



Wilson Hits a Fiber-to-the-Home Run with Greenlight Municipal Broadband Network

More than 10 years later, the network continues to deliver extensive community benefits.

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Introduction

When the coronavirus pandemic hit the United States in the spring of 2020, communities everywhere were caught unprepared. Gyms, churches, movie theaters, and a host of other everyday institutions were shuttered, forcing social activity to virtual spaces. One-third of all Americans worked from home in May and June, placing a strain on Internet connections all around the country.¹ Moreover, schools were closed, forcing tens of millions of students, their families, and their teachers to come up with distance learning plans that maintained state standards and engaged students. There were many creative solutions, but the homework gap nevertheless has hit many hard: low-income, Black, Indigenous, and households of color foremost among them.²

“Access to high-speed, reliable, affordable Internet connections has helped the community cope with the public health crisis while continuing to bring a host of other benefits.”

But some communities were better prepared than others. Wilson, a city of 49,000 in eastern North Carolina, was one of them. The city of Wilson is the county seat of Wilson county, but our usage of Wilson generally refers to the city here. It was once named the “world’s greatest tobacco market,” though today its more diversified economy is driven by finance, medical services, manufacturing, and aerospace. In 2008, Wilson began building a citywide Fiber-to-the-Home (FTTH) network called Greenlight. Access to high-speed, reliable, affordable Internet connections has helped the community cope with the public health crisis while continuing to bring a host of other benefits.



Over the last 12 years, the Greenlight network has given the city claim to the best broadband anywhere in North Carolina. Greenlight made Wilson the first gigabit city in the state, helped it endure a nationwide economic crisis in its infancy, expanded while remaining financially healthy, and brought a wealth of direct and indirect gains to the region it serves. The network has time and time again demonstrated its commitment to Wilson and the surrounding community. It has invested time, expertise, and resources to promote digital inclusion and connect people during crises.

Community FTTH networks offer some of the best value options for communities struggling with a lack of connectivity options and high prices.³ The underlying technology is fiber optic cabling — a stable, future-proof medium, capable of effectively handling infinite simultaneous connections. Fiber is the gold standard of network technology; other technologies — such as DSL and cable — fall short in comparison. Whereas subscribers on modern cable Internet connections might enjoy reasonably fast download speeds, cable’s upload capability remains limited. DSL networks rely on copper lines left over from telephone networks built decades ago, and those living more than a few hundred yards from the node (i.e. most subscribers) will get only a fraction of the advertised speed.

Community networks can take many forms. They can be owned and operated by the city, much like the other utilities (water, electric, gas, waste). They can be run by a membership cooperative, a nonprofit approach where each member shares ownership in the network and votes on decisions that affect the cooperative. Whatever incarnation they take, they offer locally-rooted and community-responsive connection options. They also tend to create competition in areas where little exists, which deeply upsets the large incumbent cable and telephone companies that monopolize much of America.⁴

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Americans face connectivity obstacles that exacerbate a host of economic, educational, and public health problems. Millions of families in urban and rural areas do not have home Internet access because it is not available, not affordable, or because there is some other barrier. Tens of billions of tax dollars have been doled out to monopoly cable and telephone companies with the promise they would extend networks to connect more Americans. The vast majority of those connections are already obsolete and often too expensive.

Wilson offers another path, one of local accountability and wealth creation. Wilson's Greenlight network shows how a community can thrive from local investment and a focus on building community benefits rather than charging the maximum that can be extracted from families.

This report offers an update and covers the highlights of two previous case studies in Wilson's Greenlight Network. In 2012, we published **Wilson Gives Greenlight to Fast Internet**, which followed the birth of the network and the successes it found despite a campaign of lobbying and misinformation by Time Warner Cable (now Charter Spectrum). In 2013, we published **The Empire Lobbies Back: How National Cable and DSL Companies Banned The Competition in North Carolina**, which documented the millions spent by monopoly telecoms in response to Greenlight and its result in HB 129, a 2011 state law that restricted municipalities in North Carolina from building their own networks like Wilson did.

Where the Piedmont Meets the Plains

Wilson, North Carolina, sits 40 miles east of the state capital in Raleigh, on flat ground that was once a part of the Appalachian Highlands. The city has a median household income of \$41,000, and slightly less than 22% of the population lives below the poverty line. 48% of the city is Black and 43% is white.

While Wilson once enjoyed the distinction of being the tobacco capital of the world, 15 years ago it faced serious challenges along with much of eastern North Carolina. Manufacturing and the tobacco industry had largely moved out of the region, leaving the city with a 9% unemployment rate in 2005.⁵ More than 25% of households lived below the poverty line.⁶ Local leaders were looking to the future, and part of that included the city's information infrastructure.

The city possesses a longer history of thoughtful investment in public utilities than most. Wilson had been operating an electric utility since 1889. That tradition was continued with the completion of another major infrastructure project — the Buckhorn Reservoir — in 2000, which secured the region's water resources for the future. Building a municipally-owned fiber network represented a logical next step. It offered not only more control over the quality and speed of Internet access for residents, but a potential engine for economic growth. For Wilson, having private employers like BB&T Bank (now Truist), Bridgestone, Smithfield Packing, and Kidde Aerospace (which collectively employed thousands between them) enthusiastic about a faster, more reliable network was also a big help.

