, and access to the Internet to residents and businesses.

Before and after voting to build the network, Wilson attempted to work with the incumbent providers for a mutually beneficial arrangement. Time Warner Cable dismissed the city's overtures out of hand but Embarq began forming a partnership to offer telephone services on the City network, only to back out later. Other businesses, including one of the

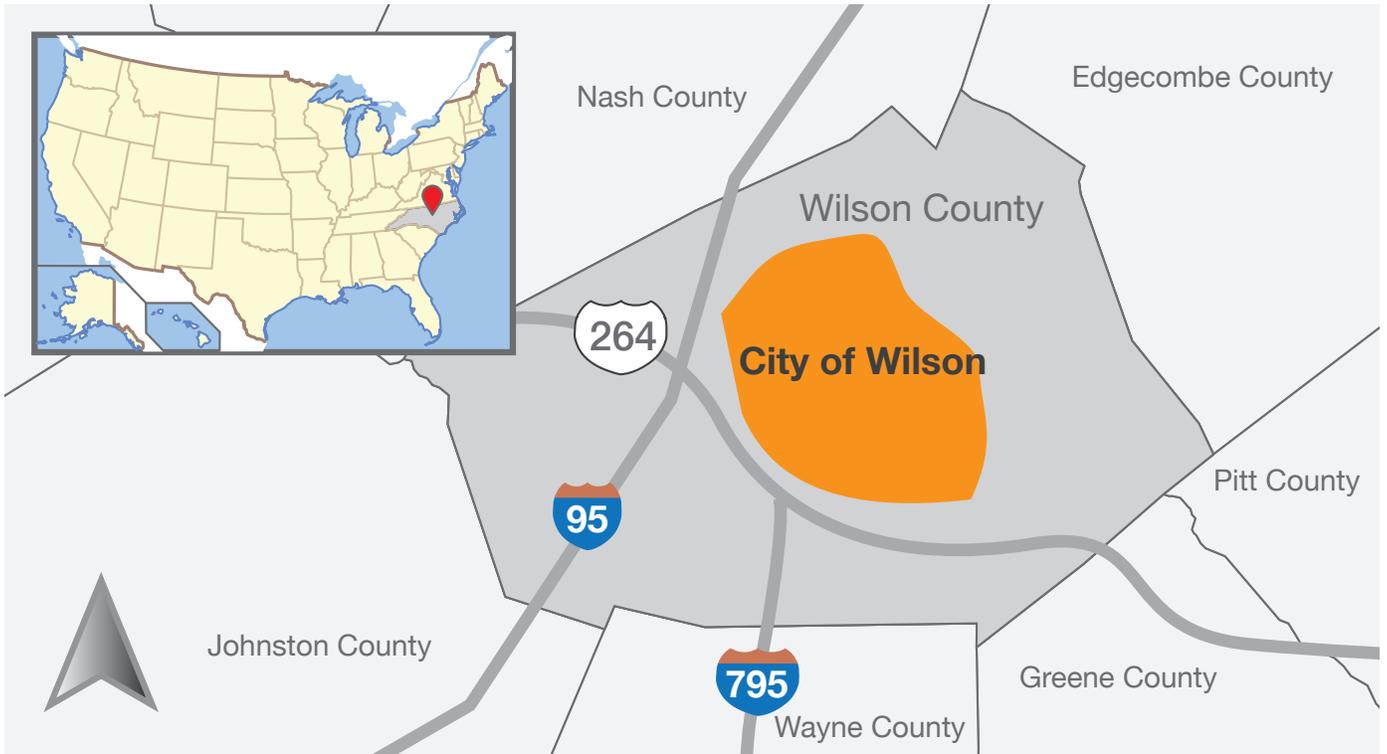
largest local employers, BB&T bank, strongly supported the network.

The City borrowed \$33 million to build the system, which became available on a citywide basis by early 2009. Greenlight offers television and telephone services as well as very fast Internet access. In addition to serving over 6,000 households and businesses, the network connects all of the public schools in the County. The schools all have 100 Mbps or 1 Gbps connections at affordable rates; Greenlight's price for a dedicated 100 Mbps Internet connection is lower than what nearby communities pay for 10 Mbps.

People and businesses have moved to Wilson to take advantage of the new network and even some who initially opposed it are now strongly supportive. Computer Central, a local dial-up Internet Service Provider that initially feared Greenlight would take its customers has actually encouraged its dial-up customers to subscribe to the City service. Computer Central has partnered with Greenlight and now specializes in value-add services that help businesses take advantage of the blazing fiber optic capacity.

In response to Greenlight, Time Warner Cable decreased its rates in Wilson while continuing to increase rates in nearby towns with no real competition. A study of the impact from Greenlight found a savings of \$1 million each year to the community due to lower prices from the introduction of competition. Additionally, Time Warner Cable modestly increased the speeds available to cable Internet subscribers within Wilson.

The network has been operating in the black and is on track to pay back its debt on time. However, a change in state law pushed by Time Warner Cable, CenturyLink, and others has limited Greenlight's potential expansion to the County borders, frustrating nearby communities that hoped to be served by it. The law also effectively prohibits other communities from building their own networks using the Wilson model.



Introduction

Wilson, North Carolina, a community hit hard by the decline of tobacco and manufacturing industries, has built a world-class fiber optic network connecting residents and businesses to the Internet. The network, named Greenlight, is one of the most advanced citywide networks in the nation, offering higher capacity connections than are available via DSL or cable networks. And because Greenlight is owned by the community, it is under strong pressure to keep prices affordable.

Nationally, almost 150 communities have citywide broadband networks operated by a local government.¹ Wilson's story is similar to those of other communities that have built their own networks. Many were responding to local business needs and developed plans for a publicly owned network only after cable and telephone incumbents did not respond to repeated requests for improvement.

After launching in June 2008, Wilson now offers telephone, television, and Internet connections to everyone in the community. It now has over 6,000 customers and the system's revenues have exceeded expenditures during each of the last two fiscal years.

Background & Context

Wilson is a city of 49,000, approximately 1 hour by car east of the state capital in Raleigh. Historically, the city's chief industry was agriculture, with tobacco and cotton forming a crucial part of the local economy. Global competition has undermined the traditional cash crops and like many communities, Wilson has watched many of its young people move away in search of opportunity elsewhere. As a result, Wilson has an older population and a higher rate of poverty than North Carolina as a whole. Wilson's seniors comprise 14.1 percent of the population versus 12.9 percent statewide; 25.4 percent live below the poverty line in the city, versus 15.5 percent for the state.² By 2008, the three largest employers in the city were Bridgestone/Firestone, the hospital WilMed, and the Wilson County Schools, respectively. Agriculture, once the mainstay of the economy, now accounts for just 1.4% of employment. In light of these trends, the city has sought alternatives to promote prosperity, most recently by building a high speed fiber optic network.

