



THE NGN STORY: HOW A COMMUNITY CREATED A FIBER NETWORK

"NGN built this network so that the schools, hospitals, businesses and community could take ownership of it and use it to improve lives. The discussion we had with the educators here today is huge and it's exciting, and we've still only just scratched the surface of what can be done with this kind of broadband technology."

NGN President & CEO Paul Belk

Introduction of the Education Exchange powered by NGN

September 2014



COMMUNITY VISIONARIES

NGN began with one man's vision – Bruce Abraham, who at the time was serving as Director of Lumpkin County Development in Georgia. Bruce watched as his community's economy spiraled downward and area companies began to close. The closures resulted in upwards of 2,200 lost jobs within the North Georgia region, including the departure of the largest employer in Dahlonega, a textile manufacturing operation that employed 365 people alone.

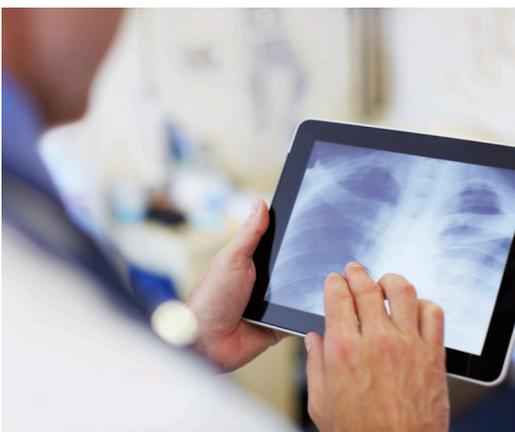
Abraham recognized area businesses were not able to fully promote themselves, because they lacked the broadband capacity to do so. He realized the strong need for high-speed broadband in his community was imperative to enabling residents to stay competitive globally, while still residing in the area.

"My group of economic developers and I were losing jobs and business prospects not only because of the national economic downturn, but also because our local companies told us they had inadequate broadband. My community owned a 65,000 square foot building that a prospect internet company walked away from buying because they told me we did not have enough broadband. They told me 'It would be too painful to get the bandwidth they needed.'"

Bruce Abraham

U.S. House of Representatives, Committee on Energy and Commerce,
Subcommittee on Communications and Technology
February 2013

Examples of businesses yearning for high-speed Internet abounded in the community:



Slow Internet speeds impaired a local medical lab's ability to send important patient documents between medical facilities. This forced them to consider relocating to Atlanta.

The University of North Georgia anticipated double their previous student enrollment, yet their Internet service was only about 50 megabits for 5,000 students. The strain on the network caused their Internet service to go down for 37 hours at the start of the school year – causing some classes, course information, homework and assignments to be inaccessible. The university tried to dramatically up their speed and reliability, but their single provider told them "it was just not cost effective."

"In rural Georgia, our local governments and economic development people are constantly challenged to remove barriers to growth and attract jobs, whether it is by improving a road, running a water line or building a sewer plant. I can tell you from 20 years in local economic development that companies won't locate to areas where they will have to operate off of wells, septic tanks and one-lane roads. Now high-speed broadband is right up there with the "must haves" to get jobs and growth in our communities."

Bruce Abraham

U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Communications and Technology, February 2013

THE FEASIBILITY STUDY

With the vision of bringing broadband to North Georgia, Abraham approached economic developers in surrounding counties and quickly found a resounding agreement. In **2007**, representatives from the University of North Georgia along with Lumpkin, White, Union and Forsyth Counties met to initiate a multi-county partnership to build the high-speed infrastructure to improve the region's economic development.

In 2008, with the strength of the group behind him, Abraham spearheaded the application for getting the area a feasibility grant funded through the State of Georgia's broadband investment initiatives. At the same time in the North Georgia region, weekly wages averaged one-third less than the rest of the state and 41 percent less than other workers in the United States.

Later that year the OneGeorgia Authority BRIDGE grant was officially awarded to the Development Authority of Lumpkin County and co-applicant partners to engage Civitium and Georgia Tech to undertake North Georgia

broadband feasibility studies. The feasibility study involved sitting down with local schools, colleges, libraries, businesses, governments and hospitals to ask them how they used the Internet. Universally, those interviewed said they needed higher speeds and redundant Internet from two providers to ensure a reliable and stable connection.