Building the Municipal Network

The Greenlight network was born in 2008. By then, city leaders had spent a half decade negotiating with Time Warner Cable (TWC) about price hikes, slow service, and poor reliability for their citizens. They approached the ISP in April 2001 and offered to buy the local cable network from TWC, but were rebuffed. A subsequent offer to partner with the company to build a FTTH network was also rejected. In fact, former Mayor Bruce Rose recalled that TWC "laughed in their faces" when the city offered to build the network so TWC could manage it. After a proposed partnership with EMBARQ (now CenturyLink) also fell through, Wilson decided to forge ahead on its own.⁷

The city financed construction using \$29 million in Certificates of Participation (COPs) in 2007 and 2008, and it completed Greenlight on budget in January 2009, a year ahead of schedule.⁸ The base plan at the time started at 10 Megabits per second (Mbps) symmetrical service. Greenlight had already signed up 1,840 subscribers when the network became available to every resident and business. Less than 15 months later, some 4,600 families and businesses had subscribed. Despite financial strain from the 2008 national economic crash, Greenlight's first operating profit came in October 2010, a year ahead of schedule. It had proven it was in Wilson to stay, despite TWC targeting the network as a threat and using the profits it extracted from other communities in North Carolina to engage in predatory pricing to weaken Greenlight financially.⁹ Greenlight continued to grow nonetheless, and even those who kept TWC as a provider enjoyed lower prices from the new competition.

By 2012 Greenlight had 6,050 subscribers, which amounted to a 30% take-rate. Officials calculated that it saved the community more than a million dollars per year¹⁰ — money that stayed in the local economy. Owning the network not only allowed the city of Wilson the flexibility it needed to help connect diverse racial and socioeconomic populations, but proved a boon to public safety, health care, education, surrounding farms, and other municipal utility services. It connected government institutions and benefitted anchor institutions like the city's hospitals, Barton College, and Wilson Community College. Longtime large employers like BB&T Bank and regional commercial endeavors like the Upper Coastal Plain Business Development Center benefited from the network and its strong reliability. The creation and growth of a municipal fiber network also forced TWC to compete for users, leading to lower, more stable prices and better speeds from the large ISP.¹¹

Blowback in Raleigh

In 2010, North Carolina ranked last in the Federal Communications Commission's (FCC's) report on the relative number of residences with access to a "basic broadband" connection, largely because of the anemic upload speeds available from TWC. While Wilson and other municipalities were working to meet unmet broadband needs of local businesses and residents, TWC, AT&T, and CenturyLink pursued a campaign in the state legislature to restrict competition. In 2007, 2009, and 2010, the city of Wilson and allies came together to defend local Internet choice and defeat bills sponsored by monopoly incumbent ISPs. The scope and coordination of their opposition was significant.¹² In total, TWC, AT&T, and CenturyLink spent \$1.1 million during the four-year effort on lobbyists and campaign contributions to key allies inside the state legislature, including State Representatives Thom Tillis, Marilyn Avila, and Julia Howard, and State Senator Tom Apodaca.¹³

When trying to rewrite state laws, monopolies like TWC often work through a state cable association. Nonetheless, insiders knew who was making the decisions. Legislation limiting local broadband authority has generally polled poorly, encouraging legislators to hide their intent and minimize public awareness. Legislators constantly moved meetings about HB 129 around in an attempt to discourage participation and also exploited legislative rules to minimize the voice of citizens who wanted faster, more reliable Internet access.¹⁴ But the degree of control the \$150+ billion company had on the state's elected officials didn't stop there.

In 2010, for instance, Wilson's efforts to speak with state representatives were stalled when municipal broadband proponents learned that TWC's lobbyists were literally answering the phones of elected officials, screening those looking to set up meetings.¹⁵ Agendas and discussions were likewise hijacked. At one meeting, State Representative Marilyn Avila ceded the chair to the monopoly telecom's lobbyists, claiming the need for an "expert" to run the discussion.¹⁶ At another meeting, the city's sole lawyer recalled that there were 25 lobbyists on the other side of the table — one estimate had more people on TWC's legal team than the city of Wilson had on its entire payroll.¹⁷

Efforts to silence proponents of municipal broadband were creative. Wilson City Manager Grant Goings recalled that when they were allowed to speak for the record, their allotted times were constantly shortened and they were treated differently when cameras were not present. He

responded by having the city's public access station drive to the capital, set up in the room, and record the action. Every time they did, the atmosphere for that meeting was noticeably more accommodating. During the lobbying and misinformation campaign, city leaders were also targeted by *ad hominem* attacks by the monopoly telecom companies and some of the legislators on their side: they accused the mayor of driving a Ferrari (he owned an older Buick) and called municipal proponents communists in an attempt to set public opinion against them.¹⁸

