New York State

Broadband Program Office

ANNUAL REPORT

2012 – 13

Letter from Program Director

Dear Readers

I am pleased to present the 2012-13 New York State Broadband Annual Report. The report summarizes our achievements and accomplishments expanding broadband access and adoption in New York State during the past year, and addresses how we are preparing for future requirements.

This past year has been a tremendous period of change and growth. The New York State Broadband Program Office (BPO) mission aims to increase the well-being and economic growth for New York citizens through broadband access and expansion. With that in mind, in June 2012, the BPO moved from the Office of Information Technology Services (ITS) to Empire State Development (ESD), the State's economic development agency. ESD works to promote economic growth and expand job creation across New York State. This move drove significant improvements in how we do our work.

In 2012-13, New York State recognized many noteworthy broadband accomplishments. With more than $56 million awarded for broadband projects during Governor Cuomo's administration, the largest statewide broadband commitment funding in the nation, we strengthened our capacity to bring broadband services to unserved and underserved communities, counties and regions across the State.

Through the Connect NY Program, Governor Cuomo's $25 million dollar broadband grant program – to expand access in rural upstate and underserved urban areas of New York – and the Regional Economic Development Council initiative, more than 150,000 unserved and underserved New York households, 8,000 businesses, and 400 community anchor institutions will soon be able to harness the power and economic impact of high-speed Internet access.

With applications needing higher speed to drive economic growth, New York set new standards for measuring broadband availability in the State. In 2012, New York raised statewide minimum speed thresholds to 6 Mbps download and 1.5 Mbps upload, which established the speed threshold for the Connect NY Program.

We are also proud of our ability to further strengthen our partnerships with local, state and federal agencies, as well as the broadband provider community. By working with our partners, we have been able to facilitate broadband expansion and adoption, and maximize grant and loan funding to New York State. To all of you who were a part of our success in 2012-13, I extend my sincerest thanks.

Our work on the ground has moved forward in exciting ways, and many New Yorkers will soon have access to broadband for their homes and businesses. Under Governor Cuomo's leadership, we will continue to identify solutions to the many challenges we still face – as New York's commitment to universal broadband for all New Yorkers remains as strong as ever.

Sincerely,

David Salway, Director,
NYS Broadband Program Office

Table of Contents

3	Table of Contents
4-5	Section: 1.0 The Basics of Broadband
6-13	Section: 2.0 Executive Summary
14	Broadband Through the Years
15-16	Section: 3.0 The Broadband Program Office - NYS Department of Economic Development
17-18	Section: 4.0 The Importance of Broadband
19-20	Section: 5.0 The Economic Impact of Broadband
21-24	Section: 6.0 Higher Speeds for Economic Development
25-29	Section: 7.0 The State of Broadband in New York State
30-32	Section: 8.0 New York's Improving Landscape
33-44	Section: 9.0 Regional Profiles
45-50	Section: 10.0 Recommendations for New York State - Establishing National Leadership
51	Appendices

1.0 The Basics of Broadband

Broadband refers to high-speed Internet access and advanced telecommunications services for homes, commercial establishments, government, schools, and community anchor institutions. In New York State, broadband service is primarily delivered via cable modem, fiber-optic cable, digital subscriber line (DSL), or through mobile wireless (3G/4G/LTE). In fact, many service providers use a combination of wireline and wireless technologies to provide hybrid broadband service to their customers.

Broadband Technology
Traditional Wireline and Wireless Technologies

Wireline

Fiber to the Premise (FTTP) is the "Gold Standard" in broadband technology. FTTP is the most expensive to deploy, but can deliver consistently high speeds reaching 1 Gigabit (1,000 Mbps) and higher.

Cable Modem uses coaxial cable connection to deliver broadband with download speeds ranging from 6 Megabits (Mbps) to over 50 Mbps. Bandwidth is managed through shared connections. Therefore, although broadband is widely available throughout New York State, advertised speeds may not always be maintained during peak usage times.

Digital Subscriber Line (DSL) uses copper telephone lines to deliver broadband with download speeds generally under 10 Mbps. Aging networks can degrade service over time, which can decrease speeds delivered to the home.

Broadband Over Power Lines (BPL) uses existing electric wiring along with fiber to deliver broadband through electric outlets. Requires special equipment installed at the home. Limited availability in New York State.

Wireless

Fixed Wireless / WiMax uses a combination of a fiber backbone and wireless towers to deliver broadband at speeds comparable to DSL. Can be quickly deployed at lower costs with a wide reach. Many plans have data usage caps.

Mobile Broadband is a combination of cellular and data service generally for use on mobile devices. Typically complements wireline connections, but some companies provide home broadband service delivered over mobile broadband networks. Many plans have caps that limit usage.

White Space is a new and emerging technology that uses the empty fragments of TV spectrum scattered between frequencies. Less expensive to deploy in areas without a lot of existing infrastructure, with the ability to travel through physical obstacles, such as trees and mountains, without diminished signal. The FCC requires networks to follow strict requirements not to interfere with existing broadcasts.

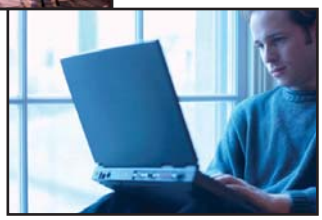
Satellite is a two-way transmission of Internet data passed between satellite and a dish placed at the home. Because data traverses long distances, latency delays can occur. Most plans have data caps, but satellite broadband is 100% available in New York State.

What Speed Do You Need?

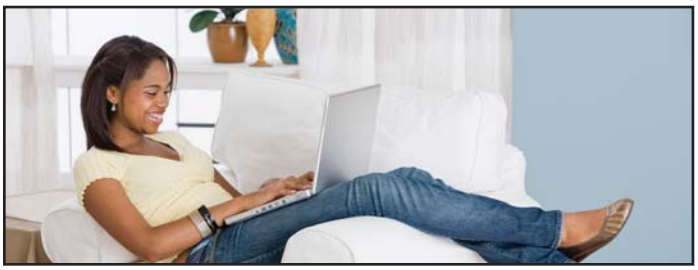
Broadband Speed is an important factor. But with all the different speeds of Internet connection available, how do you determine what speed you need? Depending on the application, your connection speed will determine how fast or how effectively you can run an application. **Figure 1.1** provides a sample of common applications and the speeds required to successfully run them.

FIGURE 1.1

Download Speed	Application
768K-1.5 Mbps	Email, Web Browsing, Voice Over IP (Vonage)
1.5-3 Mbps	Streaming Music, Standard Definition Video, Remote Surveillance, Telecommuting
3-6 Mbps	File Sharing, Internet Protocol Television (IPTV)
6-10 Mbps	Online Gaming, Streaming Video
10-25 Mbps	Telemedicine, Remote Education, IPTV High Definition
25-50 Mbps	HD Video Surveillance
50-100 Mbps	Video Conferencing, Remote Super Computing
>100 Mbps	Real-Time Data Collection, Real-Time Medical Image Consultation, Research



> "Increasing access to high-speed broadband is central to strengthening New York State's economy and critical to connecting more families and businesses to new markets and better opportunities to thrive. As a member of the Senate Agriculture Committee, one of my top priorities has been increasing federal support to ensure high-speed Internet services are both available and affordable for all New Yorkers, creating vital links to support services for our families, improving the education of our children and expanding markets for our businesses."
>
> *– New York State Senator Kirsten Gillibrand*



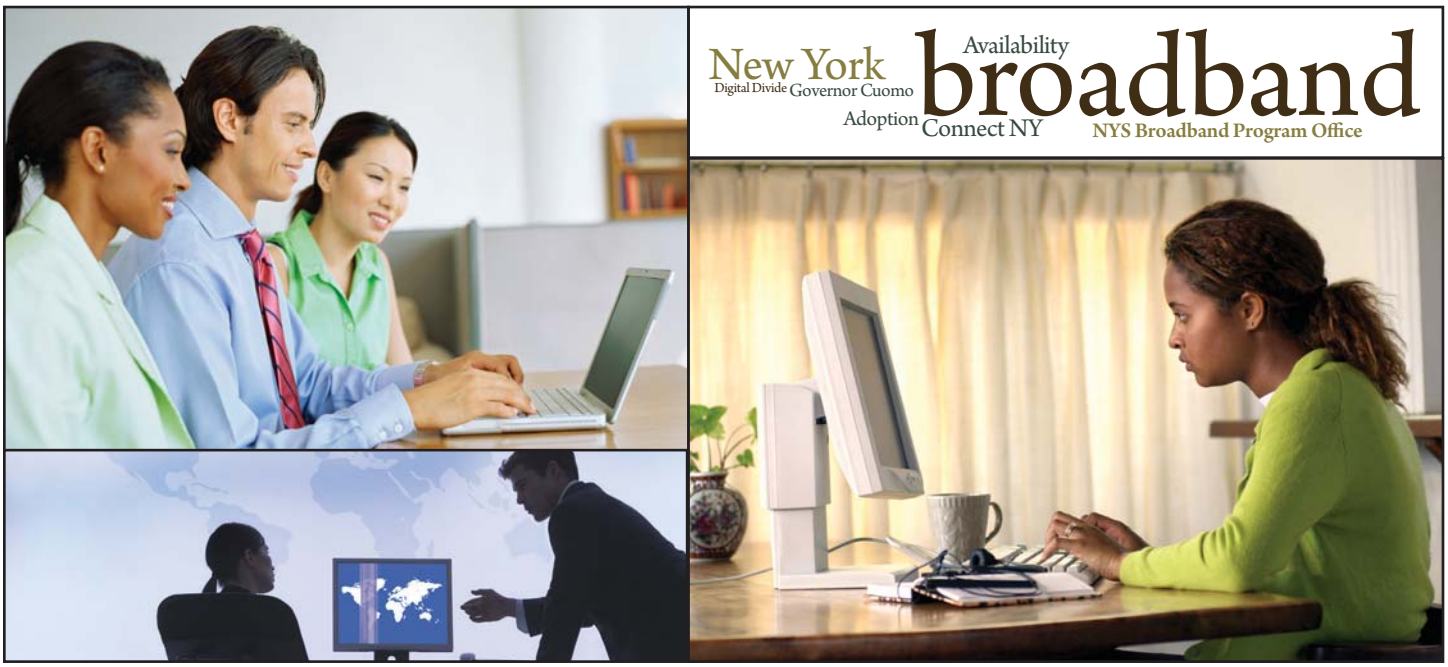
2.0 Executive Summary

Broadband Program Office

The **Broadband Program Office (BPO) was established in 2008** and **is charged with executing New York State's Broadband Strategy**. Serving as the state's single point of contact for broadband issues, the BPO's mission is to increase economic and social opportunities through universal broadband deployment. By identifying broadband needs, and developing unique solutions, the BPO is helping to close the digital divide that exist in adoption and availability rates.

The Broadband Program Office is funded in part by a $1.2 million American Recovery and Reinvestment Act grant, awarded in 2010 to expand the State's broadband planning and mapping efforts. The BPO performs a variety of functions with a goal to ensure every New Yorker has access to affordable high-speed Internet service. These functions include:

- Supports broadband initiatives for the ten Regional Economic Development Councils to advance broadband access and adoption.
- Coordinates broadband projects across New York and collaborates with broadband project sponsors to maximize broadband investments to the state.
- Manages state broadband grant programs, including the Connect NY Grant Program and the NYS Universal Broadband Grant Program, and facilitates statewide grant applications for federal grant solicitations.
- Conducts outreach to educate stakeholders, community leaders, and citizens on issues such as state broadband initiatives and programs, the types and availability of services, and broadband funding opportunities.
- The BPO is fully engaged in state, multi-state, federal, and international partnerships on broadband-related issues, including broadband deployment, digital literacy, and the National Broadband Plan.
- Contributes to broadband-related federal discussions, and reviews and recommends changes in laws, rules, programs and policies of New York State to advance opportunities for broadband.



Broadband for New York's Economic Recovery

Broadband is a transformational societal equalizer and a facilitator for the most innovative applications in the world. Having access to the Internet is a **two-fold value proposition:**

- **Increased Quality of Life** - Benefits to society in equalizing opportunities for health care access, public safety, and education, as well as the vast economic benefits including entrepreneur ventures, job opportunities, and cost savings from consumer research and bargain shopping.

- **Innovation and Economic Benefits** - Institutional access to ultra-high-speed broadband (i.e. Gigabit networks) creates innumerable economic benefits for municipalities and institutional users.

When looking at the capacity and speeds required to reap the benefits described above, the requirements are quite different. While mere access to the Internet at minimum speed thresholds can afford individual citizens the opportunity to apply for a job, start a new business, or enable basic communications, significant economic development occurs when ultra-high-speed networks are built.

As New York continues to explore ways to use **broadband to promote economic development and build strong communities** throughout the state, the ingredients for meeting those goals will remain the same:

- Fast and ubiquitous broadband networks
- An economic structure which support broadband innovation
- Investment in emerging broadband technologies
- Increased adoption and utilization of broadband

According to Technet's 2012 State Broadband Index, not all states have these ingredients in equal measure. The report ranks the states on indicators of broadband adoption, network quality, and economic structure through 2010, as a way of taking stock of where states stand. The ratings show that **New York is one of the top ten states.** As the impact of funding for broadband projects throughout New York State is realized, these projects will drive established metrics even higher.

Technet Ranking	Top 15 States
1	Washington
2	Massachusetts
3	Delaware
4	Maryland
5	California
6	New Jersey
7	Vermont
8	Virginia
9	Utah
10	**New York**
11	Rhode Island
12	Pennsylvania
13	Oregon
14	New Hampshire
15	Texas

Source: Technet's 2012 State Broadband Index
http://www.technet.org/wp-content/uploads/2012/12/TechNet_StateBroadband3a.pdf

Broadband is Foundation for Economic Growth in the 21st Century

- Over the past 15 years, the Internet has enabled as much economic growth as the Industrial Revolution did in the first 50 years.[1]

- In the U.S., the Internet accounted for 8% of America's GDP growth from 1990-2009. Since 2004 its accounted for 15% of U.S. GDP growth.[2]

- Of the 1.8 billion households worldwide, one third have Internet access.[3]

- By 2016, the number of Internet households worldwide will be 814 million.[4]

- The "apps" economy has created over 500,000 jobs to date.[5]

- The tech sector is the most profitable part of the U.S. economy. Tech companies in the S&P 500 are projected to earn 18% of the index's total earnings.

1, 2 Michael Beckerman, President and CEO of the Internet Association

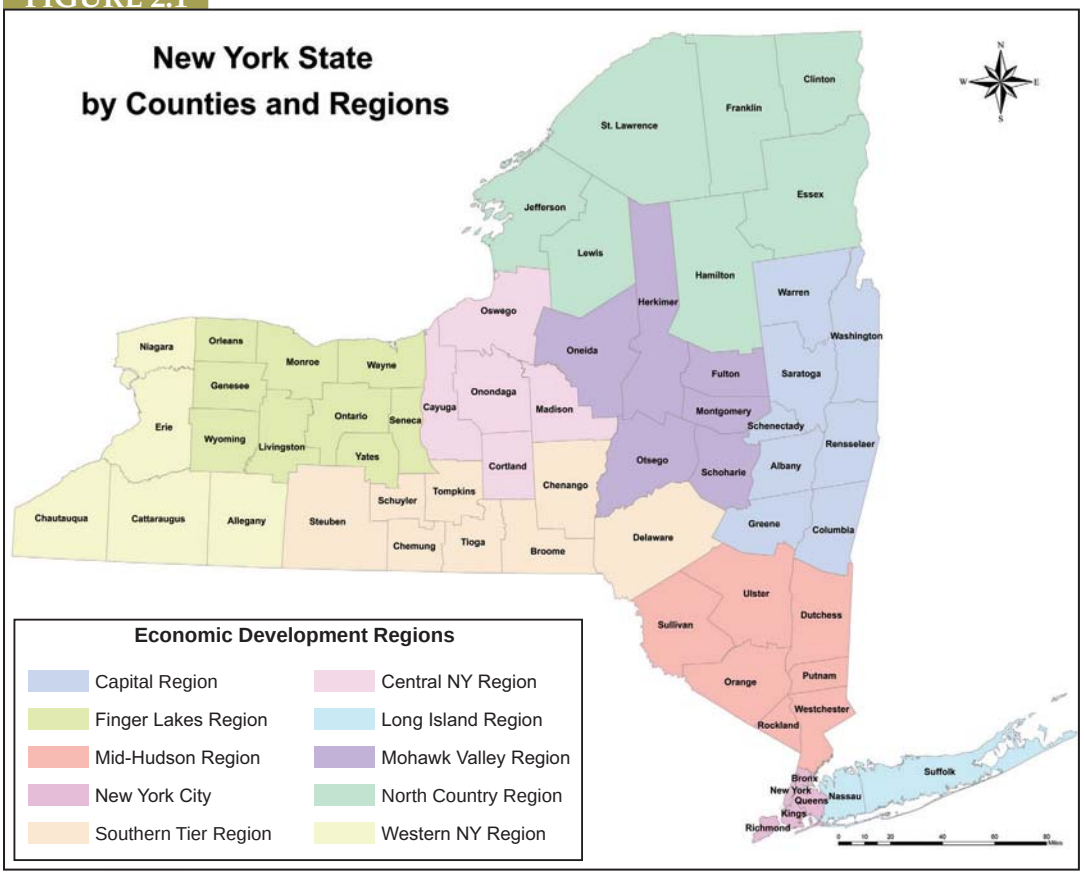
3 ICT Facts and Figures, 2011

4 Parks Associates White Paper: Trends, Technologies & Ecosystems: Evolution of the Digital Home

5 Where the Jobs Are: The App Economy, Technet, February 2012

Broadband in New York

FIGURE 2.1



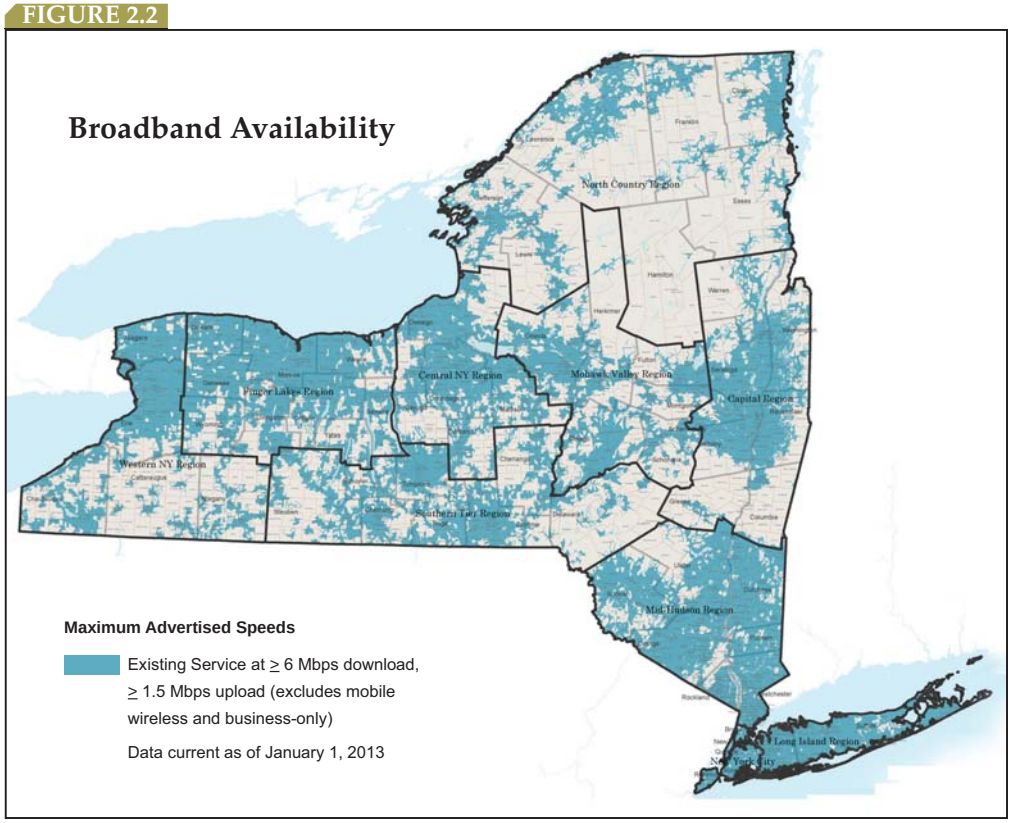
Economic Development Regions

The state of broadband in New York is best described in regional terms. In 2010, Governor Cuomo created **ten Regional Economic Development Councils (REDC)** to serve as a new model to create new jobs and economic opportunities for our State. Each region was tasked with developing a customized strategy to create jobs, grow the economy and transform communities. **Figure 2.1** shows the breakdown of New York State's ten regions.