Before deciding to build a new network, the City took other steps to improve its connectivity. In April 2001, Wilson offered to purchase the local cable network

from Time Warner Cable (TWC), but according to city records “Time Warner Cable stated they would rather go for a zero customer base versus sell any system.”³ Later in the early 2000s, city officials approached both incumbent providers in town—telephone company EMBARQ (now CenturyLink) and Time Warner Cable — seeking a partner to build out a Fiber-to-the-Home (FTTH) network. Both companies turned the City down, claiming the project would be unprofitable. City staff reported that TWC “literally laughed” at the idea.⁴

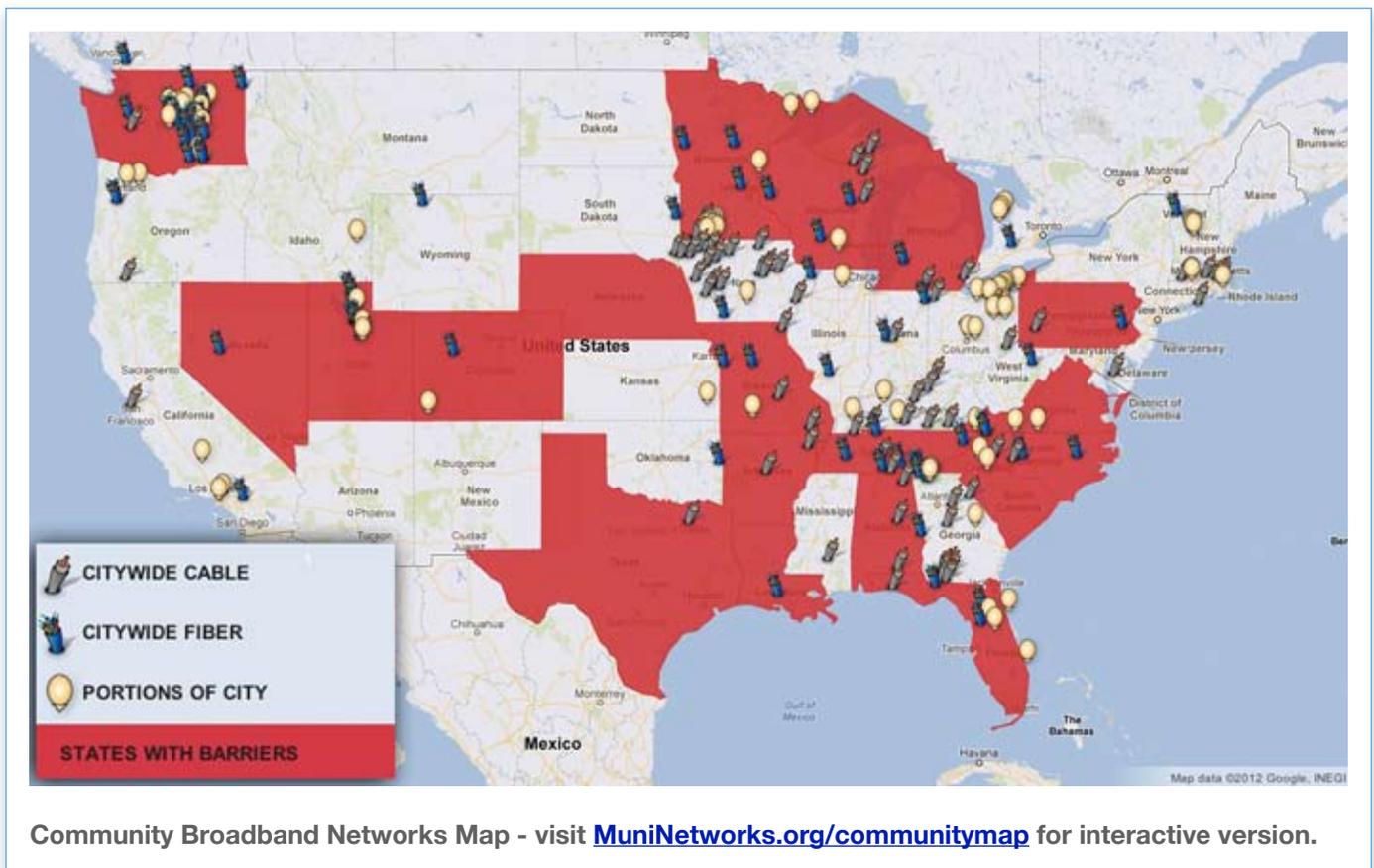
With no indication when the private sector would offer the connections the city desired, Wilson proceeded on its own. The City Council authorized \$28 million in debt in November 2006 to build the network. Greenlight became available in test neighborhoods in 2008 and citywide by January, 2009. In 2012, it began expanding service to households and businesses in the surrounding county.

The rest of North Carolina continues to lag in connectivity. The state had a dismal showing in the Federal Communications Commission’s annual

Internet Access Services report in June 2012 (with statistics from 2011).⁵ The FCC compares states based on a variety of metrics, including what percentage of the population subscribes to a “basic broadband connection,” defined by the Commission as at least 4 Mbps downstream and 1 Mbps upstream. North Carolina ranked dead last among the 47 states that had data available.

According to the FCC, only 13% of North Carolina households subscribed to that basic level of broadband. The largest providers have not delivered standard upstream connections of at least 1 Mbps in most of North Carolina. Its ranking in this metric shows the danger of being dependent on connections from Time Warner Cable, AT&T, and CenturyLink, none of which are significantly investing in next generation networks like Wilson’s all fiber optic network or Verizon’s FiOS.

In some areas, AT&T has upgraded its DSL network to a system it calls “U-Verse,” a hybrid fiber-DSL network that still relies on older copper connections and offers



neither the capacity nor the reliability of an all-fiber network. And despite AT&T's past promises to the General Assembly to upgrade its network in return for deregulation, most AT&T households in North Carolina still lack access to U-Verse. In a 2012 report to the state legislature, AT&T claimed to have made U-Verse services available to just 36.61 percent of its North Carolina customers, a modest increase from 35.54 percent the prior year.⁶ These numbers cannot be verified because AT&T is not required to submit any verifiable data to the state demonstrating where U-Verse is available. The basic maps it does submit suggest many urban areas, including Raleigh, have been bypassed by U-Verse.⁷

From Red Light to GreenLight

Wilson has long had a difficult relationship with its cable provider. As early as December 21st, 1989, City Council meeting minutes show that the City set aside \$4 million to study the creation or acquisition of a cable television network. The impetus came from cable rate increases of more than 60 percent over two years following cable's deregulation by Congress. However, that study was not completed and the city redirected those funds to a reservoir project, a \$45 million, years-long upgrade project completed in 2000.

The Buckhorn Reservoir figures prominently in how Wilson leaders talk about the network that ultimately came to be known as Greenlight. City staff and elected officials are proud that the city has taken the initiative in providing its own critical infrastructure. During deliberations over creating a municipal fiber optic network, council members and staff frequently referred to Buckhorn for its quality of water and the recreational opportunities it provides the community. Successful projects like this provide confidence that the community can successfully take on tough challenges, not because it wants to but because it recognizes it alone has the right incentives to provide the necessary infrastructure for a high quality of life.

Municipal Broadband Authority in North Carolina

When Wilson's City Council voted to create its Fiber-to-the-Home network, only one other municipal network offering television services operated in North Carolina. Morganton, a small city in the foothills of the Appalachian Mountains, had been operating CoMPAS (the "City of Morganton Public Antenna System") since a state court decision in 1989 established that communities had the authority to build their own networks. Cable company TCI engaged in a protracted legal battle before and after that decision to stop the network.

In 2001, the local government in Laurinburg, a small city southwest of Fayetteville, started leasing fiber optic capacity to network operator School Link, Inc, which in turn provided Internet service to the city, the county, the Scotland County public school system, and a few other community anchor institutions. BellSouth, which had sold service to the schools before the School Link arrangement, argued that state law did not permit municipalities to operate networks. However, the Court ruled in favor of the city, citing the longstanding authority cities in North Carolina have to operate cable television networks.

In 2005, the state legislature passed the Video Service Competition Act of 2005 (VSCA). The Act removed the last vestige of power that cities had to regulate cable by moving all authority to approve video service franchises to the North Carolina Secretary of State's office. Moreover, the new Act obligated the state to approve any completed franchise application, leaving no public authority in the state the ability to promote the public interest in video service. Once a franchise is approved, the company can offer services anywhere in North Carolina.

Despite promises from the industry that the VSCA would result in lower cable rates and new competition, available data show that rates have continued to increase at previous rates and communities remain overwhelmingly reliant on only one cable company and one telephone company.

City records from the late-1990s and early-2000s detail tense relations with the incumbent cable franchisee, now TWC. Council minutes from February 19th, 1998 include reference to TWC “walk[ing] out of a meeting” over franchise renewal terms.⁸ On several occasions in 2001, Mayor Rose voiced frustration over TWC having moved the Inspirational Network and CNN out of the basic service tier.