Wilson and its allies successfully stopped TWC-led efforts to restrict competition year after year. However, in 2011 there was a shift in the North Carolina legislature, with control passing from Democrats to Republicans in both chambers. Incoming legislators represented a new brand of Republicans who were particularly deferential to big corporations like the national telecom monopolies. In particular, it gave newly elected Speaker Tom Tillis the power to enact Time Warner Cable's agenda. He leapt to it.¹⁹

That year, TWC and its allies introduced yet another version of the same legislation they had pushed for the last four years, similar to language developed by the American Legislative Exchange Council (ALEC) to benefit large cable and telephone monopolies. The 2011 "Level Playing Field/Local Government Competition Act," had more stringent provisions than previous versions. The bill's supporters claimed the restrictions were in the name of safeguarding public tax dollars by requiring referendums and demonstrating need in unserved areas using expensive census block data. But the intent was obvious: prevent other cities (at the time there were 42 considering investments)²⁰ from building their own networks and stop existing ones from expanding to serve nearby communities. TWC and AT&T don't spend their lobbying expenditures to protect local taxpayers; they are focused on limiting competition wherever possible.

As the bill marched through the Capitol, Greenlight was allowed to continue operating, but within the territory set by its rivals in the market. Lawyer Jack Cozort, who represented Wilson, related what happened:

They would call up which entity they wanted to deal with . . . Fayetteville had been laying fiber, but for whatever reason they didn't get invited to the meeting ... And so they decided they would deal with [the town of] Salisbury first. And so Salisbury came up and made a pitch for what they were doing and what they wanted to do. But then they were told, "No. Here's what you're going to be allowed to do," by the cable lobbyists. Representative Avila and Representative Howard would occasionally interject something into the discussions but it was generally the presentation being made by the representative of the cable company who was closest to where that city was located ... And they got to me I guess about 3:00 on Friday afternoon. And most everybody else had left. They had received their penance and had moved on. And it was there that I was told basically by the cable companies, "Here's what we're going to let you do." And it was clear that they were completely in charge. I mean, it was AT&T and Time Warner telling me that Wilson will be allowed to operate in Wilson County where it now exists ... And we were able to get them to agree later on to basically let us do Wilson County... They knew where the best locations were. They knew where you were likely to get the most subscribers. I mean, they had a minute detail of each one of the communities that was being discussed ... But it was what the cable companies would allow. It wasn't what the legislature would allow.²¹

The state legislature passed HB 129 into law in 2011. Its barriers to local Internet choice are collectively among the strongest in the country, making North Carolina one of 19 states to ban or discourage community broadband solutions. North Carolina has not seen the establishment of any new city-owned networks since it passed.

In spite of these frustrations, by the end of 2012 Wilson still had a competitive advantage on the rest of the state, with a faster, more reliable network that was attentive to local needs, bound by local decision-makers, and beholden to the community. Wilson residents also sidestepped many of the struggles of Internet users elsewhere in North Carolina and across the country — regular rate hikes, bandwidth caps, outages, poor customer service — the moment they invested in their collective future.

The Greenlight Network: Better. Stronger. Faster.

Greenlight's success and expansion during its first half decade showed the value of an experienced and knowledgeable team dedicated to the local community. The muni fiber network went well beyond residential service. By 2012, they **had completed** a fiber ring linking every school in the county, connected the area's largest employer with gigabit service, and deployed Wi-Fi hotspots for public use in the downtown area and at the airport, library, and sports complex. That July, Greenlight turned on gigabit service to both new and existing customers, partly as a response to the FCC's Gigabit Challenge, giving subscribers access to download speeds 20 times faster and upload speeds 200 times faster than what TWC subscribers received.²² Its smart grid system of sensors also helped residents save money on their electricity and water bills while making use of innovative software in order to respond more quickly to outages and service conditions.²³

ExodusFX founder Brad Kalinoski called the [Greenlight] experience “phenomenal. Above and beyond expectations. For the price, it’s amazing. Now any bandwidth problems are not ours — it’s clients who don’t have the speed.”

By February 2015, Greenlight had 7,100 customers and symmetrical gigabit service cost just \$100/month. An influx of new business proved the attractiveness of a fast, reliable network. That spring, Los Angeles-based ExodusFX, looking to move operations to the East Coast, chose Wilson in large part because of Greenlight. Employing between one and two dozen people and in need of a dedicated fiber connection to handle the large files that go along with blockbuster-quality special effects work, ExodusFX passed up Kansas City's Google Fiber network for Wilson and Greenlight. Founder Brad Kalinoski called the experience “phenomenal. Above and beyond expectations. For the price, it’s amazing. Now any bandwidth problems are not ours — it’s clients who don’t have the speed.”²⁴

Rich Wilson, CEO of TresBu Digital (a major platform developer and technology vendor), also praised the network and its staff for its **continual support and reliable connectivity**, crediting Greenlight in part for the company's continued success and ability to remain in the area. The network also helps local firms like Computer Central reach more customers, provide more services, and grow its business, turning an early critic of the network into a strong supporter.²⁵