2009 Habersham EMC and Blue Ridge Mountain EMC combined their utility resources and management to support the project, and officially joined the partnership. North Georgia Network Cooperative incorporated and applied for Broadband Technology Opportunities Program (BTOP) Grant funding. In December 2009, NGN was awarded the first BTOP grant nationwide and was honored with a visit from Vice President Joe Biden, who traveled to the area to present the \$33.5 million grant during a ceremony at local Polk Manufacturing.

Collectively the communities applied through BTOP for a project to build 1,100 miles of new fiber optic network across eight counties. To make the project a reality they also received \$9 million in match money, with the State of Georgia making the largest contribution of \$2.5 million.





New broadband access means more capacity and better reliability in rural areas and underserved urban communities around the country. Businesses will be able to improve their customer service and better compete around the world. This is what the Recovery Act is all about – sparking new growth, tapping into the ingenuity of the American people and giving folks the tools they need to help build a new economy in the 21st-century.

Vice President Joe Biden
Grant presentation Ceremony
December 17, 2009

Dramatic improvements were experienced throughout the community within the first few months of launching the fiber optic network in December 2012:

- Eight school systems were connected to the network – many of which were able to receive a gigabit of service.
 - The University of North Georgia received a gigabit of service and at a cost less than what they would have paid for 100mb with their previous provider.
 - A local foot and ankle doctor was finally able to receive patient x-rays electronically in his office - making driving to the hospital to review files a thing of the past.
 - A local manufacturing facility that designs and fabricates products for global distribution was able to communicate with companies overseas without choppy internet problems allowing them to operate in what they described as “the Fortune 500 Protocol.” The new access now made them truly competitive on a global scale and provided them the opportunity to grow and create new jobs.
 - Churches were able to broadcast their services live on the network, giving them the ability to reach their elderly, homebound and hospitalized members in real-time.
- The local community bank was now able to communicate between its branch offices, safely store the financial information on the network and conduct financial transactions in four milliseconds, the speed of the core network.
 - A local window louvers manufacturer could finally communicate in real-time with its west coast office and conduct live business meetings on the Internet without having to fly its sales team to Georgia.
 - Developers began plans for two new technology parks in the area with the goal of attracting companies who require high-speed Internet connections.
 - The first data center was attracted to the region and proposed an \$800 million investment in a local facility that would initially hire 10 executive-level employees. This was an unheard of proposition in the North Georgia region, where county tax bases at the time ran about \$2.5 billion and such an investment would increase the local tax base by a quarter. In addition, the new million dollars in payroll would equal 60 jobs that would normally pay \$8 an hour in the area.



EMPOWERING SCHOOLS WITH THE EDUCATION EXCHANGE

From the beginning, the NGN team has believed economic development happens through education.

In March **2013**, eight local school systems, the University of North Georgia and the Georgia Department of Education met with NGN to talk about developing a regional education network for shared learning in North Georgia. School superintendents and information technology directors from Forsyth, Lumpkin, White, Habersham, Union and Dawson counties along with Towns and Franklin school systems met and agreed to share and develop an "educational cloud." This shared information access could provide schools with resources such as electronic textbooks, Internet security, access to college classes and video conferencing.

Later that year, a group of 13 educators met with NGN to discuss the creation of the Education Exchange, a program that would leverage the powerful NGN network to improve education in North Georgia. The group met at the Blue Ridge Mountain EMC in December 2013 to elect an Education Exchange Oversight Committee to support and guide the program's efforts.



LAUNCHING RETAIL SERVICES

Initially all retail services based on the new fiber optic network were offered through Habersham Electric Membership Corporation (HEMC) and Blue Ridge Mountain Electrical Membership Corporation (BRMEMC). NGN's leaders, however, saw a need for an additional cooperative to provide retail service to areas not already covered by the two existing members. As a result, the initial retail arm of NGN, Connect North Georgia, was created through BTOP grants to expand the reach of the NGN network to more area schools, businesses and hospitals.