Relations between Wilson and TWC took another sour turn in early 2004 after the City’s cable consultant analyzed TWC’s proposed annual rate increase. The consultants concluded that the increase, though unpalatable, was not in violation of FCC rule; that left the City with no choice but to accept the price hike. Council members suggested the larger problem was the lack of competition and then City Manager Edward Wyatt lamented the telecommunications industry’s power in Washington, which had “gotten Congress to just give them everything they wanted.”⁹ Local governments around the nation have voiced similar sentiments, noting that they can no longer ensure universal access, quality standards, or affordable rates on even basic tiers of service.

There was another fight over prices the following year. The City’s rate regulation consultant alleged that a proposed network upgrade fee violated FCC rules by

charging basic tier customers for upgrades that only affected the premium tier. Wilson rejected the fee and TWC reacted swiftly with a letter to the City Manager, promising an expensive legal fight. TWC appealed to the FCC as promised but ultimately settled with the city and gave all basic tier customers a \$17 credit, returning an estimated \$200,000 to residents.¹⁰

In the early 2000’s, the City was still experiencing significant problems with its telephone and cable service. The City could not verify its telephone service bills from Sprint, which totaled multiple thousands each month. City staff were regularly fielding complaints about cable price hikes, and rain storms frequently knocked out service to a recreation department building. Returning to its previous strategy of municipal ownership to ensure accountability, the City asked its cable consultant to conduct an initial feasibility study. At the time, the town was interested in a cable network, though the series of consultant reports from 2003 to 2004 suggested FTTH.

Wilson’s immediate model for Greenlight came from Bristol, Virginia, which created a FTTH network in 2003 called OptiNet owned and operated by BVU Authority, then a municipal electric utility (now an independent authority). A previous case study by the Institute for Local Self-Reliance, *Broadband at the Speed of Light*,¹¹ details the network’s history. OptiNet is credited with creating over 1,000 private sector jobs and millions in public savings. The network was lauded in *The Economist* and the FCC’s National Broadband Plan. In 10 years of operation, the network has not increased its rates for telephone or broadband services; its television rate increases have been below industry norms. Bristol was a particularly apt inspiration for Wilson because it faced the same economic pressures from the decline of tobacco and manufacturing industries.

Resources

The Institute for Local Self-Reliance maintains a number of resources regarding community broadband, including Fact Sheets on [economic development](#) and [public savings](#) that result from community owned networks. We recently published a [case study on rural Chanute, Kansas](#). Chanute’s public utility incrementally built a fiber and wireless network that kept jobs in the community without borrowing.

We also have a [glossary](#), [weekly podcast](#), answers to [frequently asked questions](#), collection of notable [quotes](#), [various reports](#), [videos](#), and an [interactive map](#) plotting community broadband networks across North America.

Getting Serious About Fiber

Communities with a history of providing essential infrastructure have tended to operate the most successful community broadband networks. When Wilson was considering a network investment in 2006, City Manager Grant Goings revisited the City's many successful investments, saying,

Wilson's citizens approved a bond referendum on December 16, 1890 to build a municipal power system, because Wilson was not large enough to attract investment by the private power companies. ... In 1912, a group of city leaders began producing natural gas, as the city believed important infrastructure was needed in the city ... In 1890, city leaders began the public water system when they realized they needed to protect the health of the citizens for the city to grow and prosper. Some 100 years later, progressive thinkers recognized that a water supply needed to be protected and secured for a long-term future; the result was Buckhorn Lake. For 115 years, the city of Wilson has been a leader in infrastructure.¹²

Before embarking on a citywide system, Wilson Utilities built a backbone connecting its own institutions and also connected BB&T locations with a 1 Gbps local network. BB&T is a national bank that was founded in Wilson and remains a prominent local employer. The network was designed with the capacity for later expansion to handle thousands of connections to residents and businesses, if it were deemed necessary. The City had been using Time Warner Cable's business class Internet but found it far too unreliable; so much so that it asked people to wait in line to register their children for youth sports

City leaders – in and out of government – provided important support for creating a municipal fiber optic network.

because the City's Internet connection could not be trusted to work at the appointed time.¹³

As the utility began reaching out to local elected officials and business leaders about a possible FTTH network, it emphasized the importance of fiber optics and the unlimited potential capacity. It was building essential infrastructure, not just a cable television network. Cable TV service would be offered to make sure it would attract enough subscribers to the system to pay the debt and because surveys had shown tremendous dissatisfaction with Time Warner Cable's service.¹⁴

City leaders – in and out of government – provided important support for creating a municipal fiber optic network. An executive at BB&T lent the bank's support to the initiative in a letter published in the local newspaper. The presidents of Barton College and Wilson's Technical Community College also got on board with a letter to the City Manager.

A Near-Miss on a Public-Private Partnership

Despite past frustrations with Time Warner Cable and the telephone company, the City first sought to partner with the existing providers to improve telecommunications services even though it recognized that the telephone and cable companies

were not likely to cooperate. Time Warner Cable had been quite emphatic in rejecting any public-private partnership. Nonetheless, city staff pursued dual strategies in creating the network. The City's consultant originally suggested a public-private partnership to provide telephone services and in 2007 the City entered negotiations with both

TWC and EMBARQ. As a backup plan, the City was simultaneously preparing to build a network on which it would provide telephone, television, and access to the Internet (commonly called the "triple play").

TWC was uninterested in a public-private partnership. In a 2011 interview, Assistant City Manager Shows stated,

We asked Time Warner, formally, I mean, there were letters written to upgrade the network. We asked them if they were interested in a public-private partnership. They slammed the door in our face, would not talk, period.¹⁵

Mayor Rose was more blunt: “They laughed in our faces.” Negotiations with EMBARQ, however, were more productive. On August 23, 2007, Goings reported that the City and EMBARQ had agreed on a Memorandum of Understanding. Negotiations would continue to finalize the details, and the outline of the deal seemed to benefit both the city and the company. As described by Goings, Wilson would lay high-speed infrastructure to the premises. Drawing

on its experience managing customer service through its public utilities, the City would handle television and Internet services, customer relations, billing, and marketing. EMBARQ, with years of experience in navigating federal telephony regulations, would provide voice service and a fast connection to the outside world. The two entities would share telephone service revenues.¹⁶

A spokesperson from EMBARQ spoke at the same Council meeting to support the deal, and expressed excitement that the partnership with Wilson could serve as a model for partnerships in other cities.

And yet, EMBARQ and Wilson could not come to a final agreement. In an interview, Shows discussed their negotiations at length and described how close the two parties were to finalizing terms.

BB&T Letter of Support

Leon Wilson, a senior Vice President of BB&T, published this piece in the Wilson Daily Times on October 6, 2006, expressing support for Wilson building its own network.

BB&T was founded by Alpheus Branch in 1872, right here in Wilson, North Carolina. Both the bank and the community have seen a lot of change over the years, but one thing has held constant: What is good for Wilson is good for BB&T.

Great things are happening in Wilson. Announcements of industries locating and expanding here, the economic study ranking the city of Wilson as the number one micropolitan area in our state, and rapid retail, commercial and residential growth are all indicators of the positive momentum our community is experiencing.

Our success would not be possible without infrastructure. There is no doubt that an abundant water supply, strong utility systems, and good roads and highways and rail service have helped create an environment in which businesses can succeed and prosper. As businesses grow, more jobs are created, and the people of Wilson enjoy a higher quality of life.

The city of Wilson is considering a bold investment in new infrastructure, by expanding the city's fiber optic network and making it available to businesses, industries and homes throughout our city. The banking industry, like many others, is becoming increasingly reliant on the ability to transfer information and communicate with incredible speed through secure, dependable infrastructure.

The project under consideration by City Council will take communications to a new level and should provide Wilson a strategic advantage that will not go unnoticed by business world.

The infrastructure of tomorrow will look quite different from the infrastructure of the past, and our nation's economy rewards leaders in new technology. The city of Wilson has a proven track record of sound infrastructure investments, and BB&T supports the City Council as they consider this new initiative.