In late 2020, General Manager Will Aycock reflected on the network's financial footing, saying that the network had two sources of debt and one would be retired in Fiscal Year 2022. That was from increased borrowing of \$4.75 million when demand exceeded forecasts in early years. The rest of the debt is scheduled to retire in 2025.²⁶



Gene Scott, who designed the network and today is the General Manager of the Outside Plant, sees the joint success in a complementary way. “Customers love the fact that [when they call] the people they talk to are local people,” he told Susan Crawford, who wrote about Greenlight in her 2015 book *Fiber: The Coming Tech Revolution — and Why America Might Miss it*. “You wouldn’t have thought that would have made that big a deal . . . I think it’s a kickback to, right or wrong, a feeling that large companies don’t care about the customer anymore.”²⁷

Bridging the Divide

The city and the Greenlight have continued to look for ways to connect families that face geographic, financial, and educational barriers. The creativity and scope of its dedication in these efforts shows the difference between a community network that works to improve the lives of all local citizens rather than an out-of-state corporation maximizing short-term profits.

The impact has been especially potent for those like Tiffany Cooper, a single mother living with her three sons... “It’s the best thing that could have happened to me,” she told Susan Crawford ... A certified nursing assistant working towards an EKG certification exam at the time, Cooper no longer had to find transportation to the public library to study.

In October 2016, for instance, Housing and Urban Development Secretary Julian Castro visited Wilson to help announce a partnership between Greenlight and the Wilson Housing Authority (WHA) in an effort to provide affordable broadband service to those in public housing. That service was up and running in under two months, providing routers for free and offering low-cost, high-speed Internet access (40 Mbps symmetric for \$10/month) to 70 families.²⁸ “Because of this partnership,” Greenlight General Manager Will Aycock said, “more students will be able to be online in their homes and more adults will be able to take advantage of online job training and application tools.” He continued: “The partnership will help create the future connected workforce required for an innovation economy to thrive in Wilson. In addition, the partnership connects more customers to the community network, thereby increasing the return on the community’s investment.”²⁹

As of 2020 that program remains in place. It has grown to include more than five hundred residents in public housing, with half to two-thirds taking advantage at any given time.³⁰ This is particularly significant given the localized connectivity challenges for Americans receiving housing assistance: time and time again, analyses have shown that these populations struggle to get connected.³¹ “This isn’t just about affording opportunity,” Aycock said about the program in the context of the coronavirus pandemic that fall, “Because you just can’t function these days . . . without broadband.”³²

The impact has been especially potent for those like Tiffany Cooper, a single mother living with her three sons. Opponents of low-cost, universal, fast broadband infrastructure argue that those who can’t afford consumer Internet prices should just go to the public library or McDonald’s. That’s exactly what the Cooper family had been doing, but the WHA’s low-cost program made all the difference. “It’s the best thing that could have happened to me,” she told Susan Crawford. Cooper continued: “I think it’s the best thing . . . that could have ever happened in life with these children. Honestly, it really is.” A certified nursing assistant working towards an EKG certification exam at the time, Cooper no longer had to find transportation to the public library to study. Cooper’s 14-year-old son’s grades improved too.³³

Her story highlights the challenge of bridging the digital divide in America, which includes two parallel problems: access and adoption. For those in Wilson and most of the surrounding area, Greenlight addressed access by building its Fiber-to-the-Home network to every residence and business in the county. This is an important difference between **understanding the Internet** as essential infrastructure (like electricity or municipal water systems), and considering it as a luxury. When monopoly ISPs consider expansion, they look at areas where they can return the most profit on the least investment for their shareholders. To them, Internet access is a luxury to be priced at whatever the market can bear; they see no mandate to provide access to all. The result is a patchwork of coverage that overlaps with the wealthiest neighborhoods most likely to sign up for service. When municipal networks like Greenlight consider expansion, they try to ensure it benefits the entire community both directly and indirectly.³⁴

Solving the problem of broadband adoption, however, means addressing all potential barriers that prevent families from taking Internet service once it is available at their house. This includes financial obstacles (e.g. ISPs requiring credit checks for service or having sufficient savings) as well as a lack of digital literacy (the knowledge of how to use a connection).

Greenlight has taken concrete steps in recent years to target these barriers to adoption. For example, the network instituted a new flexpay system which allows users to prepay for Internet access.