Broadband Availability

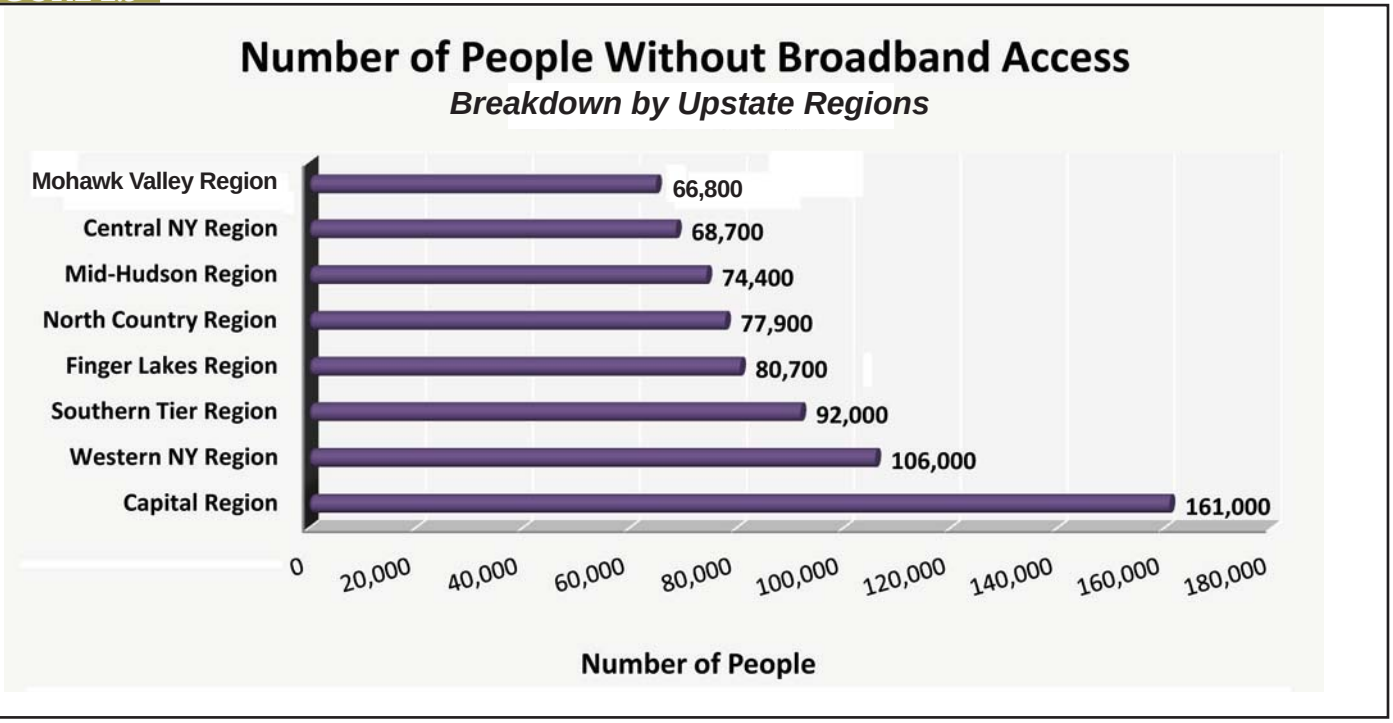
It is essential that all New York's regions have widespread broadband availability to reap the economic and social benefits that it brings. As of January 2013, **approximately 1.1 million people do not have access to broadband services. Figure 2.2** shows where broadband service currently exists, and where it does not in New York State.

FIGURE 2.2



When assessing availability of broadband services in terms of population, the **Capital Region** holds the top spot for the **highest number of unserved people in New York State**, as shown in **Figure 2.3**. However, as described later in the report, when analyzing the percentage of households served, the North Country has the highest percentage of unserved residents.

FIGURE 2.3



Although many Capital Region residents have access to the Internet at very fast speeds, an extremely high population of Capital Region residents still lack basic access to broadband. Breaking down availability further in the Capital Region, **Greene and Columbia counties** represent the **highest number of unserved citizens.**

County	Population	# of People without Access to Broadband
Columbia	63,096	51,596
Greene	49,221	42,721

Although many urban areas of the state have adequate broadband service, unserved residents in metropolitan areas are generally the result of buildings lacking access, rather than a complete lack of infrastructure.

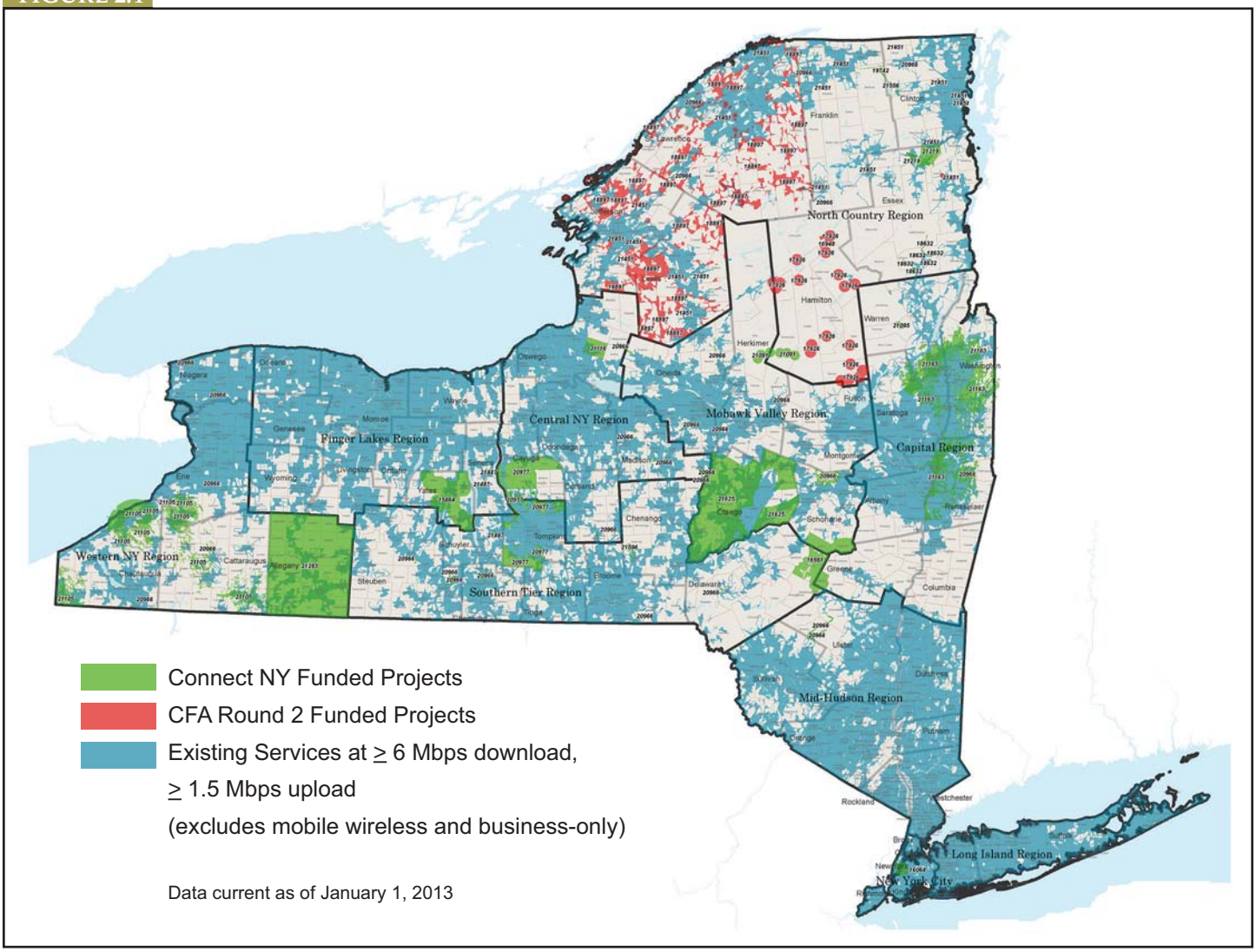
Rural areas of the state fare much worse; access is sporadic, slower and less reliable, and generally more expensive due to a variety of reasons. In addition, rural citizens of the state are most likely to be completely unserved when it comes to wireline (and in some cases wireless) broadband, which can have disastrous results when it comes to access to healthcare and public safety services.

The inherent challenge in providing broadband access in rural communities is overcoming the high cost of wireline deployment in areas which are sparsely populated. While many rural areas of the state are close to middle-mile fiber networks, the cost of **providing last-mile access** (fiber from the middle-mile network to the home or business, also referred to as a node) **can be significantly costly**. Compounding the return on investment (ROI) analysis for broadband providers is the number of homes in a particular area per mile, and the uncertainty surrounding the subscription rate of potential customers after making the investment in the network.

Connect NY Broadband Grant Program

The Connect NY Program Broadband Grant Program which was announced in 2012 by Governor Cuomo was designed to address the cost issues associated with expanding last mile access. The program provided **$25 million in state funding** to expand high-speed Internet access in unserved and underserved urban areas of New York State. The funds, which were awarded to **18 broadband project sponsors**, will strengthen New York's broadband capacity and encourage sustainable adoption of broadband service in our communities, counties and regions across the state. In addition to the Connect NY funding, Governor Cuomo also awarded **$6 million** in funding, from **Round 2 of the Regional Economic Development Council initiative,** to four project sponsors who will expand high-speed Internet into the North Country region. **Figure 2.4** shows the impact of the Connect NY and Regional Economic Development Council grants once complete.

FIGURE 2.4



> "The monies that Slic Network Solutions has received from Connect NY will enable us to greatly expand our footprint in the North Country region. We will construct an additional 137 miles of fiber passing over 2200 households expanding our network into Clinton, Essex and Hamilton Counties. This will bring fiber optic broadband to areas that are currently unserved, strengthening the economic fabric of the region, promoting business growth and improving the quality of life for the areas residents."
>
> *- Phil Wagschal*
> *President/CTO*
> *Slic Network Solutions*

Broadband Speed in NYS

The Connect NY program was designed to encourage higher broadband speeds. In 2012 New York State **raised minimum speed thresholds to 6 Mbps download and 1.5 Mbps upload.** This speed established the minimum threshold for Connect NY projects. These new standards, which are above the FCC minimum standards of 4 Mbps download and 1 Mbps upload, are the basis for measuring broadband availability in New York State.

As applications continue to demand increasingly higher speeds, broadband networks must continue to keep pace. When comparing New York State's network quality rankings (which looks at network speeds and households passed by fiber optic broadband infrastructure) on a national level, **New York ranks among the top ten states.**

Rank	State	Rank	State	Rank	State	Rank	State
1	Delaware	14	Florida	27	Georgia	40	Arizona
2	Maryland	15	South Dakota	28	Illinois	41	Montana
3	Massachusetts	16	Oregon	29	Maine	42	New Mexico
4	Vermont	17	Tennessee	30	Kansas	43	Louisiana
5	Rhode Island	18	Washington	31	Minnesota	44	West Virginia
6	New Jersey	19	North Dakota	32	Nebraska	45	Mississippi
7	Pennsylvania	20	Texas	33	Iowa	46	Kentucky
8	New York	21	Connecticut	34	Hawaii	47	Alaska
9	Utah	22	North Carolina	35	Colorado	48	Missouri
10	Virginia	23	South Carolina	36	Ohio	49	Idaho
11	New Hampshire	24	Wisconsin	37	Oklahoma	50	Arkansas
12	California	25	Nevada	38	Alabama		
13	Indiana	26	Michigan	39	Wyoming		

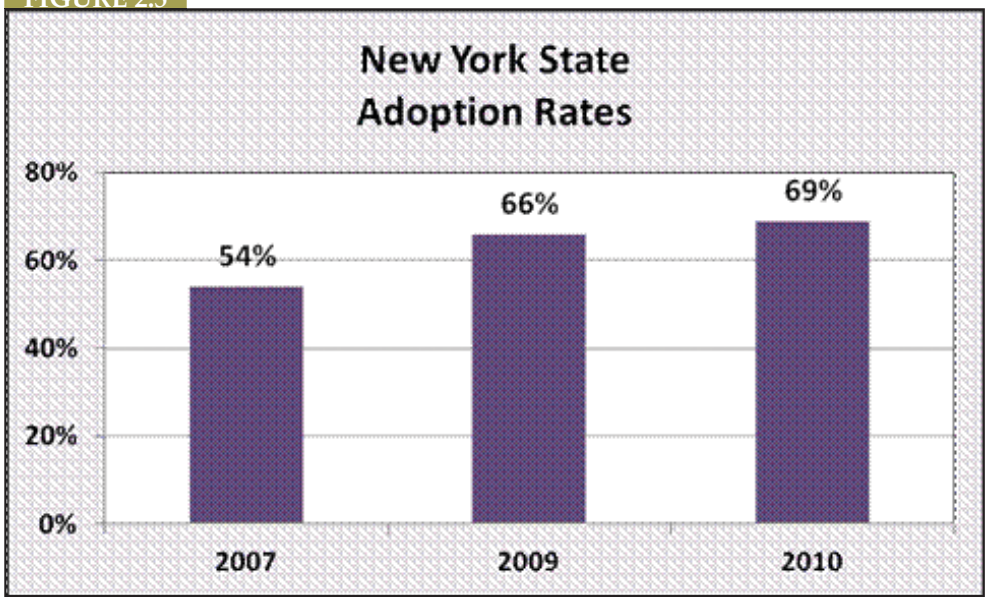
Source: Akamai, http://www.akamai.com/stateoftheinternet/ and the Fiber to the Home Council http://www.ftthcouncil.org/

Broadband Adoption

In addition to access, barriers to entry prevent many New Yorkers from subscribing to broadband. **New York State's adoption rate** (percentage of households using broadband in areas where broadband is available) **is holding steady at ~70%. Figure 2.5** shows a significant increase in broadband adoption in New York State, more than 10%, from 2007 to 2009, however adoption rates have remained virtually flat from 2009 to 2010.

This is slightly above the **national average of 65%.** When analyzing the availability and adoption of broadband Internet services, and how it is used in New York State, problems such as affordability and digital literacy continue to be significant obstacles, especially for economically and socially disadvantaged New Yorkers.

FIGURE 2.5



Source: National Telecommunications and Information Administration (NTIA)

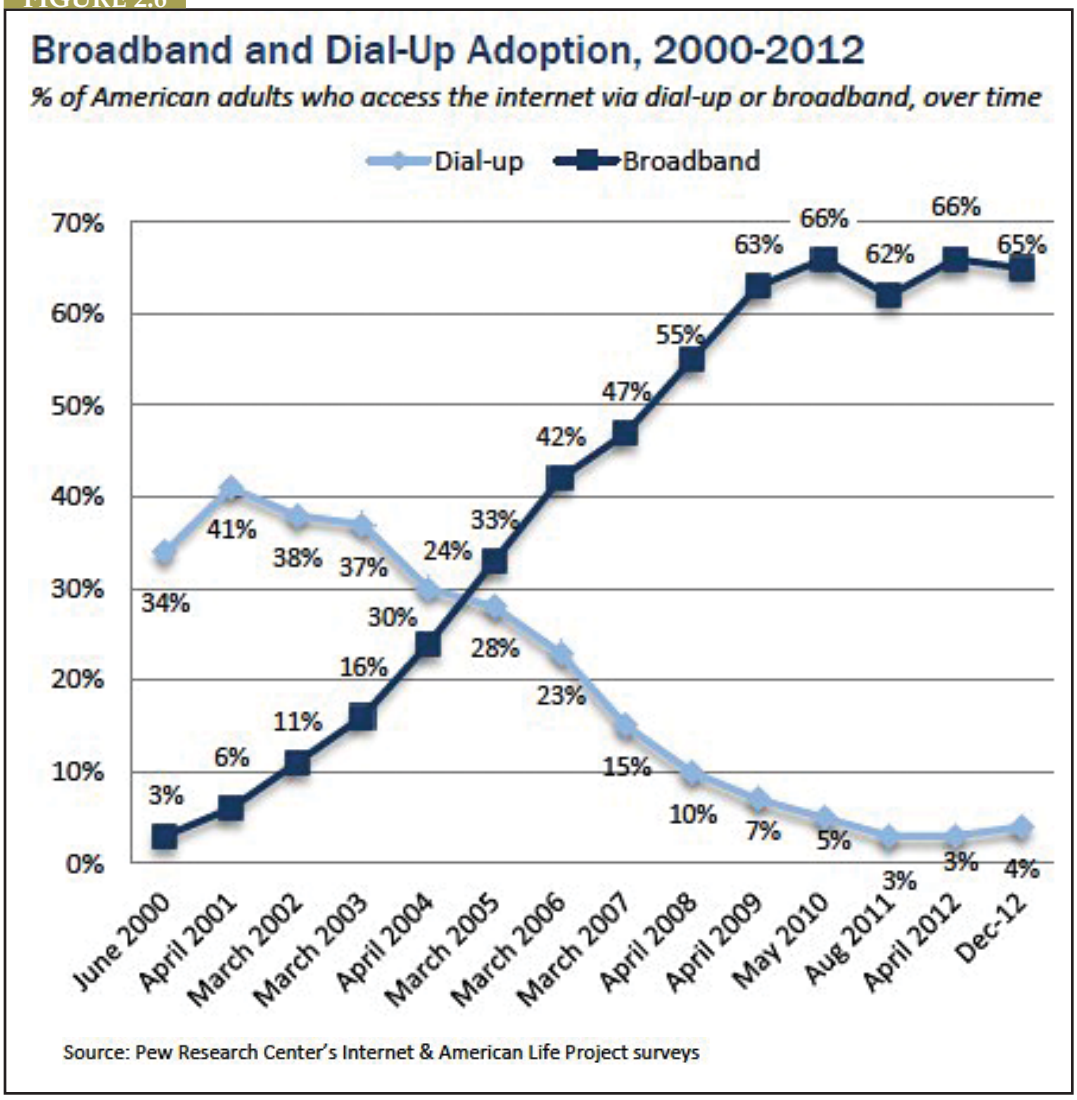
NYS BROADBAND ADOPTION FACTS

- Reasons for low adoption rates include high cost, lack of interest, perception of high online risks and/or lack of knowledge.
- Notable disparities between demographic groups continue: people with lower incomes, lower education levels, minorities, non-family households, and the non-employed tend to lag behind other groups.
- Respondents with a graduate degree have a 91% adoption rate, while those with a high school diploma have only a 44.2% adoption rate.

Source: 2010 NYS Broadband Adoption Rate Study, http://www.nysbroadband.ny.gov/themes/broadband/images/BroadbandAdoption.pdf

According to data from the Pew Research Center's Internet & American Life Project Surveys, the number of American adults that use high-speed internet at home also had a significant increase (15%) from 2007 to 2009 and has remained fairly steady from 2009-2012. **Figure 2.6** shows broadband and dial-up adoption from 2000-2012.