We negotiated for the better part of a year... to come up with that [partnership]. As a matter of fact, it got to the point that they had equipment, switch gear, in our NOC [Network Operations Center], they had already pulled fiber optic lines to enable the partnership into our NOC. And at the last minute it fell apart in Kansas City.¹⁷

Shows blamed EMBARQ’s corporate leadership for the failure, claiming they were unwilling to bear risk and reward equitably, saying:

What the incumbents consider a public-private partnership is the public is going to give the private sector millions of dollars to do marginal upgrades to their network and then charge money for those upgrades and get paid twice. Our version of a public-private partnership was a true partnership where we are both actively involved in the provision of service and upgrading the infrastructure and having ownership of the infrastructure, and ultimately their corporate leaders could not get this model to fit into their existing structure.¹⁸

City Manager Goings has offered a more charitable explanation, saying that EMBARQ local officials were negotiating in good faith, but that timing issues prevented the deal. With debt service payments

coming due, the City was under pressure to move quickly and get revenues flowing. At the time, EMBARQ was undergoing a national organizational restructuring which hindered its ability to move swiftly and capitalize on the opportunity.

Regardless, the City Council voted unanimously on November 16, 2006 (with one Council member absent), to finance the construction of an FTTH network using Certificates of Participation (COPs), a financial instrument akin to a revenue bond. Under COPs, the network itself is the collateral, and taxpayers are not obligated to cover potential losses. Wilson issued \$15.7 million in COPs in 2007 and \$13.5 million in 2008.¹⁹ Both rounds were for a term of 15 years; interest rates varied from 3.25 to 5.2 percent.

The network was expected to break even within 12 years and the entire debt would be repaid within 15.²⁰ The COPs specify that taxpayers could be liable only if Greenlight’s revenues are insufficient to pay its costs. In that case, some form of tax increase or utility rate increase could be used to make up the shortfall.²¹ Regardless, the network has not missed any debt payments and has been funded by subscriber revenues, not taxpayer revenues.

Greenlight Marketing

Three good reasons to switch...

- 1 Support a truly local provider, committed to fair pricing and Wilson’s future
- 2 Keep your money in the local economy, instead of sending it away to national providers
- 3 Call anytime, day or night, for technical support from people who live and work right here in Wilson



Find out why your neighbors are switching to Greenlight. [Another video](#)

Services

The first services launched in June, 2008. Greenlight's Internet speeds are higher than the competition's, with the basic tier of service competitively priced and providing 10 Mbps symmetric upload and download speed (see chart below for service comparison). Greenlight's capacity and reliability are far in excess of what competitors offer. In 2011, Greenlight was the first provider in the state to offer residential consumers 100 Mbps service.²² Greenlight's business users may purchase up to 1 Gbps with existing equipment and even higher speeds can be accommodated.

To demonstrate the power of the network, Greenlight outfitted a marketing trailer with three computers, TVs, and a telephone to take to area events. The trailer could be connected to the fiber network anywhere in the community to demonstrate Greenlight's services.

Greenlight gains its access to the wider Internet from a Tier 1 service provider that is collocated in the Greenlight headend facility. Greenlight also has a backup internet connection from a second service provider with a presence in the nearby city of Greenville.

Even before the network could offer services, Greenlight hired a sales person. She visited local businesses to explain what Greenlight had planned.²³ To demonstrate the power of the network, Greenlight outfitted a marketing trailer with three computers, TVs, and a telephone to take to area events. The trailer could be connected to the fiber network anywhere in the community to demonstrate Greenlight's services.

The network was completed one year ahead of schedule, in January, 2009. At that time, Wilson reported it had 1,840 subscribers, far ahead of the 1,400 projected in the business plan. Additionally, 110 businesses had subscribed.²⁴ Subscribers swelled to 2,700 by May and over 4,600 in March, 2010.

However, the cost of adding all those subscribers was greater than anticipated and the City decided to secure additional funds to ensure it had the capital to continue connecting customers. Building a network can be seen as giving a mini loan to each customer – the cost of

connecting someone to the network exceeds \$1,000, a cost that is recouped over the first few years of service. Networks that run low on capital funds may have to slow the rate at which they connect new subscribers, creating additional problems down the road.

In 2010, Greenlight borrowed an additional \$4.75 million from Wells Fargo at 2.05% interest over a term of four and one half years. This bumped the total cost of the network to \$33 million.

One of the subscribers was profiled in an article in 2008 about broadband in North Carolina, providing evidence for Greenlight's success.

Gentry Buchan works from home, requiring a fast and reliable connection. She tried Greenlight and came away very impressed:

Because she works from home, Gentry subscribed to Time Warner's "business class" broadband, which company representatives insist can be customized to up to 1 Gigabit per second. Yet, Gentry said even the slowest Greenlight connection seemed 10 times faster than her cable-based connection. "It's blistering fast," she said. To compare providers, she kept one office computer connected to Time Warner and the other to Greenlight. "It's amazing," she said of the difference in speed. "All the engineers at work want to come play at my house because there's no fiber optics anywhere else in eastern North Carolina."²⁵

Now, more than four years later, the vast majority of the state still lacks access to full fiber optic networks. The existing providers continue to offer DSL and cable, though many people have access to neither. But back in Wilson, Gentry was quickly convinced of Greenlight's superiority over the competition and subscribed, as recounted at the end of that article:

A few days ago, the Buchans signed up for cable, Internet and phone service through Greenlight. Even with two DVR boxes, more sports channels and 20 Mbps in speed, Gentry anticipates paying \$50 less per month. "When I called to cancel Time Warner, they told me there was no way I was getting the speeds I was getting for the price I was paying—they didn't believe me."

After Greenlight dropped the price of its 100 Mbps (symmetrical) service from over \$200 to \$149 per month, it signed up two early adopters. One of them noted that the original reason they moved to Wilson was its fast access to the Internet, far superior to what was available in neighboring Johnston County.²⁶ They were actually able to pay less in Wilson for a 40 Mbps connection than they had paid for 7 Mbps in their old location.

Greenlight promotes its local flavor to differentiate it from the incumbent providers. An ongoing marketing campaign promotes Greenlight as “Wilson’s Community Network” and reminds consumers that money spent on Greenlight remains in the community. Providing local service was very important to Wilson Utilities. Being rooted in the community gives subscribers greater access to Greenlight staff, creating a high level of organizational accountability. Some communities refer to this dynamic as the “strangle effect.” If something goes wrong, the subscriber can find someone locally to strangle. In contrast, national providers typically prefer

Being rooted in the community gives subscribers greater access to Greenlight staff, creating a high level of organizational accountability.

to centralize their support, making it more difficult to find local technicians to solve problems.

Having launched in 2008, Greenlight has felt the impact of recent economic trends. By September, 2010, Greenlight had disconnected over 1,000 customers due to nonpayment.²⁷ That means for every five customers remaining in good standing, one has been unable to pay. Such losses can be hard on young networks, which is why Greenlight began to require deposits based on its customers’ credit scores.

Greenlight has exceeded initial revenue and subscriber projections. In October 2010, Greenlight realized its first monthly operating profit, a year ahead of schedule.²⁸ Greenlight now has over 6,050 subscribers, a 30 percent share of the Wilson market. Ninety-one percent of Greenlight customers subscribe to data services, 87 percent to video, and 81 percent to voice.

Comparing Greenlight

Greenlight currently offers competitive packages for fiber optic voice, data, and video services (including DVR service). The table below compares non-promotional basic tier bundles from Greenlight and the two for-profit triple-play providers in Wilson.

Greenlight provides the fastest Internet speeds, along with other benefits. It has yet to raise prices in more than three years of operation and has imposed greater price discipline on Time Warner Cable, which has raised rates more rapidly around Wilson than in the city. Catharine Rice analyzed the Time Warner Cable rates for Wilson and surrounding communities in a presentation to state legislators on the topic of municipal networks.²⁹ She noted that Time Warner Cable did not increase the rates it charged subscribers in Wilson in 2007 or 2008 while increasing them substantially (up to 40 percent on some packages) in the nearby Raleigh metropolitan region where it had no municipal competition (see Time Warner Cable



Rate Increases graph). Additionally, she found Time Warner Cable offering a package in Wilson for \$99 per month that it was charging \$180 for in nearby communities. And though Wilson residents were paying less than those in surrounding communities, Rice showed that Time Warner Cable had increased the Internet speeds available to Wilson while neighbors saw no similar increase.