Greenlight has taken concrete steps in recent years to target these barriers to adoption. For example, the network instituted a new flexpay system which allows users to prepay for Internet access. This lets subscribers connect to Greenlight without large deposits or a credit check, and allows them to load funds into their account for individual days of network access without triggering service disconnections or penalizing their credit when those funds reach zero. Though Wilson would prefer never to have to cut a family off, it too has bills to pay to keep the network running. The program has been beneficial for all, with adoption rates jumping to between 25% and 30% in low-income areas where the network's penetration has been historically in the single digits.³⁵

This kind of flexibility makes a vast difference for low-income families and shows how locally managed networks advance equity issues in communities like Wilson. Will Aycock said of the driving impulse behind the program in 2018:

I can pay to keep that service active, perhaps because my job has a big project and they need to work on. And then, importantly, other times when maybe . . . there are other budgetary priorities you can just let the account draw down the service becomes inactive. But it's still there. It does nothing to damage [subscriber's] credit. There's no collections and there's no fundamental disconnect process they go through, simply sitting there waiting to be recharged . . . And again people can pay for as little as they want really, down to even just one day's worth of service.³⁶

The same system offers an opportunity for families to pay down past debt over time — when they deposit funds in the account, some can go toward the debt while most of it can go to keeping the connection alive on the days they need it.

WHA and Greenlight haven't stopped there. In early May of 2020, the department developed new efforts to alleviate the strain of the coronavirus pandemic. At a time when nearly 40 million Americans were out of work — North Carolina's unemployment rate quadrupled from March to April and by June hovered at 7.6%³⁷ — the WHA offered to pay every tenant's monthly Internet access fee through December 2020 to ensure that no one is cut off for inability to pay. They have also set up webcams in their offices to connect with residents while maintaining CDC distancing guidelines.

There are a number of other programs in place, or under development, aiming to close the digital divide. The WHA is currently in the process of collecting data so that it may have a clearer picture of the digital resources and capabilities of its residents. In 2018, they were successful in securing a grant which allowed them to run two 25-person digital literacy workshops where attendees practiced skills and at the conclusion of the workshop received a refurbished device. It led directly to successful outcomes, including jobs, for those who took part. The program was so popular, staff doubled its size for 2020 and the Housing Authority is actively looking to take further advantage of similar opportunities by applying for state and federal grants for refurbished devices.³⁸

Good for Wilson, Good for Business

The municipal fiber network in Wilson has helped local businesses thrive. Greenlight was borne partly of the impulse to reinvent a community that had seen its job base crumble. From the beginning, city leaders viewed the network as essential to ensuring a good business environment in the community. The President of BB&T Bank (now Truist), the city's largest employer, put a point on this in its letter of support all the way back in October of 2006 when it said the network would "provide Wilson a strategic advantage, and it would help attract new businesses and jobs, and open a world of information to Wilson's residents." So did Barton College, its own letter following three weeks later.

Hikers are familiar with the experience of summiting a ridge to only find another, higher, peak further up the trail. Like many municipal broadband networks, Wilson built a successful enterprise offering the highest quality Internet access all across town at reasonable prices and found it had to do still more to make sure the community got the maximum economic development boost from it (Greenlight's introductory broadband tier is \$40/month, much less than the standard tier common on cable networks).

In November 2016, for instance, local news organization WRAL and Greenlight co-sponsored the inaugural GigEast Exchange Conference in conjunction with a new annual festival. GigEast Exchange serves as a technology hub, incubator, and networking space for everyone in the community, by sponsoring co-working spaces, programming events, and the GigEast Summit. It also enables organizations like RIoT, a non-profit economic development advisor, to assist startups and local businesses. It's currently serving its fourth cohort.³⁹ The following year, GigEast partnered with Greenlight, the non-profit Mid-Atlantic Gigabit Innovation Collaboratory (MAGIC), and Johns Hopkins to bring the first hackathon to Wilson. All of this means more locally owned businesses and jobs for residents, the development of community ties, and the injection of money into the local economy.

The long history of urban development has shown time and time again how thoughtful, well-managed, low-cost city services and infrastructure draw needed development, investment, and energy, while reinvigorating culture. A powerful example of this can be found in Susan Crawford's *Fiber*. She reports on how in just a few short years tens of millions of dollars in benefits were brought to Chattanooga (a city of 180,000) and its downtown waterfront district thanks to the city's fiber network. Crawford traces how fiber brings young people and startups to town, and fuels the injection of wealth as residents set up online shops and businesses.⁴⁰

While Wilson's network wasn't the sole factor in fueling the city's new momentum, citizens, local business leaders, and long-time city employees have said that without Greenlight the revitalization underway would not be as robust.

Wilson has seen similar benefits, evidenced by the success of economic mainstays like BB&T Bank (now Truist), the relocation of companies like ExodusFX and Tresbu, and the reinvigoration of the former tobacco districts. The city's new revitalization plan has seen the establishment of a **permanent art installation** and festival, hundreds of new loft apartments, a brewery, and tens of thousands of feet of commercial space. Crawford compares Wilson and Chattanooga with Greensboro, North Carolina, which has struggled over the last decade and a half to reinvent itself, attract new businesses, and retain workers. She attributes at least part of Greensboro's economic struggles to municipal leaders' inability to connect the dots between information infrastructure and twenty-first-century jobs.⁴¹

While Wilson's network wasn't the sole factor in fueling the city's new momentum, citizens, local business leaders, and long-time city employees have said that without Greenlight the revitalization underway would not be as robust. In 2018, Wilson won a \$10k smart city grant in part because of the Greenlight network.⁴² In May 2019, WalletHub ranked Wilson the 10th best small city in the country to start a business.⁴³ Following the guiding principles laid out in its 2017 five-year plan, the city continued to pioneer programs mutually beneficial to itself and nearby residents. 2019 also saw Greenlight partner with Wilson Community College to develop a curriculum to train the next generation of network technicians and managers.⁴⁴ It came to fruition that fall in the form of a Fiber Boot Camp: a pilot course to train technicians for network jobs. Its popularity, both the city and the community college hope, will persuade the state to support funding for a full two-year degree.