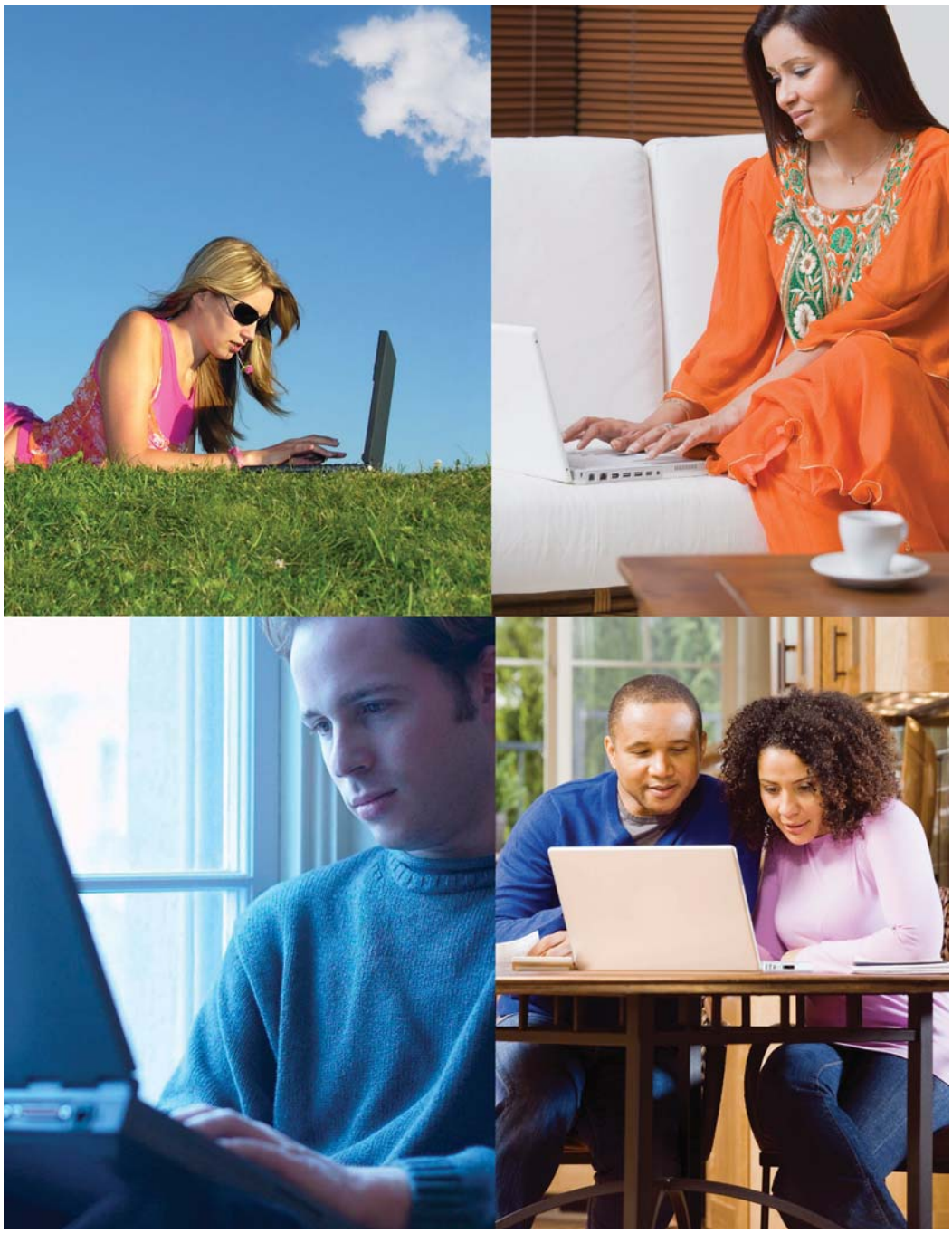
FIGURE 2.6



Broadband Policy and Funding Recommendations

To promote and reward broadband infrastructure build out and increased adoption initiatives, a **balanced mix of funding programs and public policies should be adopted** in New York State. When making investment and policy decisions, we need to consider broadband for both improved quality of life for our citizens, as well as the level of economic benefits provided. While it is easier and more cost-effective to provide basic broadband access to unserved communities, planning and building high-speed broadband networks yield the highest return on investment, while reaping the rewards from both citizen access and institutional access.

While competition ultimately yields lower prices and better service, state funding and policies should be provided in a prioritized fashion to establish universal access as quickly as possible, while building the framework for higher speed networks in the future. Public investment is more effectively utilized by leveraging existing networks to expand the reach of existing service areas. The approach for providing funding broadband networks should include recommendations to incentivize providers to invest in New York State, provide the quickest route for universal access for all New Yorkers, and align with the master state broadband strategy.



Broadband - A Look Back

DEC 2007

1st New York State Universal Broadband Council Formed

MAR 2008

New York State Awards $5 million in Broadband Grants to Nine Public/Private Partnerships

$$

NOV 2008

Broadband Program Office Established and Statewide Mapping Initiative Launched

DEC 2009

15 NYS Projects Receive $160 million Federal Broadband Stimulus Dollars as Part of the 2009 ARRA

$$

SEP 2010

New York State Awarded $9 million Federal Funding for Broadband Mapping and Planning

$$

MAY 2011

First New York State Broadband Adoption Rate Study Published

DEC 2011

$2 Million Awarded in Funding for Broadband Projects during Round 1 Regional Economic Development Council Grants

$$

JUN 2012

NYS Broadband Program Office Moves to Empire State Development

AUG 2012

Governor Cuomo Announces Connect NY $25 Million Broadband Grant Program

$$

SEP 2012

Broadband Program Office Conducts Connect NY Workshops in New York State Regions

DEC 2012

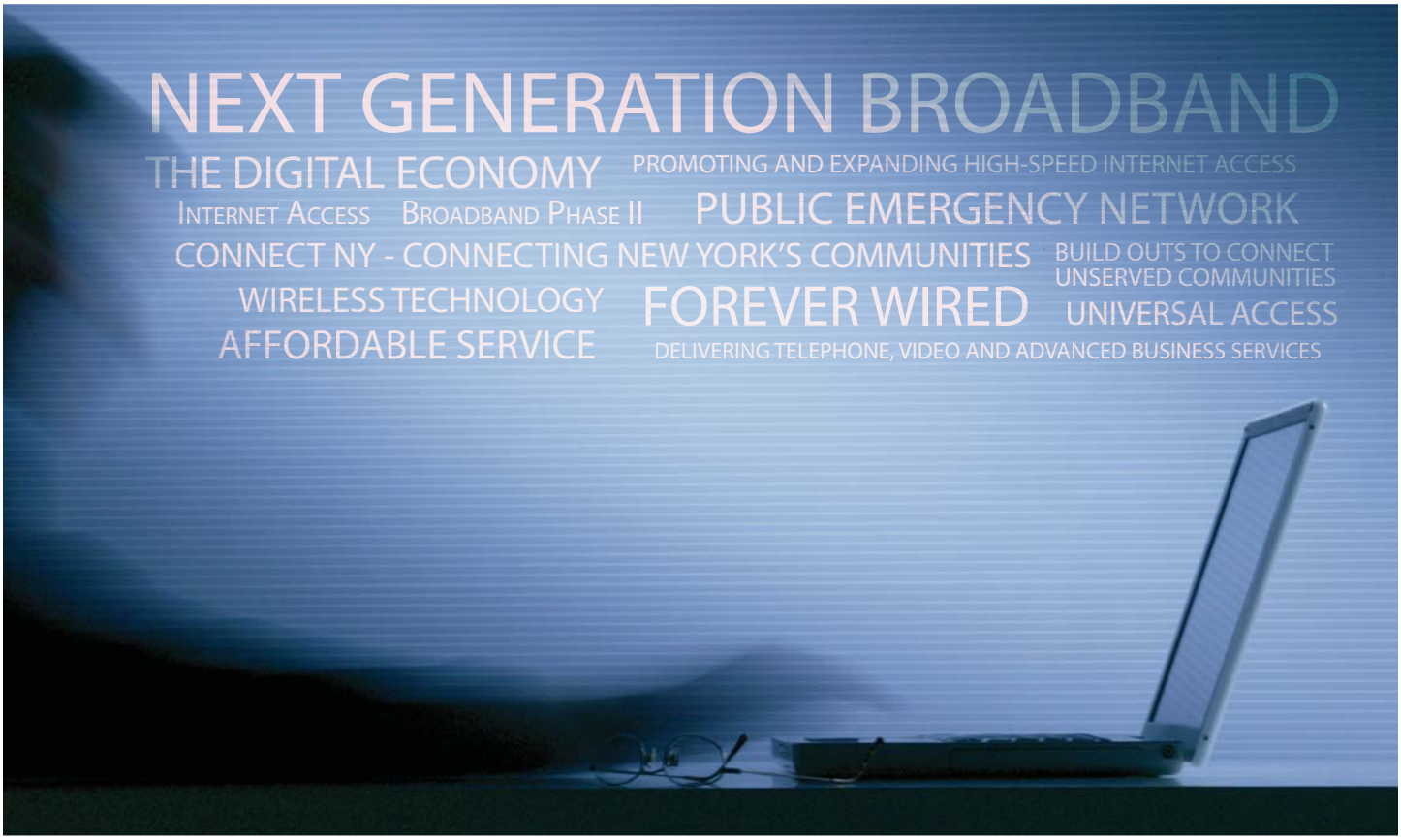
$6 Million from Round 2 Regional Council Economic Development Grants to Expand Access in the North Country

$$

MAR 2013

Governor Cuomo Announces 18 Connect NY Broadband Grant Recipients

3.0 The Broadband Program Office NYS Department of Economic Development



The past year has been a busy and exciting one for the New York State Broadband Program Office (BPO). As the focal point for coordination of the State's broadband development and deployment efforts, several key initiatives were underway during 2012-13.

In June 2012, the **Broadband Program Office (BPO) transitioned from the Office of Information Technology Services to Empire State Development (ESD),** the State's economic development agency that works to promote economic growth and expand job creation across New York. With ESD's mission in mind and understanding the strong **correlation between broadband access and economic growth,** this move drove significant improvements in implementing the State's broadband agenda.

In August 2012, **Governor Cuomo announced Connect NY,** a $25 million program designed to expand high-speed Internet access into unserved and underserved New York communities. The BPO is charged with administration and oversight of broadband projects funded through Connect NY and other state funding sources. To kick off the program, the BPO, in collaboration with Empire State Development's Regional Directors, launched a statewide tour conducting workshops and town hall-style meetings to increase awareness of the program, explain the criteria and answer questions, and encourage applicants to apply to the program.

Bridging the digital divide requires close collaboration with the public sector, non-profit entities, and broadband providers. A major component of the Connect NY program included the collaboration between these sectors to provide integrated solutions, leverage existing broadband assets and resources, and increase adoption and digital literacy requirements. The BPO also assisted in creating partnerships between a number of public, private, academia, and not-for-profit entities to help them meet these eligibility requirements for the Connect NY program.

With the Connect NY program in full swing, the BPO will continue to administer and oversee all aspects of the program and ensure applicants meet service commitments and project schedules.

Informing and Educating New Yorkers

The Broadband Program Office actively participates in meetings and workshops with representatives from both the public and private sector and broadband advocacy groups, and delivers presentations at community sponsored and broadband focused events to facilitate a greater understanding of New York broadband activities, and the opportunities access to affordable broadband provides. These events offer an opportunity for individuals and organizations to learn about New York State resources and programs available to help bring the benefits of broadband to their communities.

Connect with the Broadband Program Office

In 2012, the Broadband Program Office launched a **Facebook Page** to improve communication and encourage citizen involvement as it relates to broadband.

Like Us on Facebook by visiting
https://www.facebook.com/NewYorkStateBroadband

Broadband Flash Bulletin

IN THIS ISSUE

U.S. Senate Discusses Rural Communications

A New Way to Expand High-Speed Internet in NYC

Farmers in NY About to Get Broadband

Google and AT&T Target Austin for High-Speed Internet

QUICK LINKS

Like us on Facebook

SUBSCRIBE TO THE NYS BROADBAND FLASH BULLETIN

Join Our Mailing List!

U.S. Senate Subcommittee on Communications, Technology and the Internet Examine the Current State of Rural Communications

Volume 5, Issue 5 April 11, 2013

A New Way to Expand High-Speed Internet to New York City

New York City is exploring a new way to expand fiber quickly throughout the city. Working with Verizon Communications, the City will be testing a method where fiber-optic cables are installed under the sidewalks. This method, commonly referred to as "micro-trenching" or "saw cutting" carves narrow, shallow grooves out of the ground, opening space for cables.

New York City hopes this pilot program will enable Verizon to offer faster connections in more neighborhoods. "Whether it's restoring service to storm-ravaged areas or extending it to new ones, the innovative micro-trenching pilot will allow the City to speed deployment of fiber optics," New York City Chief Information and Innovation Officer Rahul Merchant said in the statement.

The trial will begin with 12 sites across the five boroughs and then it will be evaluated to determine if the method can be adopted citywide. Micro-trenching will allow enough space for multiple carriers to pass cables through the same area, increasing competition.

Although the five boroughs of New York City have the lowest percentage of unserved residents out of the ten New York State regions, more than 103,000 households or 271,000 people are still without access to high-speed Internet.

This year, the New York State Broadband Program Office launched the **Broadband Flash Bulletin in a web-friendly format**. To receive information on broadband hot topics, policy, funding and other relevant information at the local, state and national level, subscribe to the Broadband Flash Bulletin at **www.nysbroadband.ny.gov**.

Regional Economic Development Councils

An important element that needs to be considered while investing in broadband is ensuring local and regional authorities have proposed a strategy to maximize the use of broadband for economic and social development. With the goal of community involvement and economic growth in mind, the **Broadband Program Office worked with Governor Cuomo's ten Regional Economic Development Councils** to assess the availability of broadband for each region. This information will assist in developing broadband strategies that meet each region's unique requirements.

> "Progress continues to be made in all corners of New York State, including the North Country, to ensure more families and businesses have access to high-speed broadband. In underserved rural communities, the formula of leveraging private sector investment with public funding is proving successful and the Connect NY program grants announced earlier this year move us further forward. While work remains, the commitment of Governor Cuomo, the New York State Broadband Program Office and our partners building and delivering the service is achieving real results."

– Senator Betty Little, 45th Senate District

4.0 The Importance of Broadband

Citizens Need Broadband Access for Increased Quality Of Life & Economic Opportunity

Broadband enables citizens, communities, businesses and government entities to access a number of transformative applications. These include advanced communications, e-commerce, telecommuting, voice service (VOIP), distance learning, telemedicine, public safety, and others. It has become generally accepted that broadband access in a community plays a critical role in economic development. Broadband is considered both an attraction and retention tool for economic development. Existing businesses and entrepreneurs who effectively leverage broadband are best equipped to compete in a global market, and are most likely to remain in the state and expand their businesses. Communities with high-speed Internet access find it easier to attract new employers and encourage local entrepreneurism.

Access to affordable broadband is viewed as particularly important for the economic development of rural areas because it enables individuals and businesses to participate fully in the online economy regardless of geographical location. Aside from enabling existing businesses to remain in their rural locations, broadband access attracts new business enterprises drawn by lower costs and a more desirable lifestyle. Broadband allows businesses and individuals in rural America to live locally while competing globally.

While the introduction of broadband networks to rural areas will not bring immediate economic transformation, areas of the state, which lack access, will be unable to compete in the digital economy. As Internet connectivity increasingly becomes more imperative for many political, consumer, financial, and social transactions, a lack of broadband access limits opportunities for unserved rural areas.

Broadband Benefits All Sectors

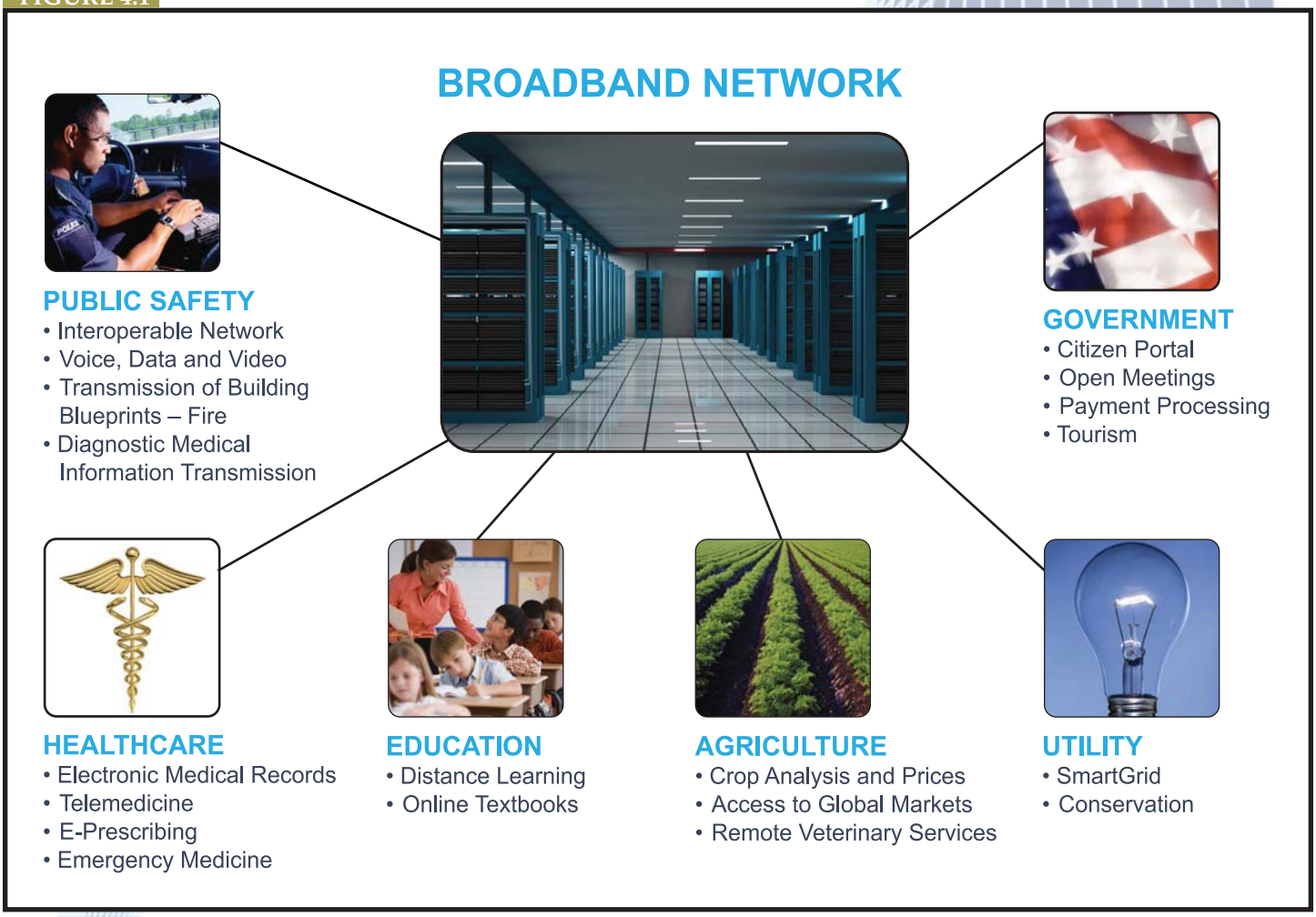
By expanding access and promoting adoption of broadband across all segments of society and across a range of industries – **agriculture, education, government, healthcare, or public safety** – vast economic benefits are realized.

The Internet is the great equalizer and having access to high-speeds can offer substantial advantages for each sector. For example, a small company in rural New York has the ability to immediately become a global company, a benefit that at one time could be felt only by larger businesses in metropolitan areas.

When expanding broadband networks to all sectors, a model should be adopted that eliminates a siloed approach to network building. Looking at lessons learned from some federally subsidized networks that utilized a siloed approach by providing funding for networks for just one particular sector, were often found underutilized networks with excess capacity that could not be shared with other users.

Figure 4.1 demonstrates a shared network and some of the benefits it brings to each sector.

FIGURE 4.1



> "Broadband is a critical infrastructure in the growing global digital economy, and countries that fail to invest in broadband infrastructure risk being excluded from today's online economy, as well as the next stage of the digital revolution and future Internet."
>
> *– The Broadband Commission for Digital Development*

5.0 The Economic Impact of Broadband

Accelerating Economic Development

New York State is faced with the challenge of accelerating robust economic development in communities across our State. A number of factors play a role in whether these communities will attract and retain businesses and remain vibrant. These include access to quality healthcare and education, adequate roads and transportation, and efficient public safety systems. Research also shows that a community's public infrastructure is a powerful driver of economic growth, and affordable access to these communication capabilities are equally as important. Communities without broadband are at risk to be left behind as businesses and jobs relocate to regions where high-speed connectivity is available and affordable.