Once the needs of the grants were fulfilled in December **2012**, Connect North Georgia officially became Georgia Communications Cooperative (GCC) and was later renamed NGN Connect to show a greater brand connection to the NGN network.

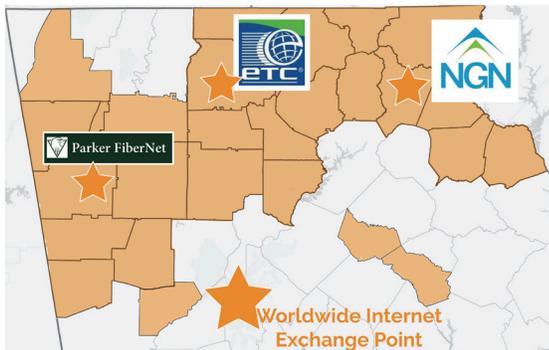
Today NGN Connect joins HEMC and BRMEMC as the third member of the NGN cooperative. It is a member-owned, non-profit, cooperative service provider and strives to provide an abundance of bandwidth on reliable networks for a reasonable price to the end-user.



"This launch will completely transform our communities. Providing support to expand the horizons, the dreams, and the reach of North Georgia students far beyond the Blue Ridge Mountains – making anything obtainable for generations to come."

NGN Connect CEO Michael Foor

Introduction of the Education Exchange
powered by NGN, September 2014



the western to the eastern state borders of North Georgia. This interconnected network can potentially connect 330 public and private schools, allowing unprecedented collaboration, shared resources and expanded STEM curriculum. Schools participating in the Education Exchange govern their content, activity and access to this cloud; empowering them to create an education experience without boundaries.

Later that year, a group of 13 educators met with NGN to discuss the creation of the Education Exchange, a program that would leverage the powerful NGN network to improve education in North Georgia. The group met at the Blue Ridge Mountain EMC in December 2013 to elect an Education Exchange Oversight Committee to support and guide the program's efforts.

In September **2014**, more than 100 educators and supporters from all across North Georgia came together to witness the birth of a partnership that would expand educational opportunities across the state. Together NGN, ETC Communications and Parker Fibernet signed an agreement to launch the Education Exchange: Georgia's only 10-gigabit private cloud for exclusive use by school systems.

The Exchange utilizes a 3,600-mile fiber optic network connecting every county from

The NGN Connect team leads the development of the Exchange over the fiber optic network, including the facilitation of the network connections and participation in the Education Exchange. The team works closely with the region's educational institutions to grow their dedicated network with additional schools and colleges to share educational assets.

The NGN Connect team also spearheads the establishment of strategic resource partnerships that provide the valuable resources for administrators, teachers and school IT professionals to fully take advantage of the network's technology. These resources open the door to significant cost savings through shared software, media licensing and more, while allowing educators to transform learning using video collaboration to expand the STEM curriculum.

NGN'S ROLE WITHIN THE COMMUNITY IN THE FUTURE

NGN's network was built on the foundation of forward thinking and as a member-owned cooperative, is committed to continually reinvesting in the network to improve reach for more area residents and businesses. As the NGN network evolves, the executive team is focused on developing strategic partnerships with neighboring rural broadband networks to further expand speed and capacity, while also making the first steps in developing hybrid fiber and wireless solutions to reach more remote areas of the region.

In September 2014, NGN announced the first of these interconnection agreements with BalsamWest to create a new direct path from Knoxville to Atlanta, bypassing traditional stops in Chattanooga or Asheville. The interconnected network can support 1 Gbps to 10 Gbps waves for high bandwidth applications, mission-critical data transfer and storage or carrier transport.

In August **2015**, NGN announced NGN Connect's acquisition of Appalachian Broadband Technologies, the first wireless infrastructure company purchased by the NGN family of companies to further expand access into underserved and hard to reach areas of the region.

What started as an idea in 2007 quickly became a reality and launched the North Georgia region into the globally competitive area it is today. NGN now manages in excess of 1,600 miles of network for its members who serve over 7,000 subscriber and one thing is certain – continued growth is definitely in NGN's future.