Trying to Spread the Wealth

Pinetops, a town of 1,300 nestled among the patchwork of farmland 17 miles to the east of Wilson, had been on Greenlight's radar for expansion from the beginning. Founded in 1901 as a rail depot, by the second decade of the 21st century it was 65% Black and 35% white, with a median household income of \$36,000 per year. Like many small towns across the country, it struggled with a declining population starting in the 1990s.⁴⁵ In many ways, the town represents the economic and educational struggles of rural communities all around the country. Access to fast, affordable broadband infrastructure could lure many people back, but like so many other places, the national cable and telephone monopolies passed over Pinetops for investment in a modern network.⁴⁶

When Greenlight launched in Wilson, Pinetops' citizens were eager to take part in the municipal broadband network — from local businesses like community staple Vick Family Farms, to private citizens and a city council eager to attract new residents and reinvigorate the local economy. The town already enjoyed electrical, water, and waste services from the city of Wilson, and citizens considered the city a critical partner that had always been responsive and inclusive to regional needs.⁴⁷

Pinetops was just seven miles past the county line along Route 42, but Greenlight was prohibited from expanding there by North Carolina's 2011 law. One Pinetops business owner called it "just one more example of small town USA being bypassed."⁴⁸ Residents at the time reported incredibly slow network speeds from monopoly provider CenturyLink, including upload and download speeds that struggled to hit 1 Mbps much of the time.⁴⁹ The *New York Times* recorded the financial impact of the legislation, citing the experiences of a farmer whose property straddled the county line:

Despite his wishes, Mr. Bissette cannot extend the high-speed broadband from the office to his barns, either by wire or Wi-Fi, an upgrade that would help him monitor his sweet potatoes and tobacco. The problem is that his office sits in Wilson County, where a municipal power company has built a high-speed fiber-optic network. The barns, however, sit in Nash County.⁵⁰

In the summer of 2014, the cities of Wilson and Chattanooga banded together to demand the right to serve their neighbors. They filed a petition with the FCC, asking the commission to overturn state laws which hindered the creation and expansion of municipal networks.

Wilson residents, North Carolinians, and those elsewhere around the country sent letters of support to the commission for Greenlight in Wilson and Chattanooga's municipal network, EPB Fiber.⁵¹ The grandson of a Wilson County resident wrote that his grandmother "still uses dial-up access to use the Internet because there are no other reasonable, viable alternatives," condemning this as "a ridiculous condition in 2014." He continued:

With a whole world of information, entertainment, and connectivity available, she accesses the Internet at a snail's pace. If the city of Wilson has the means and resources available to serve my grandmother and others like her, why should they be denied that opportunity? I can see no reason to do so, and hope those involved have the foresight, reason, and decency to allow ambitious actors like the city of Wilson to continue innovating for all whom they might serve.⁵²

Other North Carolinians denounced ISPs like TWC and AT&T for their practice of sitting on the profits from existing service areas rather than expand — even a mere two miles — to areas where citizens were stuck with dial-up, satellite, or wireless broadband at exorbitant costs.⁵³ One resident shared that he was considering moving out of the state in exasperation that “a Gig Network is so close, but yet out of reach.”⁵⁴ They pleaded with the FCC to remove barriers and facilitate the deployment of broadband for all Americans, citing a complete absence of competition, terrible customer service by incumbents, and their needs as farmers, consumers, business owners, home owners, and parents.⁵⁵

John Kuhn, a Cincinnati resident, captured the irony of the North Carolina law and the arguments made by TWC and AT&T in a comment submitted to the FCC:

The FCC should immediately and unequivocally strike down the state laws passed by the legislatures that have been captured by the big telecoms. The people of these cities elect their local leaders to spend and administer their paid taxes, they are accountable. If they choose to provide their citizens with faster and better [!]Internet service than is currently available, so be it. Why and how could giant telecom companies lose in a head to head competition? They have been telling us for years that they can outperform [sic] government, that they are so efficient and cost effective. Let them prove it. Let's have a *level playing field* for all cities and local jurisdictions that have the blessing of their citizens and taxpayers, and allow them to compete with anyone, even the world's largest telecom companies. Let the best team and the best network win the competition.

Arun Ghosh, a California native who wrote in, demonstrated the degree of frustration for those in Tennessee and North Carolina who suffered as the result of the decision:

It's a disgrace that Tennessee has adopted laws that prevent communities from providing their own broadband. In today's modern world Internet access should be a fundamental right, instead it has been turned into an expensive privilege by ... monopolistic corporations aided and abetted by their bought and paid for politicians. It's up to the FCC to right this wrong once and for all [sic].