Broadband Services are the Foundation for Technology Products and Services Growth

- By 2016, 814 million households will have Internet service, and over 94% will have broadband. [1]
- In 2013, 106 million pay-TV subscribers in North America will have access to streaming video content. [2]

Broadband Access Is a Multi-Faceted Economic Development Engine

Consumer access to broadband drives entrepreneurship, increases healthcare access, contributes to environmental conservation, and equalizes economic opportunities between urban and rural areas. Institutional access to high-speed broadband attracts new business, increases innovation, spurs technical research, drives nanotechnology and creates economic prosperity hubs. Access to high-speed broadband also provides transformative opportunities to public and private sectors of the economy.

1,2 Trends, Technologies & Ecosystems, Evolution of the Digital Home, Parks Associates 2012.

The Internet and Broadband Play a Key Role in Job Attainment and Retention.

Broadband is responsible for 20% of new jobs across all businesses, and 30% of new jobs in businesses with less than 20 employees.[3]

In one decade, the number of domestic IT jobs grew 26% – 4x faster than employment in the U.S. as a whole.[4]

A 7% increase in broadband penetration could create an additional 2.4 million new jobs.[5]

Broadband creates 2.6 new jobs for every one lost.[6]

Deloitte projects 771,000 new jobs as a result of 4G network deployment.

For every 1000 additional broadband users, approximately 80 new jobs are created.[7]

3 Lawrence Strickling, Assistant Secretary, Department of Commerce, July, 2012 Testimony before Congress

4,6 McKinsey Report, 2012

5 FCC Fact Sheet: Broadband Creating Jobs & Driving Economic Growth

7 Erik Almqvist, Social Net Benefits of IPTV and BB Infrastructure Investments, IPTV World Forum MEA, Dubai November 1, 2010

Broadband and Small Business Growth

Businesses that use broadband report median annual revenues approximately $300,000 higher than business that don't.[1]

1/3 or 2.4 million U.S. businesses earn revenues from online sales, accounting for approximately $411.4 billion in sales revenues annually.[2]

Over 2.5 million U.S. businesses use the Internet to advertise job openings or accept job applications; many only accepting applications online.[3]

Two out of three home-based businesses use the Internet to stay in touch with customers, and 59% advertise or sell goods online.[4]

> "According to a newly released Connect Nation Survey, 73,000 home-based businesses in the U.S. want to upgrade their broadband service, but the service available to them is too slow. Studies have shown that when communities adopt broadband access, it can lead to hundreds of thousands of new jobs. Broadband can remove geographic barriers between patients and their doctors. It can connect our kids to the digital skills and 21st-century education required for the jobs of the future. And it can prepare America to run on clean energy by helping us upgrade to a smarter, stronger, more secure electrical grid."
>
> *- President Barack Obama, 2010*

> "Widespread broadband connectivity will also play a critical role in realizing many other state goals, including positioning New York as a leading hub for high-tech-innovation, transforming the delivery and consumption of electricity, enhancing educational opportunities for students of all ages, and expanding the reach of quality and affordable healthcare services."
>
> *- Advanced Communications Law & Policy Institute at New York Law School, 2012*

Teleworking Makes a Considerable Impact in the Job Market

More than 1/3 of U.S. businesses allow employees to telework, including 1.5 million small businesses with fewer than five employees.

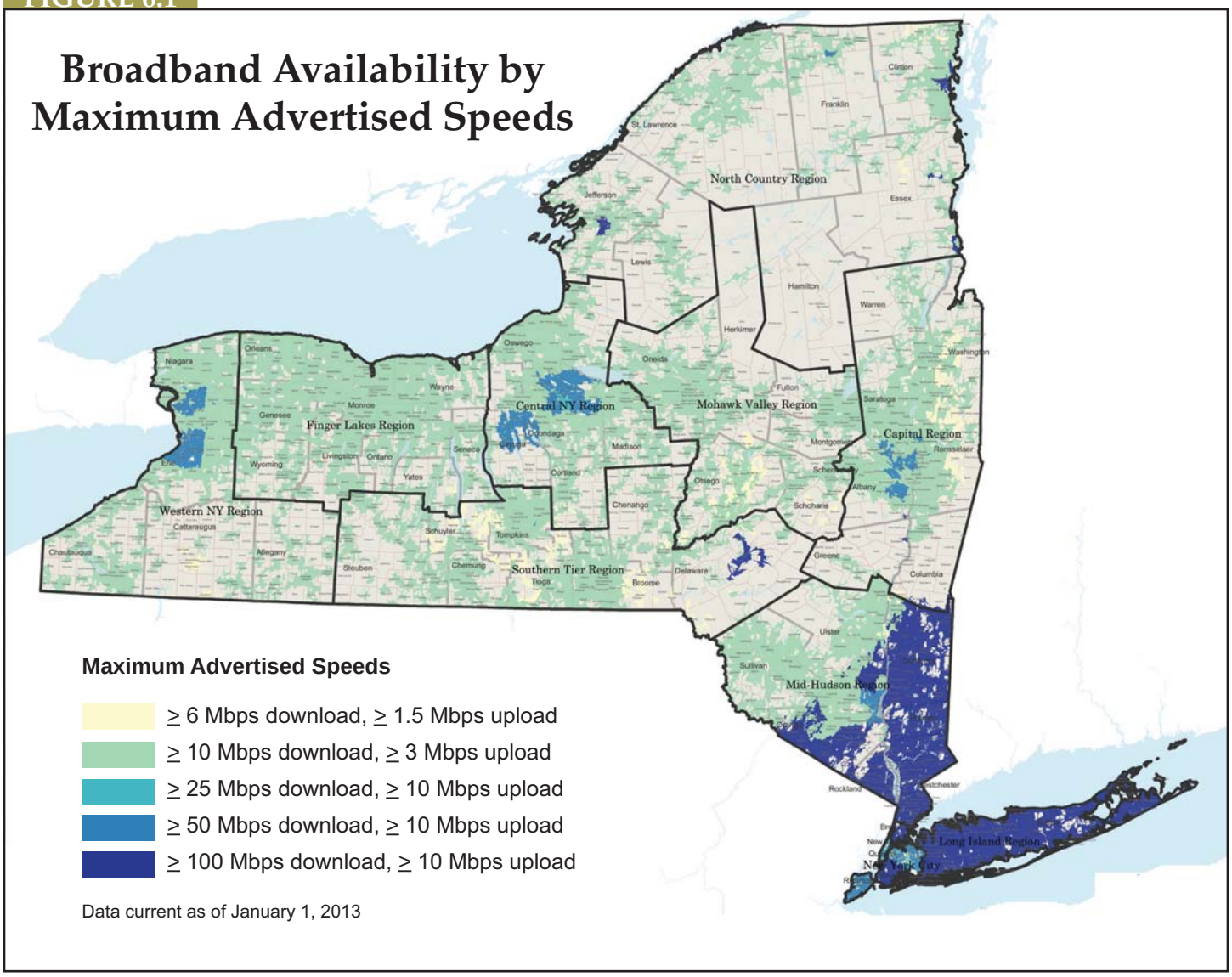
1-4 Connect Nations, The 2012 Jobs and Broadband Report, National Projection On How American Businesses Use Computers and Broadband to Grow, Hire, and Thrive, May 2012

6.0 Higher Speeds for Economic Development

Because broadband is generally defined as a facilitator for Internet access, data transmission speeds are directly correlated to the degree of economic impact. It has been established that **higher speeds deliver more economic benefits**, and minimum speeds for broadband access continue to rise as applications and innovation evolve. For instance, the speeds established by the FCC to define broadband access have been widely dismissed as inadequate for many common applications in use today. In fact, download speeds of **100 Mbps** or more are quickly becoming the standard for institutional access.

In 2012, **New York State raised minimum speed thresholds to 6 Mbps download and 1.5 Mbps upload** to measure broadband availability in New York State; up from 3 Mbps download and 1 Mbps upload. These standards are above the FCC minimum standards of 4 Mbps download and 1 Mbps upload. **Figure 6.1** shows New York State broadband availability by speed tier.

FIGURE 6.1

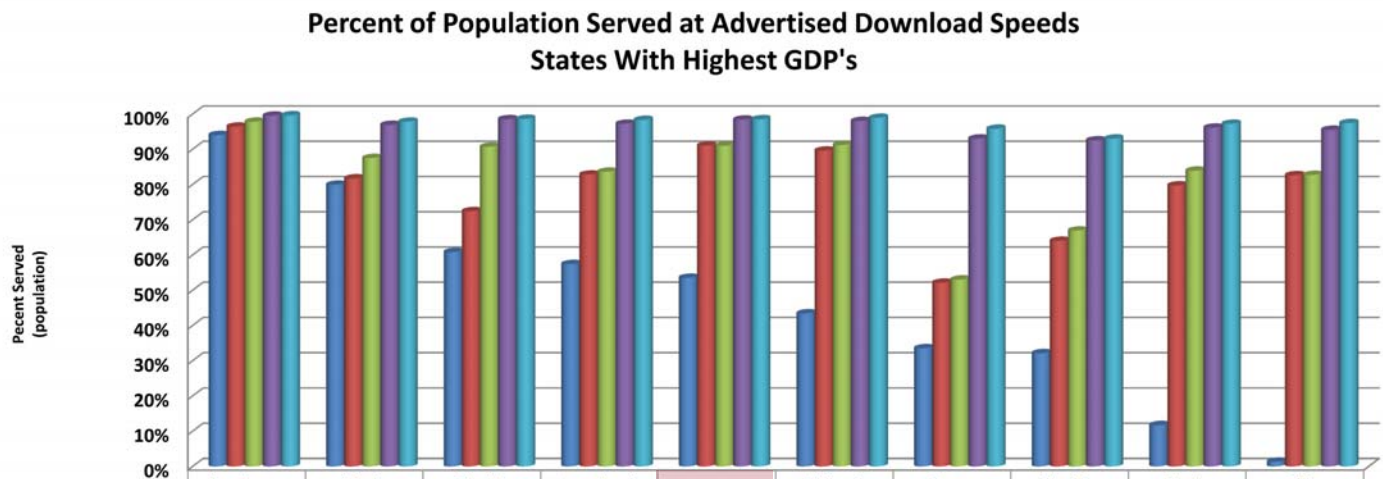


Big Broadband for NYS – Gigabit Speeds Are as Important as Access for Economic Development

A new generation of high-speed broadband or "Big Broadband" has ushered in a new age for economic development in the rapidly evolving era of telecommunications. Gigabit Networks, as they are also called, boast ultrafast speeds to embrace innovation and research, while meeting the demands institutional users place on broadband networks.

Access to broadband download speeds above 100 Mbps is commonplace in countries outside the United States. In Japan, tens of millions of people have direct access to fiber at speeds in excess of 100 Mbps. Korea continues to be a leader in achieving aggressive speeds goals. **New York State ranks 22nd in the nation, with 53.5% of New Yorkers having access to broadband at that speed tier.**

FIGURE 6.2

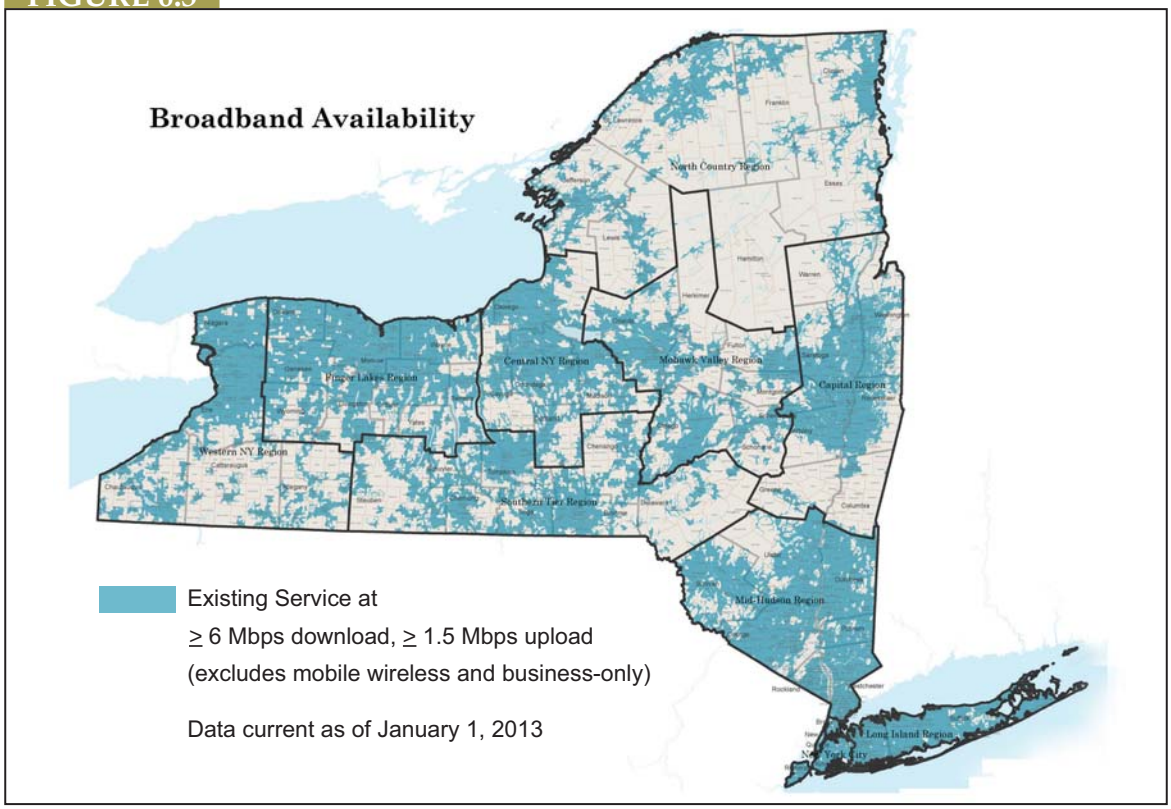


	New Jersey	Illinois	Florida	Pennsylvania	New York	California	Texas	Virginia	North Carolina	Ohio
DL Speed > 100 Mbps	94%	80%	61%	57%	54%	43%	34%	32%	12%	1%
DL Speed > 50 Mbps	96%	82%	72%	83%	91%	90%	52%	64%	80%	83%
DL Speed > 25 Mbps	98%	88%	91%	84%	91%	91%	53%	67%	84%	83%
DL Speed > 10 Mbps	100%	97%	99%	97%	98%	98%	93%	93%	96%	96%
DL Speed > 6 Mbps	100%	98%	99%	98%	99%	99%	96%	93%	97%	97%

Access to High-Speed Internet in New York State

- 47 New York counties (over 10 million people) have no access to broadband at download speeds of 100 Mbps or higher.
- 38 New York counties (almost 4 million people) have no access to broadband at download speeds of 50 Mbps or higher.
- 59% of New Yorkers (11.3 million people) cannot access broadband at speeds of 100 Mbps download/ 10 Mbps upload.
- 37% of New Yorkers (7.2 million people) cannot access broadband at speeds of 50 Mbps download/ 10 Mbps upload.

FIGURE 6.3



Fast reliable broadband infrastructure is required to attract foreign investment, foster job creation, and produce an environment conducive to business creation and expansion. While ubiquitous broadband access equalizes opportunities for disadvantaged populations and rural citizens, high-speed institutional access fosters economic growth at greater magnitudes in a shorter period of time. For example, an unemployed New Yorker with DSL broadband access stands a much greater chance of landing a job, being able to work from home, or starting a new business. However, a well-planned fiber-based network offering speeds upward of 100 Mbps will experience economic growth across multiple levels of the community. The only difference between the two scenarios is higher speeds and regional planning and collaboration during the design phase of broadband project planning. One broadband network with enough capacity to support multiple sectors is the most cost-effective method for New York State to deliver fast Internet access to diverse end users. **Figure 6.4** indicates minimum broadband speeds needed for specific economic development factors. Most economic development experts believe **speeds above 100 Mbps are required to impact economic development.**

Minimum Broadband Speeds Needed

FIGURE 6.4

ECONOMIC DEVELOPMENT FACTOR	BROADBAND SPEEDS REQUIRED					
	2-4 Mbps	10-12 Mbps	25-50 Mbps	100-120 Mbps	500 Mbps	1 Gigabit
Lure New Businesses	3.60%	6.80%	13.60%	**32.10%**	16.30%	27.60%
Company Growth - Local	4.10%	11.80%	23.50%	**32.10%**	13.10%	15.40%
Bus District Revitalization	7.40%	14.40%	21.40%	**29.30%**	11.20%	16.30%
Community Revival	8.40%	16.30%	24.20%	**25.60%**	10.20%	15.30%
Boost Worker Training	6.40%	16.00%	26.50%	**26.50%**	12.30%	12.30%
Support Home Business	8.30%	15.60%	28.40%	**27.10%**	11.50%	9.20%
Improve Individuals	4.20%	15.30%	25.00%	**31.80%**	15.30%	8.50%

Source: International Economic Development Council, Moving the Needle Forward on Broadband & Economic Development, 2012, Craig Settles

Broadband Spotlights

Broadband Project Brings Opportunity to the Town of Keene

The small town of Keene, NY, where only 1,000 homes and business are found in either densely populated hamlets or scattered along mountain roads, is making a big example of what can be done to bring broadband to one of New York's most rural towns.

KVVI Office and Head End Location

What started as a grass-roots project, with a vision of universal broadband in 2007, turned Keene into the most fully wired town in the Adirondack Park. The Broadband Initiative was organized as a cooperative effort led by Keene Valley Video and Internet (KVVI) and the High Peaks Education Foundation, and was funded by a variety of sources, including donations from local residents, and a $100,000 New York State economic development grant. The project enabled the town to refurbish a deteriorating coaxial network with fiber-to-the-home technology.

The primary goal of the project was to install connections and computers in every home with a student, teacher or staff member from the school. The secondary goal was to obtain universal broadband service. Today, every home with a student, teacher or school employee is on the network and 98% of homes in Keene are within reach of the network. Adoption rates by year-round residents are approaching 90% and seasonal homeowner adoption is growing fast.

Keene has been revitalized by broadband Internet access. Surveys say nearly half the subscribers earn a portion of their income over the Internet and existing businesses have expanded to new markets. "We did this because we couldn't live in a town that didn't have good Internet service," said Jim Herman, project co-director, a Secretary of the Board of Trustees of the High Peaks Education Foundation and a resident of Keene. "And we planned to live in this town for a very long time."

Mohawk Reservation Brings Fiber to the Home

Local native of the St. Regis Mohawk Tribe, Jacob Burke, sets and configures the GPON Active E cabinet during a hands on training session

Like many communities, the Mohawk Nation of Akwesasne, situated on Quebec, Ontario and various New York territories, has been forced to deal with the current economic crisis. Once supported by big names like General Motors and Reynolds Aluminum, the Nation's only operating facility is now the Alcoa Primary Metals facility, which is currently only running at half capacity. With the Mohawk Nation, and neighboring cities such as Massena, dependent on these plants, they needed to look at ways to bring business back to a place devastated by the failing economy.

Utilizing grants from the Recovery Act, the St. Regis Mohawk Tribe launched the Broadband Initiative Project in an effort to create new jobs, bring new businesses to the reservation, and restore the community.

The first of several project initiatives, a new network utilizing Fiber to the Home (FTTH) technology has been the key to making this a reality. Construction of a 68 mile fiber network was finalized in December 2012, and testing and customer installs are planned to begin this summer. As part of the award process and in an effort to reinvest in the community, specialty contractors were also required to hire and train locals on fiber splicing optical network terminal (ONT) installs, site surveys and many other jobs.

With more than 1,100 people or 70% of residents already subscribed, this investment is a true testament of the power that broadband has to give to a community and its positive impact on economic development.

7.0 The State of Broadband in New York State

While NYS Ranks Highly in Some Metrics – There is Room for Improvement

The impact of broadband is nowhere more evident than the State of New York. As the **16th largest economy in the world** with the third largest gross state product, broadband access is a critical factor for sustaining global competitiveness. While the technology sector is robust in New York State, every sector of the economy has become increasingly dependent on higher broadband speeds.

The digital divide in New York is actually a combination of two separate issues – **broadband availability and adoption**. Broadband availability refers to the physical access of high-speed Internet service. Broadband adoption refers to the percentage of people who subscribe to broadband service.