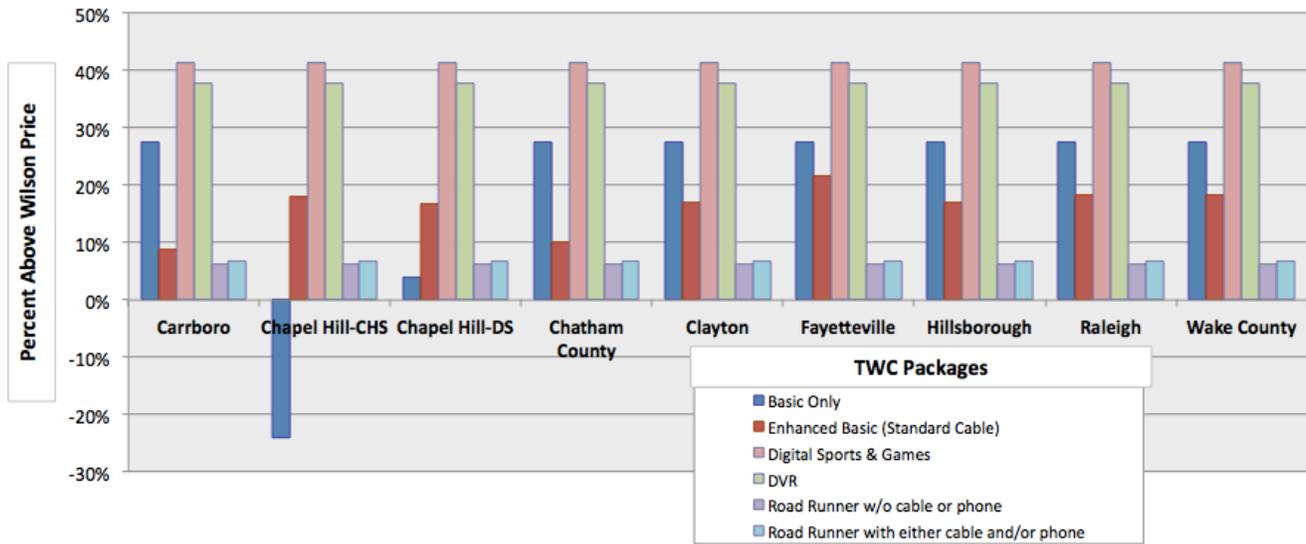
Determining the prices of Time Warner Cable services is quite difficult because the company refuses to divulge the price of services after promotional pricing expires. In contrast, the vast majority of community owned networks refuse to play confusing pricing games. They strive for transparency in pricing and offer a single price rather than short term deals that balloon after six or twelve months. Though many national

Services Pricing Comparison

	Greenlight	Price	Time Warner Cable	Price	CenturyLink and DirecTV	Price
Cable Television Offerings						
Basic Television	82 channels	\$46.95	70 channels (no HD or DVR)	?*	140 channels (no HD or DVR)	\$54.99
Expanded Television	184 channels (includes HD)	\$58.95	90 channels (no HD or DVR)	?*	150 channels (no HD or DVR)	\$63.99
Premier Package	184 channels + 4 premium channels	\$96.95	Digital TV 200 + channels (includes HD and DVR)	?*	285 channels	\$199.99
Internet Offerings (Mbps Downstream/Upstream)						
Basic Tier	10/10**	\$34.95	Up to 3/1	?*	Up to 1.5 / .512	\$56.44
Middle Tier	20/20	\$59.95	Up to 10/1	?*	Up to 3 / .512	\$61.44
Fastest Tiers	40/40**	\$74.95	Up to 20/2	?*	Up to 10 / .768	\$66.44 thereafter
	60/60**	\$99.95	Up to 30/5	?*		
	100/100**	\$149.95	Up to 50/5	?*		
Phone Offerings						
	Unlimited long distance and 12 additional features including voice mail	\$34.95**	Unlimited long distance; includes 4 features (not voicemail)	?	No long distance, no features (features can be added for additional fees)	\$25.40 \$34.40 for basic service with caller id.
					All 16 features included	\$50.85

Table 1: Prices reflect non-promotional rates. *Time Warner Cable emphatically refuses to divulge its non-promotional rates to potential subscribers. Greenlight publishes its rates openly. Additionally, since 2009, Time Warner Cable has experimented in multiple communities with monthly transfer caps for subscribers that limit how much a connection may be used. ** This option requires a bundle. See Appendix 1 for more details.

Time Warner Cable Rate Increases, 2007-2009



Time Warner Cable raised rates in non-competitive areas around Wilson while holding Wilson’s rates steady over 2007-2009 according to an analysis presented in committee at the State Legislature.

cable and telephone companies also use promotional pricing, the vast majority will at least reveal standard pricing to potential subscribers over the phone.

In its application for a broadband stimulus award under the American Recovery and Reinvestment Act, Greenlight documented disturbingly anti-competitive practices. “TWC offers below-market rates for customers seeking to switch to Greenlight, locking them into multi-year deals in exchange for name-your-price rates that are sometimes half Greenlight’s prices,” the application asserts.

Greenlight staff documented instances of TWC offering free premium channels, cost-free DVR rental, and massively discounted rates – undercutting Greenlight by more than 50% – to lure Greenlight customers back to TWC with multi-year service contracts. This often occurs either after a custom calls Time Warner Cable to disconnect or when a TWC salesperson knocks on the door of a former subscriber. In both cases, they will ask what the family is paying on Greenlight and then beat the rate, regardless of whether that rate is

sufficient to cover the cost of delivering the service. This is a similar pattern across the nation when small providers overbuild massive cable companies.

While Wilson naturally expected Time Warner Cable to lower its prices and increase investment in the newly competitive environment, TWC actions may have gone beyond competition and into predatory pricing. TWC’s price cuts in Wilson are far deeper than it typically offers in areas where it is merely competing with AT&T

and CenturyLink. Predatory pricing occurs when a company offers deep discounts on a temporary basis to run its competition out of business, after which it resumes monopoly pricing. However, the Federal Trade Commission and Federal

Communications Commission in Washington, DC, have turned a blind eye to such practices for decades.

Determining the prices of Time Warner Cable services is quite difficult because the company refuses to divulge the price of services after promotional pricing expires.

Community Impact

As documented above, Greenlight has lowered prices for both those subscribing to its services and for those subscribing to TWC services. An analysis of these savings found that the community is saving \$1 million each year.³⁰ This is money that would have previously been paid to Time Warner Cable that is likely to stay within the local economy.

Having its own network gives Wilson more freedom to try innovative approaches to solving problems. For instance, Wilson submitted a broadband stimulus application in 2009 for a grant and loan to expand the network with enhancements for public safety, education, health care and smart grid. The grant was denied, but the City is seeking other mechanisms to achieve the outcomes of the award application. Because it operates its own network, it has greater flexibility to create programs connecting the disadvantaged, though funding such programs can be a challenge.

“I can’t say anything but good things about it—I have it at home, we have it at the office, we have it at our client locations. It’s been very smooth.” - *Tina Mooring, Local Business Owner*

Meeting Business Needs

Greenlight has had success in connecting local businesses, which have access to a network superior to what is available in most other regional towns. Greenlight’s former General Manager, Dathan Shows, said that Greenlight’s administrators were surprised by their performance in the commercial sector. Customer growth exceeded forecasts, with small and large firms alike adopting Greenlight. David Vinston, a manager at Voith IT Solutions, described Greenlight as “instrumental” in helping his local firm “establish a cost effective network solution between our offices in Wilson and York, Pennsylvania.”³¹

The network is extremely resistant to failure. For those that want maximum protection, Greenlight offers a “protected ring” service that connects facilities with multiple paths – meaning that if one of the paths is damaged, the service will continue to function. One of

Greenlight’s customers has been using this service for five years and has not had a single outage. Though individual network components have failed, the network has been fixed before the customer even realized anything was amiss because their services were not impacted.