Wilson and Chattanooga joined forces to fight for their right to connect local farms and people without decent Internet access outside the limits set by laws pushed by monopoly lobbyists in both states. The FCC, seeking to encourage new investment, agreed and deemed those laws unenforceable.⁵⁶ It declared that state laws were not allowed to limit either Greenlight or Chattanooga's EPB Fiber. The significance of the decision was highlighted by Pinetop's Town Commissioner Florence Pender: “It will help to bring in jobs, and we desperately need those.”⁵⁷ Though the states would immediately sue the FCC in search of a judicial reversal, Wilson began expanding service to the town that desperately needed broadband.

Unfortunately, the victory was short-lived. On August 10, 2016, the Sixth Circuit Court of Appeals overturned the FCC ruling, cutting off Wilson's authority to offer its services outside of Wilson county, including Pinetops.

Vick Family Farms, which grew sweet potatoes, cotton, soybeans, tobacco, and wheat, was also suddenly marooned — its optical sorter relied on a high-speed connection to send large amounts of raw data to its analytics provider and receive quick and reliable feedback.⁵⁸ Without warning, the future of the farm lay in the balance.

In response, the Pinetops Board of Commissioners passed a resolution calling on the state to reverse HB 129. Both national and local news outlets reported on the economic impact of the law and the fact that it was an undeniable step backwards.⁵⁹ Residents were angry — it seemed as if they had just entered the 21st century, only to be hurled back into an antiquated system shortly thereafter.⁶⁰ “It’s kinda like giving a piece of candy to a child and then snatching it back, saying you can’t have it,” said Brenda Harrell, the Town Administrator. “Somebody, somewhere, is pulling some strings.”⁶¹ In response, citizens formed a Facebook group to organize, exchange information, and conduct letter-writing and phone campaigns to the offices of local and state elected officials.

That October, State Representative Susan Martin and State Senator Harry Brown worked on new legislation to address the issue for the upcoming session in January, pledging to support community broadband efforts. “We recognize that while North Carolina’s economy is one of the fastest growing in the country, the success is not equally distributed across our state,” they said in a press release, and committed to find ways where “state policy and strategic investments can play in providing rural areas of North Carolina with more opportunities.”⁶²

Prohibited from offering service for a fee by the restrictive state law, the Wilson City Council voted to continue providing service to Pinetops, for free, for six months, which was the only alternative to immediately disconnecting the town.⁶³ Former Wilson Mayor Bruce Rose said that “[t]aking broadband service from the people of Pinetops would have been a terrible blow, especially when they are still recovering from Hurricane Matthew.”⁶⁴ Wilson had gone even farther to help with hurricane relief, having expanded free services in the aftermath of the hurricane. The network couldn’t, however, do so indefinitely.

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HB 396 passed the state legislature the following June with every Democrat and Republican present voting in favor. It partially exempted Pinetops from the 2011 law and allowed Greenlight to continue providing service, but also carried the marks of telecom lobbying. For example, it outlined the strict service area to which Greenlight was restricted:

(i) the corporate limits of the Town of Pinetops and (ii) any service connection located within 800 feet of the centerline of Christian Road (State Road No. 1942) between its intersection with Bloomery Road (State Road No. 1996) and West Hornes Church Road (State Road No. 1941).

HB 396 also contained the provision that the municipal network could serve Pinetops only as long as no other provider offered fiber service in the area, defining “provider” as “an incumbent local exchange carrier or cable telecommunications company that is not presently providing Fiber to the Premises (FTTP) service in the temporary extension areas.”⁶⁵

The bill also failed to include a measure considered crucial by city residents — that any incoming retail provider had to offer not just FTTP but “comparable service,” the intent being to combat telecom’s habit of offering upload speeds at a fraction of the advertised download speed. In fact, when Suddenlink (now owned by Altice, USA) representative Bill Paramore appeared before the residents at a city council meeting, he claimed there was “no reason to need it unless you’re a big commercial service sending huge files internationally,” and that “[f]ifty meg is what we have on the upload side and that’s a gracious plenty for sending very large files.”⁶⁶

When residents likewise asked why the company had not extended service to Pinetops in the years before despite being just a couple of miles away, he claimed the build out was a

coincidence; the result of corporate changes and the maturation of network architecture and construction which made building to rural communities viable. Yet, there was little evidence of SuddenLink expanding into other rural areas across its footprint. Many assumed the state cable association wanted to push Wilson out of Pinetops.