1.1 million New Yorkers (520,631 Housing Units) lack access to broadband at the minimum speeds established in New York State (6 Mbps download /1.5 Mbps upload)

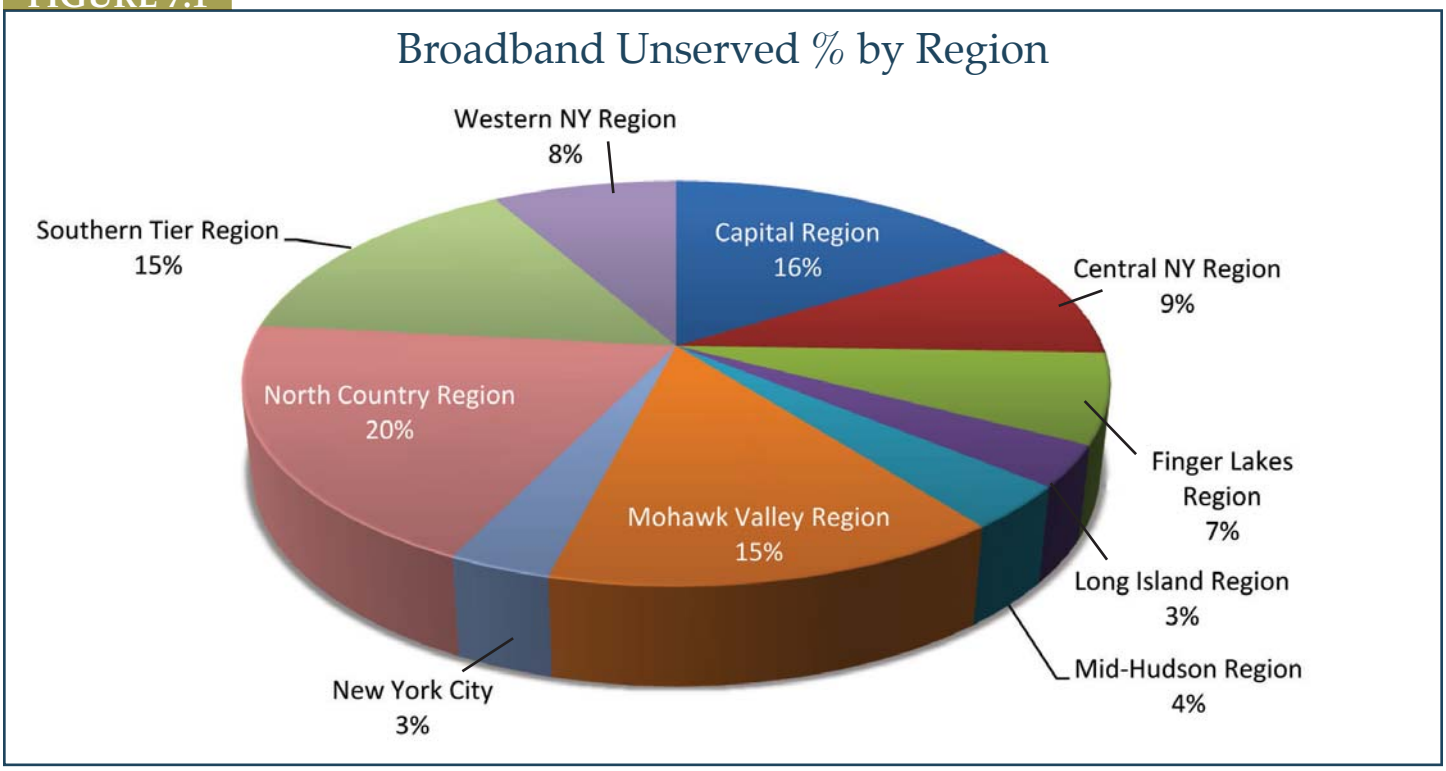
In terms of broadband availability, the line delineating New Yorkers has become more broadly drawn. There are those who have access to reliable, fast access to the Internet, (**18 million people**) and those who do not (**1.1 million people**). Although New York State has made significant progress expanding high-speed Internet access in recent years, hundreds of thousands of New Yorkers still go without the basic ability to connect online. While availability percentages in various areas of the state remain **above the 90th percentile**, the number of New York citizens without access to high-speed Internet is more than the entire population of Vermont and Wyoming combined (and ten other states and U.S. territories).

> "The Development Authority of the North Country was fortunate to receive a federal ARRA (stimulus) grant as well as several NY State broadband grants that allowed us to greatly enhance broadband throughout the North Country. Advantages provided to constituents of the North Country include network diversity for the critical communications needs of customers throughout the North Country, middle-mile extensions through the Adirondacks, connecting over 100 community anchor institutions, the creation of two Telemedicine Networks linking over 80 healthcare facilities, and the creation of an enhanced public emergency network. The middle-mile network provides the backbone for last-mile broadband services and we are working on several initiatives to foster last-mile builds."
>
> *– Jim Wright, Executive Director, Development Authority of the North Country*

Digital Age is Slow to Arrive in Rural New York

Although the gap between broadband access in rural and urban areas has lessened over the past few years, it still remains wide. This is mainly due to the business model used by the telecommunication industry; which is based on housing density calculations. Areas of the state with higher housing densities generate positive returns on investment for broadband providers resulting in urban areas having higher availability and faster speeds. As a result, high broadband availability is clustered in urban areas, with rural and remote parts of the State remaining largely underserved. This is especially evident in the **North Country, where 20% of the population (85,788 people) lacks broadband access.** On the opposite side of the spectrum, the **five boroughs comprising NYC have availability approaching the 97th percentile. Figure 7.1** shows the percentage of New Yorkers in each region without access to broadband services (6 Mbps download/1.5 Mbps upload).

FIGURE 7.1



New Yorkers who can't access the Internet are at a severe disadvantage. As a result, New York State significantly expanded mapping efforts initially launched in 2009 to understand where broadband is available, and where it is not.

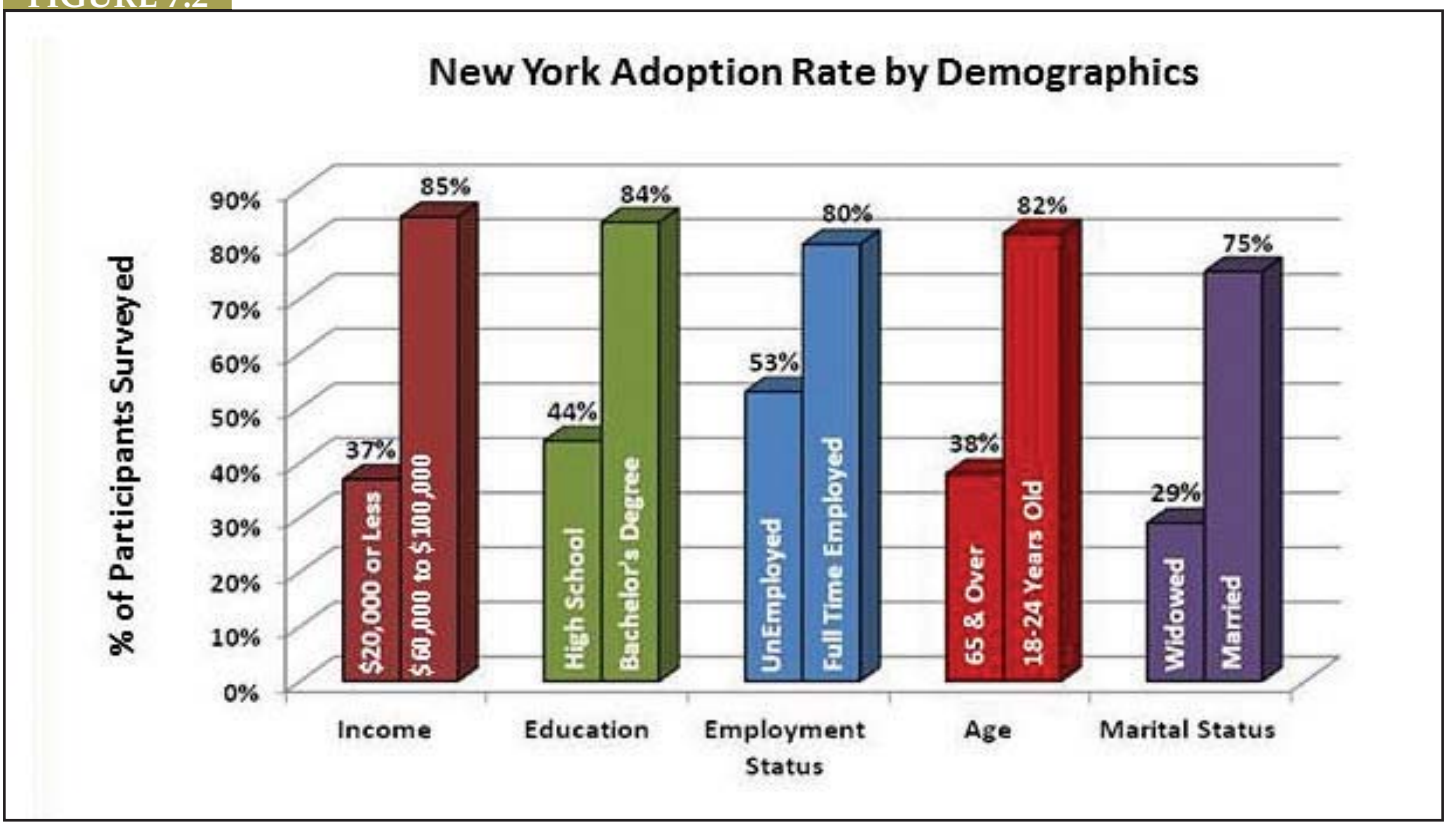
As part of this effort, the Broadband Program Office **launched a survey designed to determine the highest concentrations of broadband demand throughout the State.** A significant hurdle to achieving universal broadband is the perception that sparsely populated areas may not have enough subscribers to justify costs of extending broadband services to those regions. This demand aggregation model is helping New York gain a clearer picture of potential subscriber adoption, particularly in rural regions of the state, and will assist in driving new broadband investments, an increasing private investment to these areas. To take the survey visit **http://nysbroadband.ny.gov/Your-Internet-Access**.

6 million New Yorkers are not Connected to Broadband

During the 2012-13 year, the overall **percentage of New Yorkers who use broadband at home** has been consistently stagnant at **approximately 70%**, slightly ahead of the national average of 65%. Similarly, this trend in New York mirrors the national trend, where Americans with broadband at home has leveled off since 2009.

New York State's 2010 Broadband Adoption rate study, http://nysbroadband.ny.gov/themes/broadband/images/BroadbandAdoption.pdf, shows that substantial disparities in home computer use and Internet adoption exist for the economically and socially disadvantaged. For example, only 37% of New Yorkers with annual incomes of $20,000 or below have broadband at home when compared to an 85% usage rate by New Yorkers with incomes over $60,000. Because of the close association of income with education, employment status and age, disparities also exist in these demographics. For example, when we look at broadband adoption by age, the lowest adoption rates are found in seniors 65 or older. Typically income is a factor in adoption for the over 65 age bracket, as seniors tend to be on a fixed or lower income. **Figure 7.2** shows New York adoption rates by demographics

FIGURE 7.2



> "The development and deployment of a world-class broadband initiative will play a critical role in fueling Governor Andrew Cuomo's strategic blueprint for building the innovation-driven economy in the New New York. The establishment of a robust platform for the ultra-fast, reliable and secure capture, analysis, transmission, and storage of important data is essential to compete in the 21st century global economy, and to enable new opportunities for nanotechnology-based educational and career paths that are catalyzing the state's future."

– Dr. Alain Kaloyeros
Senior Vice President and CEO
College of Nanoscale Science and Engineering

Similarly when you look at national adoption rates, the same trends follow. **Figure 7.3** indicates American Broadband Use and the gaps amongst different demographic groups.

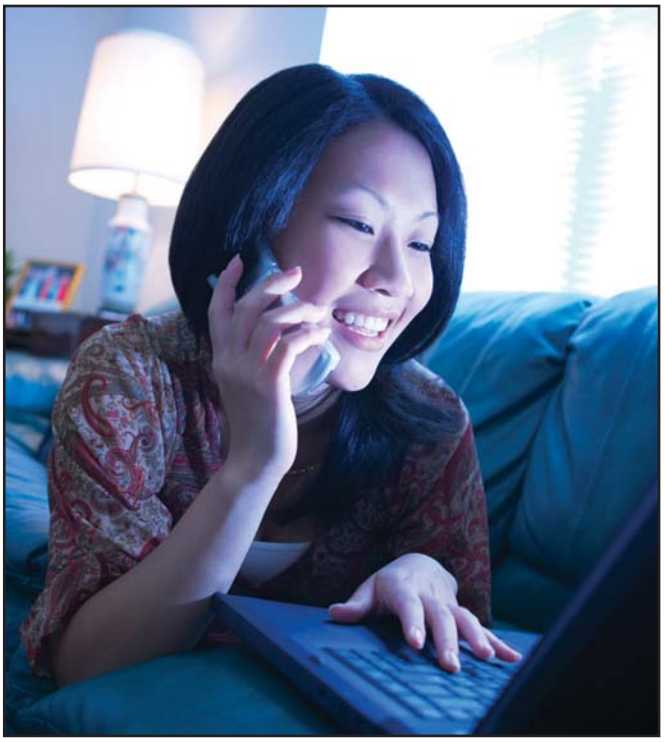
FIGURE 7.3

American Broadband Use

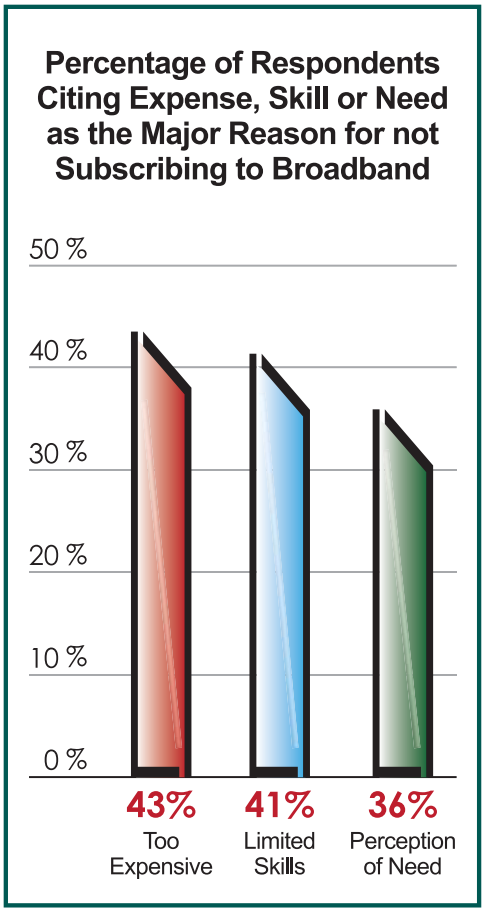
	% Who Have a High-Speed Internet Connection at Home	
ALL ADULTS - 2,261		**65%**
a	Men (1,054)	65
b	Women (1,207)	65
Race/Ethnicity		
a	White, Non-Hispanic	70
b	Black, Non-Hispanic	53
c	Hispanic	49
Age		
a	18-29	75
b	30-49	74
c	50-64	62
d	65+	41
Education Attainment		
a	No high school diploma	27
b	High school grad	56
c	Some College	73
d	College +	85
Household Income		
a	Less than $30,000/yr	46
b	$30,000 - $49,000	69
c	$50,000 - $74,999	79
d	$75,000+	85
Urbanity		
a	Urban	64
b	Suburban	67
c	Rural	63

Source: Pew Internet Post-Election Survey, November – December 2012.

Visit our New York State broadband map, www.broadbandmap.ny.gov, to find out about broadband service in your community or to take the NYS speed test which provides consumers information about the quality of their broadband connection.

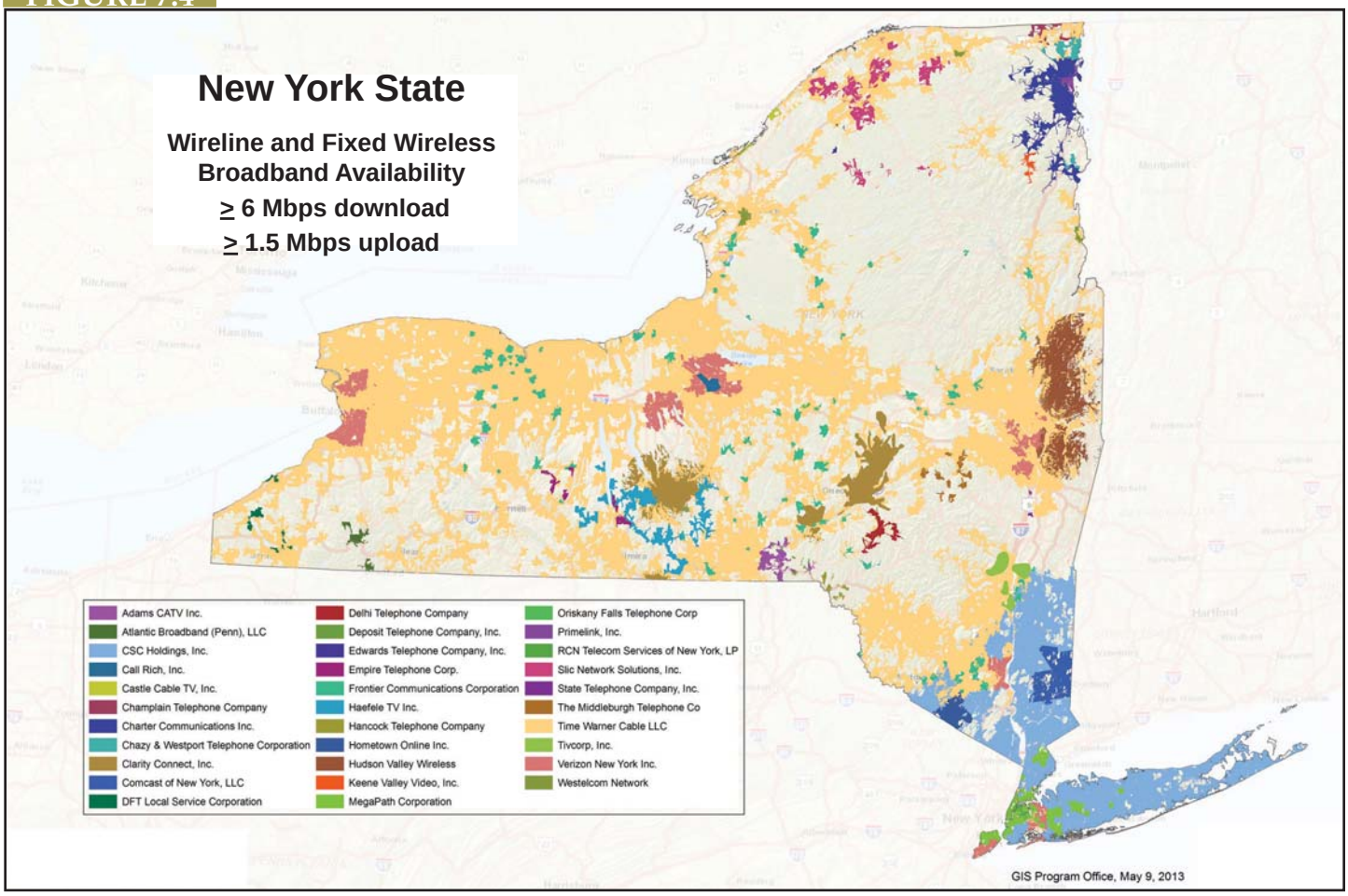


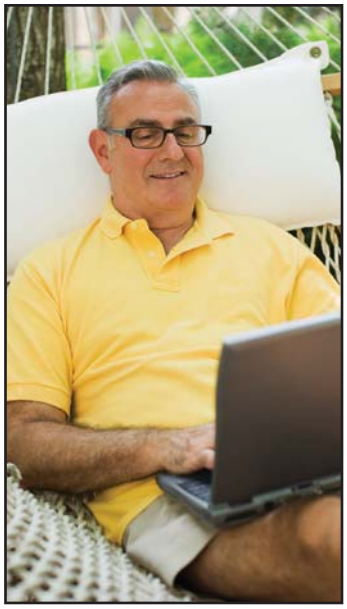
When non-adopters in New York State were asked why they have no Internet connection at home, **43% of households without broadband cited affordability.** Limited skills and lack of need or interest were also cited as main reasons for not adopting broadband Internet.