BB&T is the most prominent commercial Greenlight subscriber. The bank was founded in Wilson and continues to have strong ties with the community. Though the headquarters is no longer in Wilson, it maintains a large number of employees downtown. BB&T executives publicly supported the venture at public hearings in 2006 (see the box above with BB&T’s public letter in support of the network) and the bank provided underwriting for the initial debt issue. Additionally, BB&T opposed state legislation that has made it all but impossible for other communities to build their own networks.

Greenlight has been able to provide a much-needed redundancy to businesses in the community. Large institutions like BB&T, whose productivity drops precipitously when communications systems go down, are so concerned about reliability that they typically contract with different providers to ensure physically diverse fiber paths. Greenlight was engineered to meet these high specifications, not just for BB&T but for any business in the community.

Greenlight also connects the Upper Coastal Plain Business Development Center, a small business incubator in Downtown Wilson, with a more affordable and higher quality connection. Housed in a former department store, the Center offers business development assistance and below-market commercial rents to small businesses. The Center conducts a training program for tenants that includes business plan consulting and other technical assistance. WHIG-TV, the local station which airs community programming, has opened an office in the Center, and will be hiring staff to expand local coverage.

Other Internet Service Providers

As described above, Greenlight has impacted the ISP market in Wilson. Time Warner Cable upgraded its level of service to remain competitive and a Tier 1 network provider now co-locates at Greenlight facilities. That company provides data management services through a world-class Tier 1 Point-of-Presence (POP)³² to high-capacity users such as large firms and other Internet service providers. This investment in Wilson would not have been possible without the city's state-of-the-art infrastructure.

Though Greenlight offers local businesses more broadband choices, it impacted small, dial-up ISPs in town. Tina Mooring, manager at Computer Central, has been particularly vocal about Greenlight. In a 2011 interview, she argued that the City had been unfair to her and that her small business had lost 2/3rds of its dial-up customers to Greenlight. She said she had approached the City to discuss creating a public-private partnership that would allow her to resell services to end-users using the City's fiber optic network, but that the City had rebuffed her.

The name for this model is open access—where a local government builds a physical network but does not offer services directly, instead allowing multiple independent entities to compete on the fiber optic network for customers. The open access model is tremendously appealing in that it creates the real competition that is all but impossible when each provider is expected to build its own capital-intensive network. However, it also results in lower revenue for the network owner, making it more difficult to pay off the debt incurred in building the network. This approach has had some success where local governments have built incrementally without borrowing, but Wilson decided the most prudent course would be for the City to build and offer services on the network.

Despite their earlier disagreements, Greenlight and Computer Central are now partners. Computer Central

has transitioned its dial-up customers to Greenlight and the business now focuses on value-added services including disaster recovery and video surveillance cameras for both residents and small businesses. Though it still offers wireless services in the rural parts of the County, Computer Central urged its Wilson customers to subscribe to Greenlight to take advantage of the fast network.³³ Reflecting on Greenlight's service and the transition process, Mooring noted in a July 2012 City Council meeting, "I can't say anything but good things about it—I have it at home, we have it at the office, we have it at our client locations. It's been very smooth."³⁴ Computer Central and Wilson co-market their services, a win-win for everyone involved.

Public Safety

Public safety is an important dimension of Greenlight service. Greenlight connects police stations throughout the city, and the City has purchased several mobile surveillance cameras. The cameras are placed in areas difficult for the police to quickly access, allowing for more efficient use of police resources. Each camera requires a connection to transmit the data it collects, so without Greenlight's citywide fiber, the City could only station surveillance cameras where it had other pre-existing fiber.

Firefighters are able to maximize idle-time and save on travel expenses thanks to the ability to now receive their continuing education training in firehouses via video conference over Greenlight. This saves tax dollars because training sessions can be conducted once for each shift; in the past instructors had to visit multiple fire stations to conduct classes. Greenlight also provides network connectivity to the City's mobile command center. The command center can be deployed anywhere in the community and continue to have a high capacity connection, which is necessary to access high-bandwidth applications such as GIS (Geographic Information Systems) in the field.

Greenlight gives the city options; as new service delivery technologies that require advanced

connectivity become available, Wilson will be able to exploit them. As an example, emerging fire monitoring technologies send first responders real-time data on temperature and barometric pressure in buildings that are on fire. In the future, citywide fiber can provide the communications backbone for advanced traffic management to give priority to first responders.

Health Care

WilMed, the local hospital, also subscribes to both Greenlight and Time Warner Cable. Having redundant providers ensures a connection if one goes offline, though Greenlight has not had any such outages. Greenlight provides data service to WilMed, and fast tracks data between the hospital and off-site facilities that are also on the network. For doctors that live in town and subscribe to Greenlight's Internet service, this means that communications between the home office and the hospital get the full capacity of the fiber network that is available at the time of transmission.

Even if a doctor only subscribes to the basic 10 Mbps tier, communications with the hospital will be much faster. Higher capacity connections allow for rapid transmission of hyper-dense medical files, such as very high-resolution diagnostic imaging scans to be viewed immediately without life-threatening delays.

Public Education

Since July 2010, Greenlight has been the sole provider of metronet (connecting the schools to each other on a wide area network) and Internet services for the public school system. To get the contract, Greenlight won the bidding process that is required under federal E-Rate rules. (E-Rate is a federal program that subsidizes school and library connections.) The 28 school facilities are spread across both the city of Wilson and the small towns and rural areas of the county. The school system includes three high schools, six middle schools, 14 elementary schools, and a few additional facilities.



Greenlight offers free Wi-Fi downtown.

These facilities are connected to each other using a 100 Mbps metronet service.³⁵ The data center is connected with a 1 Gbps connection to the wider world but is presently only purchasing 100 Mbps of connectivity to share among the schools. Greenlight's list price for 100 Mbps metronet is \$400 per site and the gigabit aggregation point at the data center is \$1250. The list price for a 100 Mbps dedicated connection to the Internet is \$3000 per month. A nearby community pays more for its dedicated 10 Mbps connection than Greenlight charges for its 100 Mbps.³⁶

A nearby community pays more for its dedicated 10 Mbps connection than Greenlight charges for its 100 Mbps.

Greenlight allows for a number of distance learning possibilities, including video conference tutoring for homebound students and remote instruction of advanced science topics that require better equipped labs than are available in the schools.

Libraries and Free Wi-Fi

Libraries remain important community institutions, as centers for public gatherings, research, and online connectivity. Beginning in the fall of 2011, Greenlight became the broadband data provider for public terminals and wireless in the Wilson County Central Library. Wireless connections, powered by Greenlight, are also freely available throughout the branch location. The library uses the Greenlight connection to teach courses on Internet and computer basics as well as providing a place for people to submit online job applications.

In addition, Greenlight provides free wireless Internet throughout downtown Wilson. This public service allows a seamless communications experience for the growing number of mobile device users who would prefer to use faster Wi-Fi connections rather than more expensive and limited 3G or 4G subscriptions. Patrons of local businesses, pedestrians, and travelers waiting in the city's rail station regularly take advantage of this service.

Free Wi-Fi is also available at the Gillette Athletic complex, which has helped the Parks & Recreation

Department to attract large soccer and baseball tournaments to the complex. The Wi-Fi is not only an amenity for people attending; referees depend on it and tickets are sold at the gate using handheld devices that will accept credit cards.