The consequences played out with great irony over the next 18 months. The cable company suddenly began laying fiber from Rocky Mount along Highway 43 to link Pinetops and force Greenlight to sell.⁶⁷ “They flooded the streets with sales reps going door to door saying, ‘Greenlight’s gonna be cut off so you’re going to have to go with us,’” one resident recalled, adding that many residents switched because Suddenlink implied they were going to have to eventually.⁶⁸

Suddenlink finished work in the summer of 2018, and on July 12th, Greenlight was forced to turn off service. It sold its assets to National Network Holdings for \$280,000, and today the town is served by Locality Networks.⁶⁹ In an analysis, Catherine L. Schwarze summarized the impact of the FCC’s 2016 decision as one that would echo across the rest of the United States: “[W]hile the Sixth Circuit’s decision protects state sovereignty, it greatly interferes with the mission of the FCC to spread telecommunications access, and it robs people of access to broadband Internet.”⁷⁰



Gigs and Gigs: Looking to the future

What does the future hold for Wilson and Greenlight? Both the city and the network are already planning ahead. The **Whirligig Park**, **GigEast**, and Greenlight remain at the center of economic revitalization plans in the near-term, and they continue to focus on helping the larger Eastern Carolina community.

Wilson Chief Planning and Development Officer Rodger Lentz and colleagues conducted a study in 2015 which sought to understand the mobility of millennials and ascertain the most important factors in their decision about where to move. He found that they were twice as likely to consider a move in the next five years as the two generations which came before them.

In characterizing their decision-making process, Lentz and his colleagues discovered that incoming residents prioritized community assets over lower taxes, a distinction unique to their generation. The study emphasized the “importance of investing in community assets. In so doing, local decision makers can reap a double benefit, providing better service and a higher quality of life to existing residents and businesses and simultaneously creating a stronger magnet to attract skilled workers. The more desirable attributes that a community can provide and the better they can provide them, the stronger the magnet.”⁷¹ Wilson not only built a network without taxpayer dollars but used it to broaden the tax base and improve the quality of life — a double whammy.

In 2019, the Coalition for Local Internet Choice awarded Wilson the Vanguard Innovator award.⁷² There were also signs the state had begun to change its tune regarding municipal broadband. State Representative **Josh Dobson** co-sponsored the Fiber NC Act 2019 to allow local governments to partner with existing ISPs to provide broadband. Enough Republicans co-

For low-income residents, the network has made its Lifeline program permanent, offering basic video conference-capable connections for \$10/month for residents to activate as needed, as well as a strong commitment to bridging the digital divide moving into the future.

sponsored the bill to ensure passage if leadership gave it a vote. They killed it instead. Former House Speaker Thom Tillis has gone on to fight against local Internet choice in the U.S. Senate, but other legislators like Julia Howard were still around to carry water for Charter Spectrum and AT&T despite their continuing refusal to invest in rural North Carolina.

The state also initiated a grant program that spends \$15 million a year for 10 years to pay private ISPs to bring broadband to rural areas.⁷³ Rather than allowing communities like Wilson to build the infrastructure at no cost to taxpayers, including with a private partner, the state's Republican leadership preferred to fork out millions of taxpayer dollars to private companies that have committed to far slower speeds and less capable modern networks.

Nevertheless, Wilson's future looks bright, and so does Greenlight's. By summer 2020, the network was nearing a take rate of almost 45%, serving 11,300 users with its roughly 40 full-time employees. It also continued its commitment to helping out the community when possible: in the midst of the coronavirus pandemic when schools suddenly converted to remote learning, Greenlight installed more than 3,000 feet of fiber to make sure history teacher Michelle Galloway could connect with her students from home.⁷⁴

Greenlight offers symmetrical Internet speed tiers to users at 50 Mbps, 300Mbps, and 1Gbps, for \$40, \$60, and \$100 respectively, without any added fees. These are not promotional prices, and customers bills are not loaded with additional hidden fees. For low-income residents, the network has made its Lifeline program permanent, offering basic video conference-capable connections for \$10/month for residents to activate as needed, as well as a strong commitment to bridging the digital divide moving into the future. VoIP, cable, and a la carte services are also available. Also, Greenlight recently signed a deal with prepaid mobile carrier Republic Wireless to offer cellular service to its users starting at \$10/mo, a 33% discount.⁷⁵



Built with forethought, Greenlight will serve the city and surrounding area for decades to come. Many in the state are hopeful for the future, and look for the end of preemption as the largest obstacle to North Carolinians getting access to the connectivity they need. No matter what the future holds, one thing is certain: smart investment in community public works projects will pay dividends for those willing to take up the cause.

TABLE 1. GREENLIGHT SPECTRUM COST COMPARISON AUGUST 2020

Greenlight							
All prices are regular, per month (updated 10/20/20)	50 Mbps/ 50 Mbps	300 Mbps/ 300 Mbps	Gigabit/ Gigabit	Wi-Fi	Wi-Fi mesh	Phone	Mobile (Republic Wireless)
	\$40	\$60	\$100	\$10	\$10	\$35	Starting at \$10/month

Charter Spectrum						
Promotional prices (updated 10/20/20)	200 Mbps/ 20Mbps	400 Mbps/ 20Mbps	Gigabit/ 50 Mbps	Wi-Fi	Wi-Fi mesh	Phone
	\$45	\$65	\$105	NA	NA	\$55
Regular prices after one year	\$60	\$80	\$115	NA	NA	\$55

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