With cost being the number one reason why consumers choose not to subscribe to broadband, **competition is crucial for increasing statewide adoption rates.** Competition in residential broadband services provides consumers the benefits of choice, better service, and lower prices. In New York, especially rural and remote areas, subscribers have limited choices when choosing a broadband provider. **Figure 7.4** provides a look at the current state of competition among wireline and fixed wireless broadband services.

FIGURE 7.4





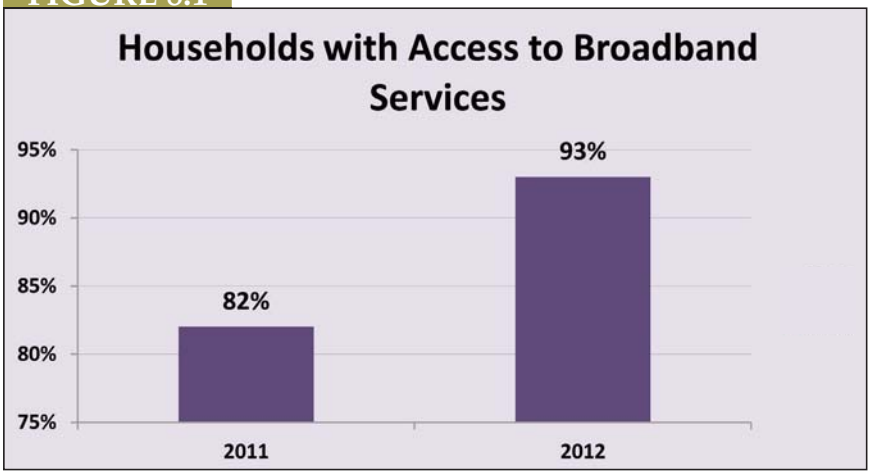
8.0 New York's Improving Landscape

Making Big Strides to Close the Digital Divide in New York

The availability, affordability, and utilization of broadband technologies is a high priority for the State of New York. The numerous benefits of broadband access, such as e-commerce, e-government, telemedicine and distance learning, will result in job creation, improved healthcare, greater educational opportunities for our students and teachers, and enhanced economic development.

18,310,000 New Yorkers currently have access to Broadband. When we look back at the last few years, we see dramatic improvements in New York's broadband landscape. Nearly **1 million more households** now have access to broadband services when compared to just two years ago. **Figure 8.1** shows a climb in availability of broadband services in New York State from 2011-12.

FIGURE 8.1



Recognizing that broadband services are vital to our state's economic recovery and well-being, **Governor Cuomo is committed to investing in our state's broadband infrastructure.**

On March 5, 2013, **Governor Cuomo awarded $25 million** in funding to expand high-speed Internet access in unserved and underserved areas of New York through the Connect NY Broadband Grant Program. Eighteen broadband projects, across nine New York State regions, were selected to receive Connect NY Broadband grants based on the support of the Regional Economic Development Councils and technical scores awarded by a committee who analyzed and ranked projects competing for the $25 million in funding. With a private match, the total investment in broadband through the Connect NY Program is $32 million.

Together, these projects will bring broadband service to over 153,000 households, 8,000 businesses and 400 anchor institutions – many without any means to access the Internet.

In addition to the Connect NY Broadband Grant Program, Governor Cuomo awarded an additional **$6 million in funding to eight broadband project sponsors** through round 2 of Regional Council Awards in December 2012. This funding will expand broadband services in the North Country region. **Figure 8.2** highlights the Connect NY and Round 2 Regional Council Award recipients, the amount of funding awarded, and the region served.

FIGURE 8.2

Organization Name	REGIONS	Funding Awarded	Housing Units Served
Connect NY Funded Projects			
Time Warner Cable	MULTI: Capital Region, Central New York	$ 5,266,979	4,114
Yates County	Finger Lakes	$ 2,407,049	11,788
Clarity Connect Inc	MULTI: Central New York, Southern Tier	$ 2,216,000	6,430
Slic Network Solutions	North Country	$ 2,162,656	544
Hudson Valley Wireless	Capital Region	$ 2,042,177	48,065
New Visions Communications	Central New York	$ 1,999,584	1,156
MTC Cable	MULTI: Capital Region, Mohawk Valley	$ 1,800,000	2,630
Slic Network Solutions	North Country	$ 1,012,366	485
Slic Network Solutions	North Country	$ 976,426	527
Allegany County	Western New York	$ 800,000	26,140
Southern Tier West Development Foundation	Western New York	$ 672,452	10,100
Newport Telephone Company Inc	MULTI: Mohawk Valley, North Country	$ 572,000	220
County of Otsego IDA	Mohawk Valley	$ 558,940	23,400
Town of Jay	North Country	$ 557,000	420
EDC Warren County	Capital Region	$ 200,000	89
Trumansburg Telephone Company	Finger Lakes	$ 114,015	340
Haefele TV Inc	Southern Tier	$ 24,010	350
NYCEDC	New York City	$ 1,636,346	
Regional Council Economic Development Council Grants			
Slic Network Solutions	North Country	$ 1,370,306	870
Hamilton County	North Country	$ 1,700,000	6,400
Development Authority of the North Country	North Country	$ 500,000	9,000
Development Authority of the North Country	North Country	$ 2,222,000	NA

> "Clarkson University hosted the first annual Forever Wired Conference in 2009 to bring attention to the critical broadband infrastructure our region needed to support entrepreneurs, telecommuters and green tech commerce as well as to expand educational, tourism and recreation opportunities across the Adirondack Park and North Country. As a priority in the North Country Regional Economic Development Council Plan launched in 2011, broadband is now being installed and delivered to more and more homes and businesses and the effects are enormous. In today's global economy, if you are not connected, you are not in the game."

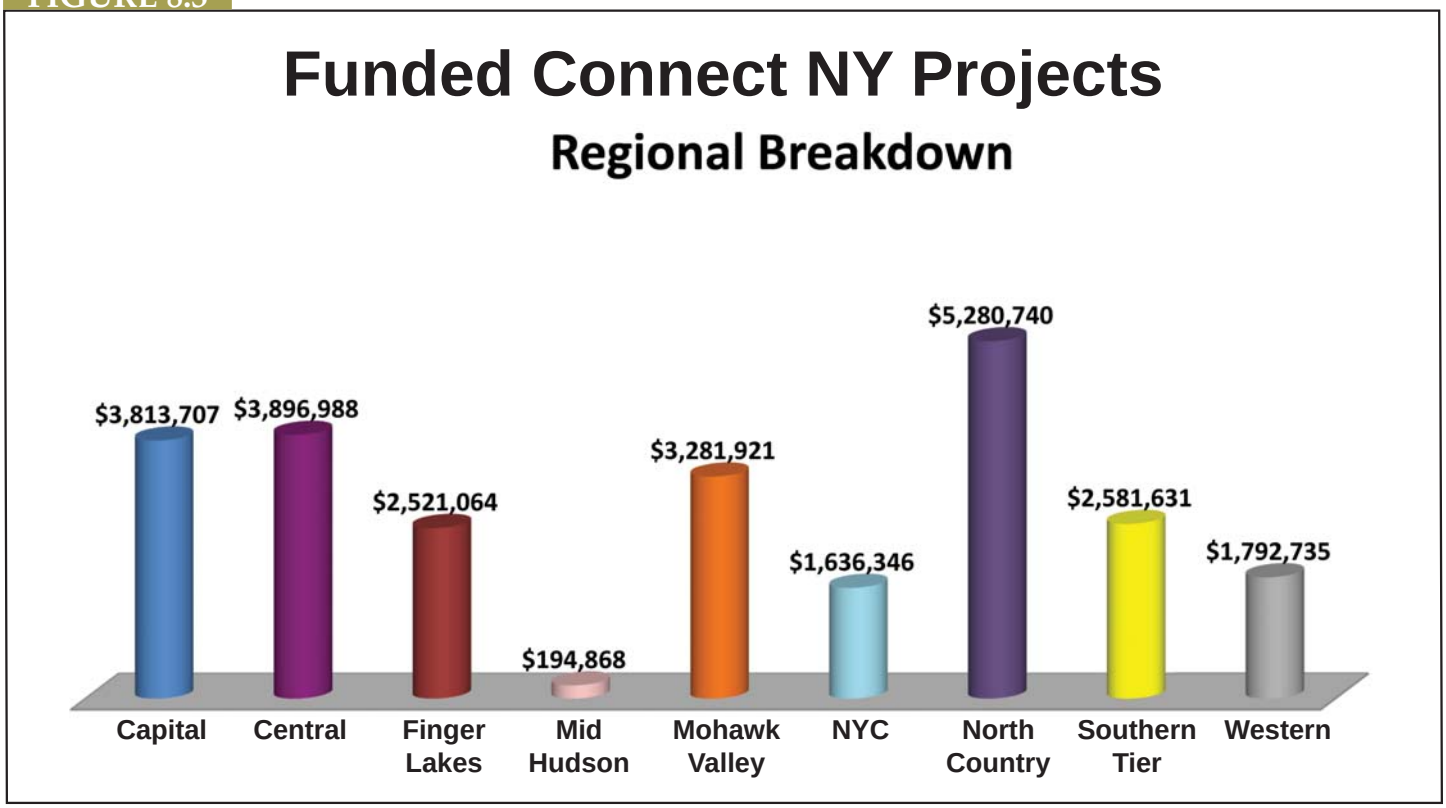
– Anthony G. Collins
President of Clarkson University and Co-Chair of the North Country Regional Economic Development Council

Broadband Expansion in New York's Regions

The Broadband Program Office collaborates with each of Governor Cuomo's ten regions of New York State to understand the unique needs and challenges each region faces when it comes to broadband availability and adoption. During the year, the Broadband Program Office developed technical profiles to maximize the use of broadband for economic and social development in each region. These included current broadband utilization, availability and adoption rate data, comparative analysis with other regions and the state, and opportunities to leverage broadband to achieve the highest level of economic benefits.

Under the Connect NY grant program, each region was awarded a portion of the $25 million available. **Figure 8.3** demonstrates the amount of funding awarded per region. While the North Country received the largest portion of funding, it is important to note that 20% of North Country households do not have access to broadband services – the highest percentage of unserved homes among all the regions.

FIGURE 8.3



The **$25 million award**, combined with additional funding to advance broadband technologies and services, brings the total amount of funding awarded for broadband projects during **Governor Cuomo's administration to more than $56 million**, the largest statewide broadband funding commitment in the nation.

> "Through the Connect NY program, we are bringing high-speed internet access to all corners of New York State. The projects receiving these grants represent the very best proposals with the most potential to benefit statewide economic and community development efforts. These funds will strengthen New York's broadband capacity and encourage sustainable adoption of broadband service in unserved and underserved communities, counties and regions across the state."
>
> *– Governor Andrew M. Cuomo*

The following **ten pages show each region's** broadband availability and highlight the impact and benefits of the State funded broadband projects.

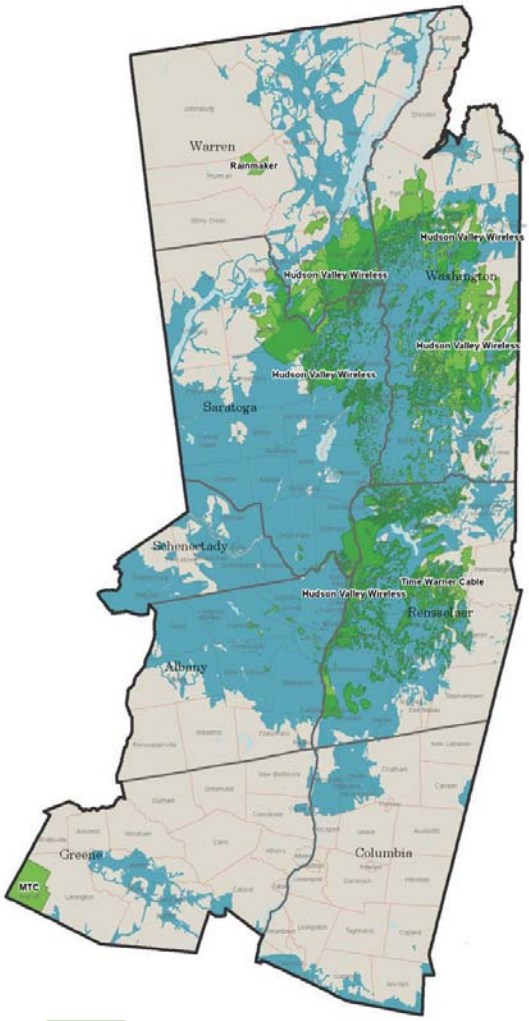
Capital Region

The Capital Region is quickly becoming the center of New York State's "Tech Valley", a region based on innovation and invention. In 2010, Albany was ranked the 15th "Most Innovative City in America" by Forbes. With a region that encompasses industry clusters such as bio life sciences, semiconductor development and nanotechnology as some of its core innovators, one would assume lack of viable broadband infrastructure would not present an issue. However, 85,000 or 17% of the Capital Region's households still lack access to broadband service. While the counties in the Albany metropolitan area are primarily served by high-speed Internet, availability issues are prevalent in the region's most southern counties – Columbia and Greene – where more than 80% of households within the counties lack access to broadband services. The Capital Region's Economic Development Council cited the expansion of 21st century broadband infrastructure as a priority to stimulate economic growth and improve the quality and livability of communities within the region in their strategic plan. The Capital Region was awarded $3.8 million in Connect NY funding.

Capital Region *by the numbers*

- 8 County Region - 5,330 Square Miles
- 505,621 Households (Population 1,079,207)
- 85,324 Households (17%) with No Broadband Access

Capital Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload.

Data current as of January 1, 2013

Connect NY Broadband Funding

Connect Thurman White Space Project - $200,000

Through a public/private partnership, 89 households and ten businesses in the Town of Thurman will receive broadband access. The Town of Thurman will also offer residents access to public computers and enhanced digital literacy training.

Connecting the Capital Region - $2,042,177

Hudson Valley Wireless will provide high-speed fixed wireless broadband access to 40,000 households, 2,000 businesses, and 100 community anchor institutions currently without broadband access in Albany, Saratoga, Rensselaer, Warren, and Washington counties. The network will also be used to improve critical communications for public safety and expand e-gov services.

MTC Broadband Build Expansion Project - $324,000

This multi-region project serves the Capital, Mohawk, and Southern Tier Regions. In the Capital Region, MTC Cable will construct a fiber-optic network to provide a suite of advanced telecommunications services to 470 residents, and offer Ethernet service options for business applications. The network also provides future-proof architecture to support long term sustainment.

Statewide Broadband Expansion - $1,265,530

Through a statewide broadband expansion project, in the Capital Region, Time Warner Cable will deploy robust high-speed Internet service to 1,152 households in the town of Grafton in Rensselaer county. The project will also provide residents with access to digital TV, telephone services and security services.

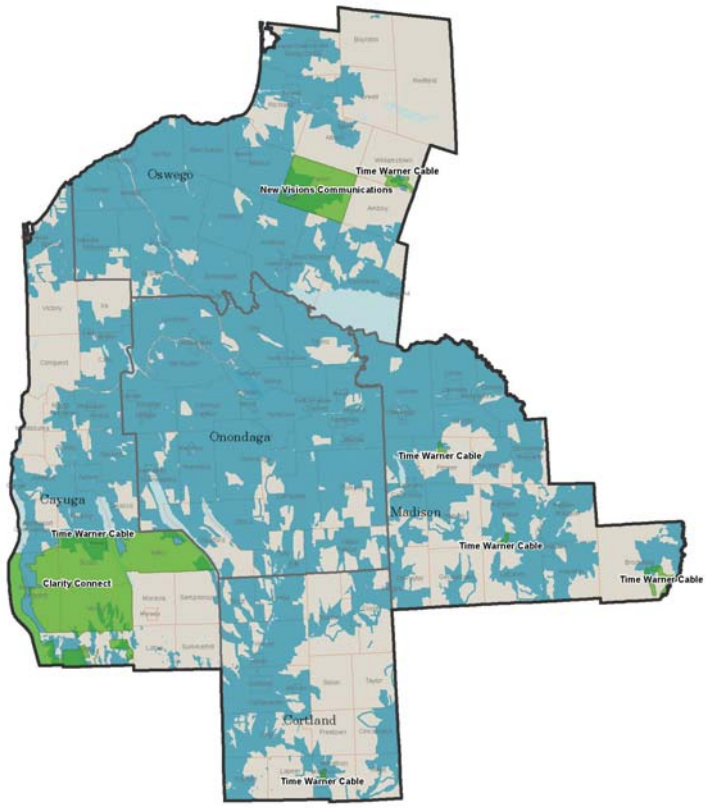
Central Region

Central New York is the heart of New York, and includes the Syracuse metropolitan area (Onondaga County), and Cayuga, Cortland, Madison, and Oswego counties. Central New York draws its economic strength from a highly educated, productive workforce and a significant concentration of colleges and universities, as well as active trade associations. Nine percent (9%) or 34,000 Central Region households still lack access to the benefits of high-speed Internet services. The Central NY Regional Economic Development Council's Five-Year Strategic Plan highlights the expansion of broadband connectivity to underserved areas of the region as a priority. The $3.9 million awarded through the Connect NY Program will provide some of the much needed resources to further strengthen broadband infrastructure as the region continues to develop new project pipelines and partnerships to further address broadband access challenges.

Central Region *by the numbers*

- 5 County Region - 4,249 Square Miles
- 344,778 Households (Population 791,939)
- 31,346 Households (9%) with No Broadband Access

Central Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at 6 ≥ Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

Parish Broadband - $1,999,584

New Visions Communications will utilize existing infrastructure to provide high-speed Internet, VoIP, and cable television to more than 1,000 homes and businesses in the Town of Parish, where 72% of the population does not have access to broadband, VoIP or landline cable television. Speeds offered will range from 25 Mbps to 1 Gigabit.

Tompkins-Cayuga Ubiquitous Last Mile Coverage - $908,560

The Tompkins-Cayuga Ubiquitous Last Mile Coverage is a multi-region project serving the Southern Tier and Central New York regions. In the Central New York Region, Clarity Connect, Inc. will provide state-of-the-art broadband service to approximately 1,700 households, farms, parks, and community anchor institutions currently without access to broadband service. Seventy-five percent of the new service territory will receive speeds of 32 Mbps download/7 Mbps upload, while the remainder will receive download speeds between 6.5 Mbps and 32 Mbps. Eighteen months after completion of the service area, a planned upgrade will increase average download speeds to between 13 Mbps and 64 Mbps.

Statewide Broadband Expansion - $789,404

Through a statewide broadband expansion project, in the Central Region, Time Warner Cable will deploy robust high-speed Internet services to 558 households in the towns of Brookfield, Eaton, Fenner, Fleming, Williamstown, and the village of Marathon. The project will also provide residents with access to digital TV, telephone services, and security services.