Television

Community networks are often much more receptive than their commercial counterparts to carrying local programming. In fact, many try to maximize local programming as a

competitive advantage over providers not rooted in the community. Unlike its video competitors, Greenlight's television lineup includes WHIG-TV and WNCR-TV, two low-power stations based in nearby Rocky Mount. At the January 18, 2007 Council meeting, Steve Stevenson, program director of WNCR, sought help in getting his network on the incumbent cable network, Time Warner Cable. TWC had not shown any interest, and Mayor Rose offered to write a letter encouraging them to add the station to their lineup. Another local station, WHIG-TV, has aired baseball games in the area and recently opened a Wilson office as part of efforts to add more local coverage.

Greenlight also carries the Greenlight channel, which provides local, Wilson-focused programming on its system, differentiating it from other telecommunications providers which offer a connection but not a platform for community expression. For example, the Greenlight channel broadcasts half-hour pre- and post-game shows to discuss the local semi-pro baseball team during the summer playing season. The Greenlight channel also was the venue for airing the 2010 Sheriff's debate.

For several years, Greenlight has had the NFL and Red Zone channels while Time Warner Cable did not, giving Greenlight the edge among passionate football fans. However, TWC began carrying those channels in September 2012, after resolving its protracted dispute over carriage rates. Locally owned networks around the nation have been among the first to offer local

sports channels like university conference-specific channels because they know how important local teams are to the community. The national companies can take years longer as they attempt to wring as many concessions as possible out of the new channels.

Local ads are a win-win for the community, connecting local businesses to potential customers and generating revenue for the municipal network. Video providers like Greenlight have the option to insert broadcast ads for local businesses, though many report that the technology is not worth investing in until a network has about 5,000 subscribers. The process for assigning ad slots is complex and involves a mix of national, regional, and local ads, but it offers a venue for small businesses to advertise themselves. Greenlight contracts with advertisers through Prime Media Productions, and its ad revenue is averaging \$5,000-10,000 per month, with the bulk coming from local businesses. However, events like national elections often swell advertising revenues, particularly in a battleground state like North Carolina.

Backlash

In 2011, North Carolina became the nineteenth state to create barriers that essentially revoke the authority of local governments to build networks. The full story behind this multi-year legislative battle will shortly be available in a separate report from Christopher Mitchell and Todd O'Boyle. The Legislature, under pressure from Time Warner Cable, CenturyLink, and others, passed a bill to restrict publicly owned networks. Wilson and some other existing municipal networks in North Carolina obtained exemptions from some but not all of the restrictions. For instance, Wilson is only permitted to expand Greenlight to the County boundaries whereas private companies can

offer services anywhere within North Carolina. This restriction was a disappointment to the many communities in neighboring counties that asked Greenlight to expand to their towns.

Throughout the process of building the network and dealing with the legislation in the state capital, Wilson has had to combat false accusations from multiple sources.

Unlike its video competitors, Greenlight's television lineup includes WHIG-TV and WNCR-TV, two low-power stations based in nearby Rocky Mount.

Shortly after the City Council's vote to create a municipal network, city officials reported that residents were asking whether tax dollars were funding Greenlight and whether it would be a mandatory service. The City Manager attributed such questions to a

willful disinformation campaign by Greenlight's opponents.³⁷ For example, at a January City Council meeting, Reid Hartzog from TWC criticized the "decision to appropriate public taxpayer dollars" to build out a network to compete with the private sector.³⁸ In fact, the City was issuing Certificates of Participation (CoPs), a common tool used to generate the revenue needed for capital projects, like the construction of power utilities. The certificates commit future telecommunications revenue to pay off the debt. As such, Greenlight subscribers who chose to pay for the service would fund it, not "taxpayers."

Some have accused Wilson of cross-subsidizing from its other utility functions, though they offered no proof—the closest they have come is to cite Wilson's electricity rates compared to Progress Energy and Duke Energy (both of which have lower rates), suggesting that alone is evidence of cross-subsidization. But like all municipal utilities, Wilson submits to audits that are publicly available and they show no evidence of cross-subsidization. As for its electrical rates, a newspaper reporter did some digging to find the truth:

Greenlight is an incredible asset—offering the highest capacity connections available in the state at some of the most affordable rates.

Wilson is one of 33 ElectriCities in eastern North Carolina that buys electricity from the NC Eastern Municipal Power Agency. ElectriCities has badly managed its debt, so rates are high across the board—but Wilson's are the second-lowest among them.³⁹

Allegations such as these are hardly a surprise—the municipal network in Bristol, Virginia, spent years disputing similar allegations from its incumbent telephone provider before the matter was finally resolved in favor of Bristol's cost allocation model. Historically, these tactics seem to have been more about smearing and harassing a community network rather than making defensible claims.

Though Wilson had not increased its pole attachment charge since 1975 (for poles owned by the utility), it calibrated that fee to industry norms in 2007. The increase from \$5 to \$15 is actually a decrease in real dollars – that \$5 in 1975 was worth \$20 in 2012.⁴⁰ Time Warner Cable has insinuated that the fee increase would be used to help Greenlight, but Greenlight also has to pay the same fees to the City. As for increases in such fees, Time Warner Cable itself had doubled the rates it charges others for access to its poles over the previous ten years.⁴¹

Perhaps the most comical attack on Wilson's Greenlight has come from the John Locke Foundation, a "think tank" which has repeatedly warned that wireless technologies, such as WiMAX, will make fiber optic cables obsolete.⁴² In reality, wireless systems use antennas that are themselves connected by wires, usually fiber optic, to the Internet. This claim is akin to suggesting that airplanes will make runways obsolete. Wireless and wired connections are complements, not substitutes. As an example, the city of Stockholm has the most wireless 4G competition, precisely because the City invested heavily in fiber optics.⁴³ Unfortunately, when paired with a powerful media strategy, even blatantly false claims can sway elected officials.

The Future of Greenlight

Deploying a state-of-the-art broadband system in the backyard of a multi-billion dollar competitor is not for the faint hearted. But having lost its economic base to global competitors in the tobacco and manufacturing sector of the city, Wilson's leaders knew that the community's economic future and quality of life depended on building an infrastructure that would bring its businesses, students, and residents to the new digital, global market.

Greenlight is an incredible asset—offering the highest capacity connections available in the state at some of the most affordable rates. Greenlight can expand, but not very far. Wiring all the schools in the county in 2010 created a skeleton network that stretches into the towns and countryside, where 30,000 people live in 12,500 households. Should it choose, it can offer services to anyone in the County but cannot expand further under present state law. This restriction came as a disappointment to many nearby towns that had already asked Wilson when Greenlight would be able to expand.

During the state legislative battle over municipal networks in 2011, a Vice President from the large technology firm Red Hat wrote a public letter detailing how difficult it was for them to negotiate with the national cable company serving a nearby area in which they were investing. That company demanded a large price premium to bring a fiber cable to the building. That connection is now standard in Wilson and businesses will increasingly take notice of how easy it is to get fast, affordable, and reliable connections there. Some already have.

For the foreseeable future, Wilson has a competitive advantage over the rest of the state. Its network is faster, more reliable, and will only become more attractive as it holds rates down compared to those depending on the national cable and DSL companies.

Communities throughout the United States have seen a reordering within the broadband market. Most

communities have only one cable company and one DSL company offering broadband Internet services. In recent years, cable has generally been the faster, higher cost connection and DSL has often become the slower, slightly less expensive option. In short, cable and DSL have found ways to split the market rather than engaging in real competition—and national cable companies outright refuse to enter each others' territory to create cable competition. However, cable companies (led by Time Warner Cable) have begun instituting bandwidth caps, limiting how much a subscriber can use the connection. Wilson, along with more than one hundred other communities that have

built their own networks, does not have to worry about these dynamics any longer.

Wilson's network has created more choice, more investment, and lower prices. Local businesses and residents do not have to worry whether the FCC will defend the public interest in matters of rates, network management or bandwidth caps because the community makes the rules for its own network. On matters of essential infrastructure, they are in charge. Decisions are made locally. And if the need arises, they can find someone to strangle if something goes wrong. That is a pretty good incentive to make sure things go right.