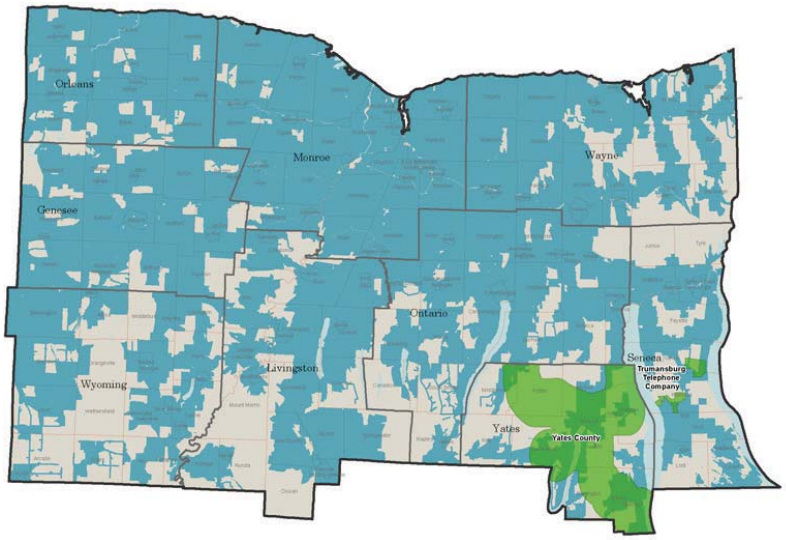
Finger Lakes Region

Named for the 11 long, narrow lakes through the southern counties, the Finger Lakes also includes the City of Rochester, the third largest city in New York State and an international center of higher education, medical and technological development. The Finger Lakes is also a popular tourist destination and agriculture (especially dairy farming) is an important economic driver. In the Finger Lakes Region investments to improve broadband Internet access remain a critical issue, especially in some rural areas to promote economic growth. Seven percent (7%) of households in the region are still not connected to high-speed Internet access. With tourism serving as an economic driver for the industry, providing broadband to popular vacation destinations in the area is essential. Additionally, as farmers look to remain competitive in a global market, access to broadband services is becoming increasingly more important. The Southern Tier Region was awarded **$2.6 million** in Connect NY funding.

Finger Lakes *by the numbers*

- 9 County Region - 6,756.5 Square Miles
- 528,490 Households (Population 1,217,156)
- 34,543 Households (7%) with No Broadband Access

Finger Lakes Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

Ovid and Romulus Broadband Project - $114,015

The Trumansburg Telephone Company will provide broadband to 110 households in the towns of Ovid and Romulus in Seneca County who currently have no broadband services available to them. The project will also offer free digital literacy training and discounts on subscription fees.

Yates County Open Access Fiber Network - $2,407,049

Yates County will build and operate a fiber-optic ring with spurs to remote areas within the County of Yates. This network will serve as a backbone for the development of community-based broadband initiatives. The open access fiber network will be 68 miles long, passing 10,400 households and available for use within each town it routes through.

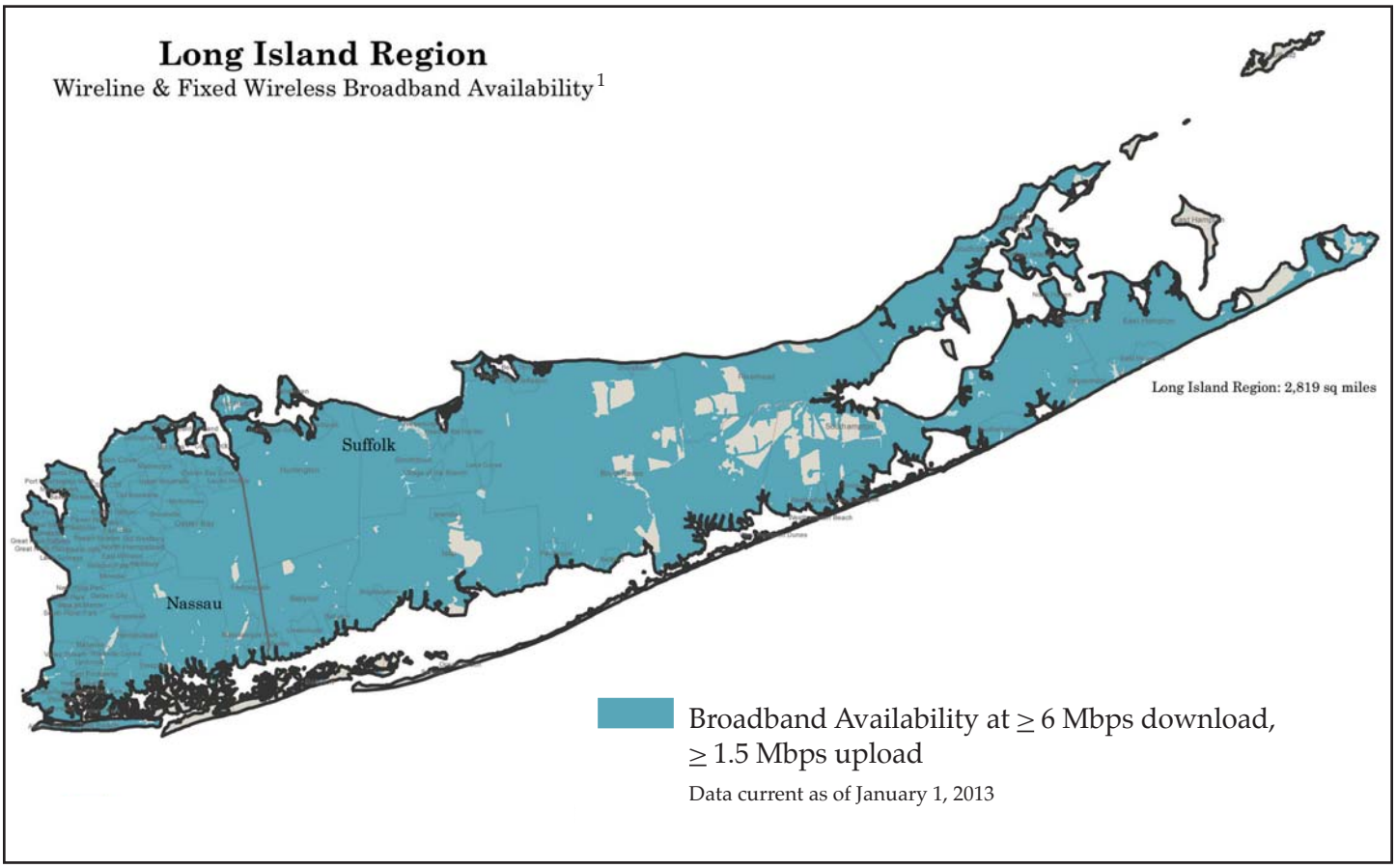
Long Island

Composed of only two counties, Nassau and Suffolk, the Long Island region is more populous than 38 states. Long Island is a world leader in technology development and is home to several research campuses and laboratories, and the Hauppauge Industrial Park – the largest industrial park on the East Coast with over 1300 companies and 55,000 employees. Like the New York City and Mid-Hudson regions, broadband service is widespread. 97% of the nearly 2.8 million people living in the region have access to broadband services. However, due to the large population, when you look at the number of unserved residents, 85,000 people are still without access.[1]

Long Island *by the numbers*

- 2 County Region - 2,819 Square Miles
- 1,038,331 Households (Population 3,000,000)
- 36,430 Households (3%) with No Broadband Access

While Nassau County has six broadband providers providing high-speed access to fiber, only 53% of Suffolk County has access to fiber-optic technology, which drives economic development by luring new businesses and driving innovation and entrepreneurship. Major broadband providers in the Long Island region include Cablevision/Optimum (38% Service Area), Verizon New York (19% Service Area), and Megapath (3% Service Area).



1 No proposed projects from the region were submitted for Connect NY grant funding.

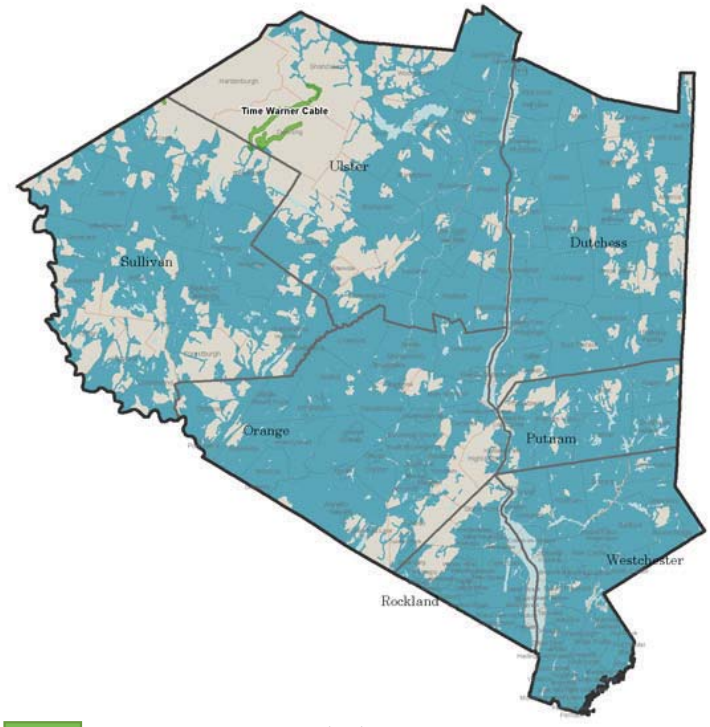
Mid-Hudson

The seven counties that make up the Mid-Hudson region are geographically, demographically, and economically diverse, with a mix of urban areas, waterfront cities, rural villages, farmlands, and forests. While five of the seven counties have high broadband availability with only 3% of the population unserved, the number of residents in Ulster and Sullivan County who are able to access the Internet is slightly lower at 95% and 93%, respectfully. Although availability numbers in Mid-Hudson are higher than many other regions of the state, Mid-Hudson has pockets of town with no access at all. For example, in the Town of Denning, located in Ulster County, 511 out of the 531 homes in the town have no broadband access. However, subsidized by a **$195,868** Connect NY grant, Time Warner will be bringing broadband access to more than a quarter of those unserved homes.

Mid-Hudson *by the numbers*

- 7 County Region - 4,764 Square Miles
- 901,589 Households (Population 1,217,156)
- 30,956 Households (3%) with No Broadband Access

Mid-Hudson Connect NY Project



Connect NY Funded Project

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

Statewide Broadband Expansion - $194,868

Through a statewide broadband expansion project, in the Mid-Hudson Region, Time Warner Cable will deploy robust high-speed Internet service to 135 households in the towns of Rockland and Denning. The project will also provide residents with access to digital TV, telephone services and security services.

CountryHouse REALTY

991 State Route 55
Grahamsville, NY 12740
T 845.985.5116 • F 845.939.2628
countryhouse@mw.com
www.CountryHouseRealty.net

October 1, 2012

Re: Connect NY

To Whom It May Concern:

As a real estate broker who also lives in the Town of Denning, I can attest to the fact that prospective buyers in our area greatly downgrade those homes without access to broadband connectivity versus similar properties in other areas with this service.

And as an employer via my vacation rentals company, Red Cottage Inc., and via Eureka Market & Café, being able to reach my employees on email is vital to efficient communication. If they do not live in an area with access to broadband, it makes my job more difficult, and is a consideration when I hire.

Managing about 30 higher-end vacation rental properties and bringing hundreds of people to Denning alone, over the course of the year, the lack of broadband discourages longer-term visits in favor of homes in other towns.

I would strongly encourage you to view our area as one that would greatly benefit from this worthwhile program.

Yours sincerely,

Jennifer Grimes
President
Country House Realty, Inc.
Red Cottage Inc.
Eureka Market & Café

The Cottage
PO Box 2
Claryville, NY 12725
H) 845-985-5146

"As a real estate broker, I can attest to the fact that prospective buyers in our area greatly downgrade those homes without access to broadband connectivity."

Edwin Sanchez
60 Dinch Road
Claryville, NY 12725
845/899-7221

FOR CONNECT NY BROADBAND

To Whom It May Concern:

My name is Edwin Sanchez. I am a produced and published playwright/author. Much of my day-to-day business is done online with the emailing of scripts and communications with theatres and editors. Because I live in the hills of Denning and not in New York City, the Internet is crucial to me and my livelihood. The current satellite connection I now have is neither fast enough nor dependable enough for me to be able to maximize my work financially.

I am also a playwriting teacher with Primary Stages in New York City where I go in, once a week for a class. However, I lost the ability to teach an online class because I have no access to Skype. These classes would have more than doubled my business and my income and a brought much-needed economic increase to the Town of Denning.

In this day and age there is simply no reason that broadband should not be available to all.

Please seriously consider providing Denning with high-speed Internet capabilities.

Thank you for your time and attention.

Sincerely,

Edwin Sanchez

"In this day and age there is simply no reason that broadband should not be available to all."

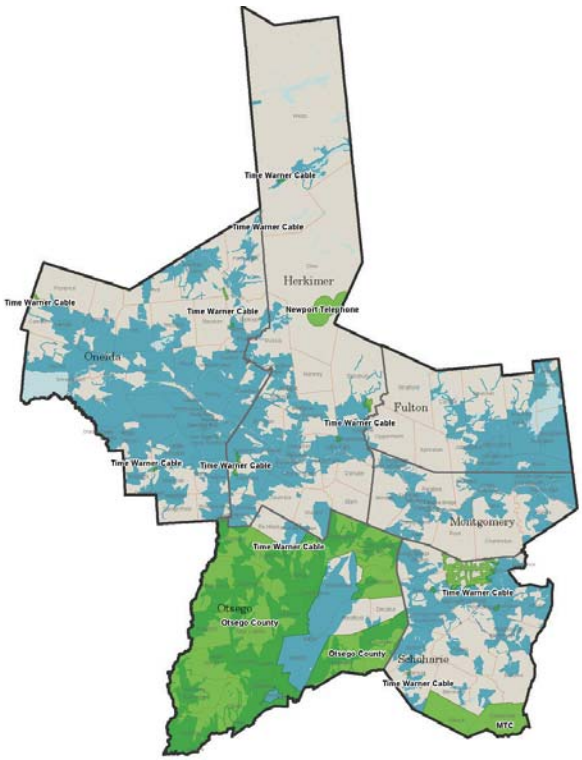
Mohawk Valley

The Mohawk Valley region is the geographic center of upstate New York and is within 100 miles of major markets in every direction including Albany, Syracuse, Binghamton, and the Canadian border. The Mohawk Valley boasts a superior quality of life as well as some of the most affordable real estate in New York. In fact, the Utica/Rome metropolitan area made *Money Magazine's* top ten list of the most affordable places to live. However, that quality of life is impeded for 15% of the Mohawk Valley region's residents who have no broadband available to them. The range of served residents in the region is broad. For example in Oneida county, where the 300-acre Marcy Nanocenter property is currently being transformed into a large, shovel-ready site for high-technology development, 92% of the population have access to broadband service. However, when you look at Schoharie County, only 62% of people can realize the same benefits that broadband brings. The Mohawk Valley Region was awarded **$3.3 million** in Connect NY funding.

Mohawk Valley *by the numbers*

- 6 County Region - 5,295 Square Miles
- 237,194 Households (Population 500,155)
- 35,620 Households (15%) with No Broadband Access

Mohawk Valley Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

Otsego County Wireless Network - $558,940

The County of Otsego IDA will partner with a last-mile provider to leverage an open access fiber backbone and various towers to deploy wireless broadband to 24 towns, 9 villages, and 1 city in Otsego County. This project will serve approximately 28,000 households, and 4,500 businesses community anchor institutions.

Broadband 1 Project - $268,840

The Broadband 1 project is a multi-region project serving the North Country and Mohawk Valley regions. In Herkimer county, Newport Telephone Company will leverage existing infrastructure to bring broadband to 113 residents and businesses and enhance emergency services.

MTC Broadband Build Expansion Project - $594,000

This multi-region Project serves the Capital, Mohawk, and Southern Tier Regions. In the Mohawk Valley region, MTC Cable will construct a fiber optic network to provide a suite of advanced telecommunications services to 470 residents and offer Ethernet service options for business applications. The network also provides future-proof architecture to support long term sustainment.

Statewide Broadband Expansion - $1,860,141

Through a statewide broadband expansion project, in the Capital Region, Time Warner Cable will deploy robust high-speed Internet service to 1,194 households in the towns of Carlisle, Exeter, Forestport, Jefferson, Litchfield, Marshall, Salisbury, Schoharie, Seward, Steuben, Webb, and the city of Little Falls. The project will also provide residents with access to digital TV, telephone services and security services.

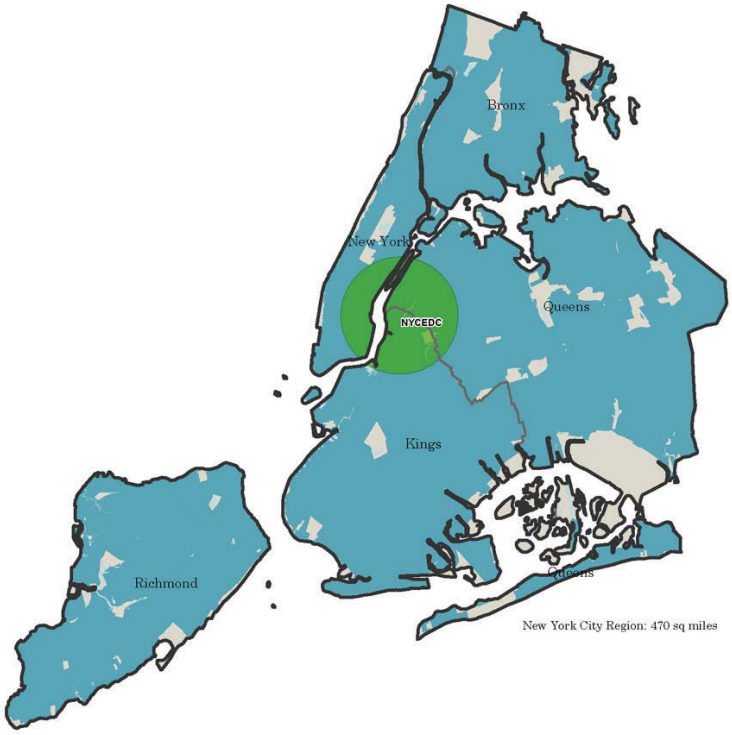
New York City

New York City is the largest city in the nation and home to one out of every 16 residents in the U.S. Within the five boroughs that make up the New York City (NYC) region, broadband availability is high at 97%. Although unserved neighborhoods are present in the region, most unserved residents in the New York City region are the result of specific buildings lacking access, rather than a complete lack of infrastructure which is prevalent in our State's rural communities. The **$1.6 million** in funding awarded through Connect NY will enable the NYC region to expand fiber to these underserved neighborhoods. While basic access provides citizens in the region with a vast number of economic and life enhancing benefits, the adoption of broadband in the NYC region can present an even greater barrier in NYC. New York City currently has a series of programs underway to increase adoption rates by expanding public computer centers, providing access to free computers, training for students, and discounted broadband service.

New York City *by the numbers*

- 5 County Region - 470 Square Miles
- 3,371,062 Households (Population 8,175,133)
- 101,150 Households (3%) with No Broadband Access

New York City Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

ConnectNYC Fiber Access - $1,636,346

In collaboration with private sector internet service providers, the New York City Economic Development Corporation (NYCEDC) will build on its efforts to eliminate digital deserts through a program which extends fiber build out with speeds of up to 1 Gigabit to approximately 25 small and medium businesses located in underserved neighborhoods. The Connect NYC Fiber Access project will have an immediate impact on the city's industrial businesses catalyzing growth within industrial business zones and building on the City's status as a center of innovation.

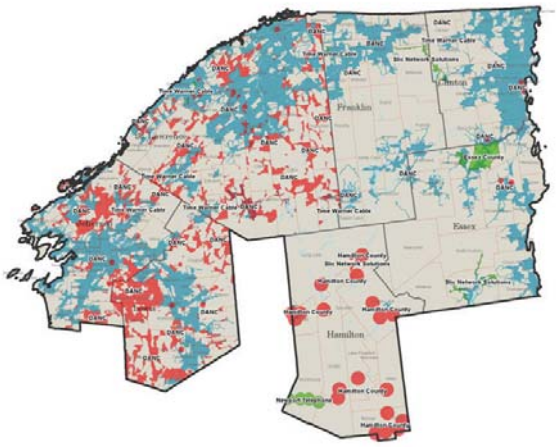
North Country

The seven counties in the North Country are comprised of 220,000 households, but only 159,000 have access to broadband at speeds fast enough to enable residents to harness the power and economic impact of Internet access. With nearly 90,000 North Country residents left out of the digital age, the region is falling behind when it comes to participating in the digital economy and the opportunities it provides. The funding awarded through the Connect NY Broadband Grant Program and Round 2 of the Regional Economic Development Council Awards will deliver approximately $11 million in funding to bridge the digital divide and enable the region to become "Forever Wired," the name of the region's comprehensive plan to expand access and utilize high speed broadband connections. The **$11 million** from Round 2 complements the **$1.5 million** delivered to the North Country in Round 1 of the Regional Economic Development Council Awards.