Appendix 1

Provider Services Comparison

Television Services

	Greenlight	Greenlight Price	TWC	TWC Price	CenturyLink and DirecTV	CenturyLink and DirecTV Price
Cable Television Offerings (per month)						
Basic Package	“Expanded Basic” 82 channels	\$46.95	“Broadcast TV w/ International” 70 channels (no HD or DVR)	\$33.99 first year; refused to quote after	“Entertainment” 140 channels (no HD or DVR)	\$29.99 first year ; \$54.99 thereafter
Medium Package	“Digital Line Up” 184 channels (includes HD)	\$58.95	“El Paquetazo” 90 channels (no HD or DVR)	\$41.95 first year; refused to quote after	“Choice 150” 150 channels (no HD or DVR)	\$39.99 first year \$63.99 thereafter
Premier Packages	“Bronze” 184 channels + 1 Premium channel	\$70.95	Digital TV 200 + channels (includes HD and DVR)	\$49.99 first year; refused to quote after	“Premier 285” 285 channels	\$44.99 first 3 months, \$89.99 next 9 months, \$199.99 thereafter
	“Silver” 184 channels + 2 premium channels	\$80.95				
	“Gold” 184 channels + 4 premium channels	\$96.95				

	Greenlight	Greenlight Price	TWC	TWC Price	CenturyLink and DirecTV	CenturyLink and DirecTV Price
Internet Offerings (Mbps Downstream/Upstream per month)						
Basic Tiers					Up to 1.5 Mbps /512 Kbps	\$56.44
			“Basic” Up to 3/1	\$19.99 for first year; refused to quote after	Up to 3 Mbps / 512 Kbps	\$61.44
Middle Tier	10/10*	\$34.95	“Standard” Up to 10/1	\$34.99 for first year; refused to quote after	Up to 10 Mbps / 768 Kbps	\$54.44 first year, \$66.44 thereafter
Fastest Tiers	20/20*	\$54.95	“Turbo” Up to 20/2	\$44.94 for first year; refused to quote after		
	20/20	\$59.95				
	40/40*	\$74.95	“Extreme” Up to 30/5	\$54.99 for first year; refused to quote after		
	60/60*	\$99.95	“Ultimate” Up to 50/5	\$84.99 for first year; refused to quote after		
	100/100*	\$149.95				

* indicates that this option is only available with one or more other service

	Greenlight	Greenlight Price	TWC	TWC Price	CenturyLink and DirecTV	CenturyLink and DirecTV Price
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Phone Offerings

Basic			Includes unlimited national long distance; includes 4 features (not voicemail)	\$19.99 for first year; refused to quote after	Unlimited local, no long distance, no features (features can be added; customer charged additional fee for each feature – 16 available features)	\$25.40 \$34.40 for basic service with caller id.
Pay per minute long distance					\$4.50 added to price of Basic for up to 50 minutes, no features (features can be added; customer charged additional fee for each feature – 16 available features)	\$30.00 each additional minute is .16
Unlimited Long Distance	“Home Phone Plus” includes 12 features (requires purchase of at least one other service)	\$34.95	Features of the Basic service with an additional 1000 international long distance minutes; charged per minute after, depending on where the call goes	\$39.98 for first year; refused to quote after	All 16 features included	\$50.85

TWC representatives refused to quote a price for service after the first year on any of the services. They also would not give an example of what customers in the Wilson area were paying now, after the introductory period ended.

References

- 1 Additional case studies on community networks are available from the Institute for Local Self-Reliance at ilsr.org - for example, see [Broadband at the Speed of Light: \[ilsr.org/broadband-speed-light\]\(http://ilsr.org/broadband-speed-light\)](#) to learn about three citywide gigabit networks built by Chattanooga, Tennessee; Lafayette, Louisiana; and Bristol, Virginia.
- 2 [Census.gov](http://www.census.gov)
- 3 City Council Meeting Minutes, April 19, 2001.
- 4 Todd O'Boyle interview with Grant Goings on October 14, 2011.
- 5 http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0614/DOC-314630A1.pdf
- 6 State of North Carolina Department of the Secretary of State; State Franchise for Cable Television Service Annual Service Report. Filed 8/2/2012.
- 7 However, the quality of the maps is so poor, it is hard to tell just where U-Verse is available. AT&T and other massive companies have successfully lobbied to reduce their obligations to disclose where their services are available, making verification of AT&T claims all but impossible.
- 8 City Council Meeting Minutes, Feb 19, 1998.
- 9 City Council Meeting Minutes, Jan 24, 2004.
- 10 City Council Meeting Minutes, Sep 21, 2006.
- 11 See <http://www.ilsr.org/broadband-speed-light/>.
- 12 City Council Meeting Minutes, Sep 21, 2006.
- 13 Interview – Christopher Mitchell with Mike Basham on May 9, 2008.
- 14 Offering cable television service is a very difficult and low reward proposition. Margins are low and headaches are common. National competitors have massive scale advantages in negotiating for channels. However, subscribers typically want to bundle multiple services, which is why so many publicly owned networks offer television services.
- 15 Todd O'Boyle Interview - June 6, 2011.
- 16 City Council Meeting Minutes, Aug 23, 2007.
- 17 Todd O'Boyle Interview - June 6, 2011.
- 18 Todd O'Boyle Interview - June 6, 2011.
- 19 BTOP Application.
- 20 <http://charlotte.news14.com/content/headlines/593820/wilson-builds-its-own-fiber-optic-network/>
- 21 In a letter to the State Treasurer's office, Wilson estimated that if the network did not pay for itself, the City could raise electrical rates by 1.4 percent and/or the tax rate by 5.6 cents.
- 22 The only other provider to offer 100 Mbps symmetrical in North Carolina is Salisbury, another municipal network launched after Greenlight.
- 23 Many communities have found that when they begin building a community fiber network, the existing cable and telephone company try to sign subscribers, particularly business subscribers, to long term contracts (often on favorable terms) to prevent the new service provider from signing those customers to its own services.
- 24 "Greenlight Numbers Ahead of Schedule" Wilson Press Release - Jan 16, 2009.
- 25 "Mighty Mighty Broadband" by Fiona Morgan - <http://www.indyweek.com/indyweek/mighty-mighty-broadband/Content?oid=1209049>
- 26 "Greenlight Lands First 100M Customers" in *The Wilson Daily Times* on March 13, 2011.
- 27 "Greenlight competition affects rates elsewhere" in *The Wilson Times* 25 September 2010.
- 28 Rochelle Moore articles in *Wilson Times*. "Greenlight Pushing Toward Positive Cash Flow" on September 17, 2010, and "Greenlight Makes Profit for First Time" on Oct 7, 2010.
- 29 Presentation before the NC House Select Committee on High Speed Internet Access in Rural and Urban Areas on December 14, 2009.
- 30 "Greenlight competition affects rates elsewhere" in *The Wilson Times* 25 September 2010.
- 31 Quote comes from a testimonial shared by Greenlight staff.
- 32 A POP is where multiple networks come together to interconnect and exchange traffic.
- 33 Will Aycock interview May 18, 2012.
- 34 City Council Meeting on July 19, 2012.
- 35 Metronet connects facilities to each other, creating a wide-area network (WAN) as opposed to purchasing a connection to the Internet.
- 36 Will Aycock interview on May 18, 2012.
- 37 "City Council Approves Fiber Contracts" by Rochelle Moore in *Wilson Times* on July 23, 2007.
- 38 City Council Meeting Minutes, Jan 18, 2007.
- 39 "Mighty Mighty Broadband" by Fiona Morgan - <http://www.indyweek.com/indyweek/mighty-mighty-broadband/Content?oid=1209049>
- 40 Using the Consumer Price Index - <http://www.usinflationcalculator.com>
- 41 <http://savencbb.wordpress.com/2010/06/22/clarifications-to-news-and-observer-article-about-muni-broadband>
- 42 The Center for Media and Democracy notes that 80% of funding for the John Locke Foundation comes from Art Pope, who has a long history of donated to anti-government groups and is often compared to the Koch Brothers. http://www.sourcewatch.org/index.php/John_Locke_Foundation
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