North Country *by the numbers*

- 7 County Region - 12,400 Square Miles
- 220,702 Households (Population 430,000)
- 57,248 Households (26%) with No Broadband Access

North Country Region Connect NY Projects



Connect NY Funded Projects

CFA Round 2 Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

Schroon Lake Next Generation Broadband - $2,162,656

Slic Network Solutions will provide Internet with speeds up to 100 Mbps, telephone, IPTV, and advance business services, utilizing fiber to the home and wireless technology, to 454 households in the towns of Schroon and North Hudson. In addition, wireless hot spots for frequently visited public locations including the public beach in Schroon Lake and area camp sites will be served.

Bellmont North Next Generation Broadband - $1,012,366

Slic Network Solutions will provide high-speed Internet with speeds up to 100 Mbps, telephone, IPTV, and advance business services, utilizing fiber to the home and wireless technology, to more than 500 households and businesses in the Adirondack Park to the northern end of the Town of Bellmont.

Lyon Mountain Broadband Project - $976,426

Slic Network Solutions will provide high-speed, low cost Internet, with speeds up to 100 Mbps,, telephone, IPTV, and advance business services, utilizing fiber to the home and wireless technology, to 467 households and 13 businesses in the community of Lyon Mountain.

Statewide Broadband Expansion - $269,132

Through a statewide broadband expansion project, in the Capital Region, Time Warner Cable will deploy robust high-speed Internet service to 264 households in the towns of Ellenburg, Gouverneur, Moira, Oswegatchie, Pitcairn, Theresa, and Tupper Lake in Clinton, Franklin, Jefferson, and St. Lawrence Counties. The project will also provide residents with access to digital TV, telephone services and security services.

Essex County Broadband Service Expansion - $557,000

The Town of Jay will provide broadband service (30 Mbps to 100 Mbps) to more than 1,900 households currently without access in the towns of Jay and Wilmington. The project will also provide digital video services and potentially a competitive telephone service.

Broadband 1 Project - $303,160

The Broadband 1 project is a multi-region project serving the North Country and Mohawk Valley regions. In the North country, Newport Telephone Company will leverage existing infrastructure to provide broadband service to 117 residents, businesses and community anchor institutions in Hamilton County. The project will also enhance emergency services in the county.

Round 2 Regional Economic Development Council Grants

North Country Public Emergency Network - $2,200,000

The Development Authority of the North Country (DANC) will construct a Public Emergency Network for Jefferson, St. Lawrence, Lewis, Franklin, Essex, and Clinton Counties. The network will provide high-speed broadband services to 21 public emergency locations and 20 municipal buildings supporting emergency operations.

North Country Telecommunications Loan Fund - $500,000

The Development Authority of the North Country (DANC) will create and manage a loan fund that will be used to support last mile build-out of high-speed broadband for residents and businesses in Jefferson, Lewis, and St. Lawrence Counties. Utilizing the loan fund, local governments, IDA's and private broadband service providers can construct last-mile build-outs to connect unserved households.

Hamilton County Broadband Phase II - $1,700,000

Hamilton County will provide high-speed Internet access (10 Mbps) to more than 8,000 residents in the towns of Long Lake, Indian Lake, Blue Mountain Lake, Raquette Lake, Inlet, Speculator, Wells, Hope, Benson, Piseco, and Lake Pleasant currently without access. With only 3% of the population having access to broadband, Hamilton County has the largest percentage of unserved residents in the State. This grant will complement a previously awarded $596,000 New York State grant.

Long Lake Next Generation Broadband - $1,400,000

Slic Network Solutions will provide high-speed, low-cost broadband service, utilizing fiber to the home and wireless technology, to more than 700 unserved households in the Hamlet of Long Lake and the surrounding area. The broadband service will also be capable of delivering telephone, video and advanced business services.

Southern Tier

The Southern Tier stretches along the Pennsylvania border, and harbors the cities of Elmira, Ithaca, Corning, and Binghamton. Although the Southern Tier region is home to several high-tech firms, including Corning, Lockheed Martin, IBM, BAE Systems, and Rockwell Collins, -all Fortune 500 companies- a staggering 16% of the Southern Tier region still lacks access to high-speed broadband service. One of the five major strategies listed in the Southern Tier Regional Council's five-year Strategic Economic Development Plan recognized broadband as a backbone for enhancing economic development for the region. With more than **$2.6 million** awarded to three broadband project sponsors, many unserved Southern Tier residents will soon realize all the benefits of broadband service.

Southern Tier *by the numbers*

- 8 County Region - 6,251 Square Miles
- 307,071 Households (Population 657,909)
- 53,022 Households (17%) with No Broadband Access

Connect NY Broadband Funding

The Smithville Project - $24,010

Haefele TV Inc. will build fiber optic cable utilizing existing infrastructure to deliver broadband services to 350 households in the towns of Smithville and Greene in Chenango county. This new service will provide speeds of 7 Mbps download and 1.5 Mbps upload to approximately 100 new subscribers.

Tompkins-Cayuga Ubiquitous Last Mile Coverage - $1,307,440

The Tompkins-Cayuga Ubiquitous Last Mile Coverage is a multi-region project serving the Southern Tier and Central New York regions. In the Southern Tier region, Clarity Connect, Inc. will provide state-of-the-art broadband service to more than 2,500 households, farms, parks and community anchor institutions currently without access to high speed broadband service. Seventy-five percent of the new service territory will receive speeds of 32 Mbps download/7 Mbps upload, while the remainder will receive download speeds between 6.5 Mbps and 32 Mbps. Eighteen months after completion of the service area, a planned upgrade will increase average download speeds ranging from 13 to 64 Mbps.

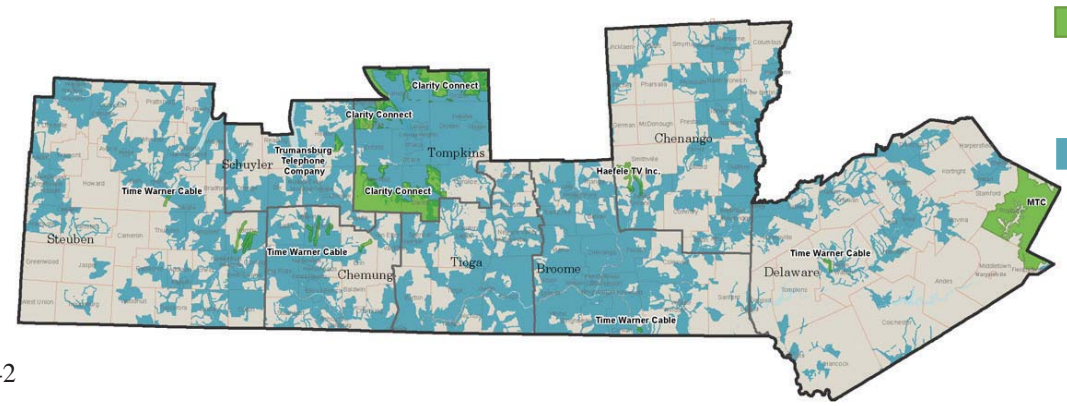
MTC Broadband Expansion Project - $882,000

The MTC Broadband Expansion project is a multi-region project serving the Capital, Mohawk and Southern Tier regions. In the Southern Tier region, MTC Cable will construct a fiber optic network, which will provide advanced telecommunications services to more than 1,274 residents, businesses, and anchor institutions. A variety of broadband service offerings will be available with download speeds ranging from 5 Mbps to 50 Mbps, along with Ethernet service options for business applications. The fiber-to-the-home network also provides future-proof architecture to support new services and long term sustainment.

Statewide Broadband Expansion - $567,621

Through a statewide broadband expansion project, in the Southern Tier region, Time Warner Cable will deploy robust high-speed Internet service to 519 households in the towns of Bath, Erin, Hornby, Kirkwood, Veteran, and Walton; communities located within Broome, Chemung, Delaware, and Steuben county. The project will also provide residents with access to digital TV and telephone and security services

Southern Tier Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

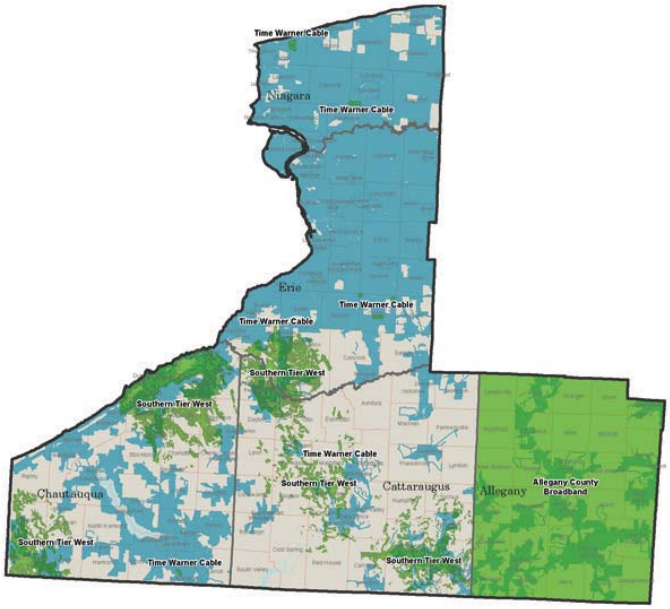
Western Region

The five counties in Western New York – Allegany, Cattaraugus, Chautauqua, Erie, and Niagara – are home to nearly 1.5 million New Yorkers. The work of the Western Region Economic Development Council is built on the region's "Strategy for Prosperity" – a comprehensive plan to create a more dynamic and sustainable economy for its region and citizens. A fundamental key to creating a sustainable economy is access to high-speed Internet. However, 8% of the Western region still does not have access to broadband. In the Western region, Allegany and Cattaraugus County stand out for their lack of broadband availability. In Allegany county, only 54% of homes can access broadband. Broadband availability in Cattaraugus County is slightly higher at 64%. Western NY was awarded **$1.7 million** in Connect NY funding. More than half of that funding is allocated to expand broadband to residents in Alleghany and Cattaraugus counties; dramatically decreasing the number of unserved residents.

Western Region *by the numbers*

- 5 County Region - 6,233 Square Miles
- 653,265 Households (Population 1,399,677)
- 54,895 Households (8%) with No Broadband Access

Western Region Connect NY Projects



Connect NY Funded Projects

Broadband Availability at ≥ 6 Mbps download, ≥ 1.5 Mbps upload

Data current as of January 1, 2013

Connect NY Broadband Funding

Allegany County Broadband - $800,000

Allegany County will create a county-wide platform for providing access to an existing network, delivering broadband to 28 local communities and 17,440 households that are currently without broadband service.

Southern Tier Broadband - $672,452

The Southern Tier West Development Foundation will expand access to broadband service and increase broadband speeds through a WiMAX (Worldwide Interoperability for Microwave Access) system to more than 10,000 households in towns and villages in the counties of Chautauqua, Allegany, Cattaraugus, and Erie, passing more than 41,000 households. The project will also partner with local medical clinics to enhance electronic medical records, and upgrade hardware and software at libraries in Chautauqua, Cattaraugus, Allegany, Steuben, and Chemung counties.

Statewide Broadband Expansion - $320,283

Through a statewide broadband expansion project in the Western region, Time Warner Cable will deploy robust high-speed Internet service to 292 households in the towns of Brant, Boston, Cambria, Colden, Kiantone, Mansfield, and Porter; communities located within Chautauqua, Cattaraugus, Erie, and Niagara county. The project will also provide residents with access to digital TV and telephone and security services.

The W!ld Center Expands its Reach With New State of-the-Art Broadband System

Naturalist Katie Morgan leads a live climate change program for retired adult learners while Kendra Ormerod directs the camera.

The W!ld Center, a not-for-profit natural history museum in the Adirondack Park, is dedicated to helping people discover and explore the natural wonders of the region.

Seeking more ways to reach distant and unreached audiences, the Museum is turning to new technologies. On June 3, 2013, The W!ld Center will have access to a new, state-of-the-art, high-speed broadband system. This high-speed Internet access will allow the Center to expand its services to include videoconferencing, web-based learning opportunities for students and adults, and live, interactive webinars, broadcast on **www.wildcenter.org**.

On October 25, 2013, The W!ld Center, along with ADKAction.org, will sponsor a forum for regional teachers and school administrators focusing on opportunities and best practices of using this new broadband technology in the classroom.

In addition to providing this opportunity on-site at The W!ld Center, the conference will also be streamed live to participating satellite campuses at regional schools, allowing many more teachers to participate.

These new opportunities are a terrific complement to the already engaging programs offered at The W!ld Center, and a chance for virtual visitors to experience the wonder of the Adirondacks.

Telemedicine Health Project To Extend Adirondack Health's Medical Services

With the help of a $112,000 telemedicine grant from the United States Department of Agriculture, Adirondack Health will implement a telemedicine health project to reduce travel for residents, patients, and providers, as well as enhance current medical services. Adirondack Health will utilize secure web-based technology to implement the telemedicine system, which will initially be used among Adirondack Health's facilities.

For example, a virtual connection can allow a nurse at either Living Center to consult with the Emergency Department at Adirondack Medical Center, if a resident is experiencing complications. In some cases, a routine hospital visit can be a stressful or exhausting experience for a Living Center resident who may be elderly or frail. The telemedicine connection with the Emergency Department can determine if a health concern can be managed within the comfort of the resident's home environment at the Living Center.

As the system develops, Adirondack Health will broaden the telemedicine network to include regional connections to provide specialty services not available locally. This could eliminate the inconvenience and cost of travel for Tri-Lakes residents.

"As we all know there are many challenges for health care providers in a rural area such as ours," said Chandler Ralph, President and & CEO of Adirondack Health. "Nevertheless, we are committed to overcoming those challenges to maintain the level of sophisticated and compassionate care our community expects and deserves. This telemedicine project is yet another example of overcoming obstacles to meet the needs of our patients and Living Center residents."

10.0 New York State Recommendations - Establishing National Leadership

New York State Broadband Goals:

» ACCESS: Adopt Aggressive Speed and Availability Goals For Broadband Access

Goal 1
- **Every Community Anchor Institution in New York will have access to Broadband at 100 Mbps download / 50 Mbps upload.**

Goal 2
- **Every New Yorker will have access to affordable broadband at 100 Mbps download / 50 Mbps speeds.**

Goal 3
- **Every New Yorker will have access to affordable mobile broadband.**

Goal 4
- **New York State will establish 10 Broadband Gigabit Corridors across the state.** By creating high-speed broadband network for economic development and institutional use, and expanding access to broadband and dark fiber.

» ADOPTION: Adopt Aggressive Broadband Adoption Goals

Goal 5
- **New York State will achieve high rates of broadband adoption rate of 80%.**

» UTILIZATION: Adopt New York State Master Broadband Strategy - Coordinated statewide strategy to leverage federal, state, and local assets to expand broadband access in rural areas for multiple public sectors (public safety, healthcare, education, consumer, energy, community anchor institutions, and citizen access). Ensure that all communities are fully utilizing broadband technology to purse economic opportunity, improve government services, and fully leverage healthcare, public safety, and educational resources.

Any effective broadband strategy would not be complete unless utilization goals were also an integral part of the master plan. A state broadband strategy needs to ensure that every key economic and public sector is fully utilizing robust infrastructure to derive maximum benefits to the sector, and the economy.

Goal 6
- **New York State will develop a Master Broadband Plan to connect State-owned assets and leverage federal, state and local funding to build and connect an ultra high-speed broadband network to meet the needs of multiple business and public sectors:**

Sector Utilization Goals - Develop sector specific utilization targets

1. Education – All NYS schools will have access to 100 Mbps Download /50 Mbps Upload Speeds.

2. Healthcare - All NYS schools will have access to 100 Mbps Download / 50 Mbps Upload Speeds.

3. Public Safety – NYS will have a strategy to implement an interoperable public safety network, which meets federal standards and includes connectivity in every county.

4. Energy – Broadband will enable SmartGrid applications across the State.

> "Governors who show an interest in developing broadband are a spur to building the coalitions and institutions that can enhance broadband infrastructure deployment and adoption in a state. Legislative leadership is also critical to ensuring that regulatory barriers are minimized, that rights of way access is expanded and that other policies needed to promote deployment and adoption are developed."
>
> *-Technet Report, 2012*

- New York's grid is aging – 59% of the state's generating capacity and 84% of transmission facilities were put in operation before 1980, and over 40% of the state's transmissions lines will require replacement within the next 30 years at an estimated cost of $25 billion. This need represents an opportunity to upgrade the transmission system to a more distributed smart grid network. (2100 Commission Report)
- Over 90% of all U.S. consumers would pay for a smart thermo stat or smart water controls if the solution saves them 20% on energy consumption. (Parks Associates)
- Energy monitoring and control systems have demonstrated energy savings approaching 17% in some homes. (Parks Associates)

> "You want to help small businesses, you want to help your entrepreneurs, you want to make it possible for people living in remote towns and upstate New York and West Texas to be part of the global economy? Then stop pretending we can do it with South Korea having average download speeds of four times ours."
>
> *- President Bill Clinton, 2012*

A clear plan for widespread implementation of broadband technologies in New York will guide the state's broadband development efforts. Adopting a coordinated approach, considering a combination of executive leadership, State funding, and public/private cooperation will ensure that investments in broadband also support regional priorities and the specific needs of all key sectors including education, health, agriculture, and public safety.

The following recommendations for improving broadband infrastructure, access and adoption are aimed at making New York a national leader in broadband for economic development and high-tech innovation. A New York State Broadband Infrastructure Bank will provide critical funding for broadband access in unserved and underserved areas, as well as financing for economic development opportunities.

Funding for broadband infrastructure improvements has historically been divided unevenly among federal, state, local, and providers based on specific sectors. The federal government has often delegated project selection and oversight responsibilities for infrastructure projects to state, local, and other recipients, which can weaken alignment to federal program goals and efforts to ensure accountability.

> "Widespread broadband connectivity will also play a critical role in realizing many other state goals, including positioning New York as a leading hub for high-tech innovation, transforming the delivery and consumption of electricity, enhancing educational opportunities for students of all ages, and expanding the reach of quality and affordable healthcare services."
>
> *- Advanced Communications Law & Policy Institute (ACLP)*

Broadband Adoption Recommendations

10.1 Increase Awareness

Highlight broadband success stories describing what broadband is capable of doing to increase economic development. Increasing awareness and sharing best practices brings consumers, government leaders and private providers together to explore opportunities to leverage broadband in their communities.

10.2 Personal Tax Credits

Personal Tax Credits for broadband expenses incurred in operating a business from home, use of broadband by low-income households, and the purchase of certain computer equipment used to access the Internet.

10.3 Broadband Infrastructure Bank

A New York State Broadband Infrastructure Bank will provide critical funding for broadband access in unserved and underserved areas, as well as financing for economic development opportunities.

Funding for broadband infrastructure improvements has historically been divided unevenly among federal, state, local, and providers based on specific sectors. The federal government has often delegated project selection and oversight responsibilities for infrastructure projects to state, local, and other recipients, which can weaken alignment to federal program goals and efforts to ensure accountability.

Projects would be selected by the NYSBIB's independent, bipartisan leadership based on merit and demonstrated need. Evaluation criteria may include economic benefit, greatest need, job creation, highest leverage of state funding, regional benefit, and other public good considerations. By emphasizing merit and need, the state will be assured that public funding will flow to recipients with the greatest need, with a focus on return on investment objectives and financial discipline.

10.4 I-Link-NY Consolidated Funding Portfolio

Utilizing a suite of private, federal, and state broadband grant and loan programs, broadband service providers can apply for funding via a consolidated funding portal – eliminating complex application processes and leveraging a suite of financial incentives.

> "We need to see the Internet as part of our global commitment to infrastructure and I hope there will be an infrastructure bank set up in the U.S. this year, and I hope part of its commitment will be to guarantee universal broadband access at competitive speeds."
>
> *-President Bill Clinton, 2013*

10.5 Leverage State Owned Network Assets for Broadband

New York State currently owns, manages, or has the legal authority to use a significant amount of broadband fiber and network assets, but many of these assets remain underutilized or completely unused. Through a process of identifying and mapping state broadband assets, these critical infrastructure components can be connected to other networks to provide a statewide open access fiber backbone for community anchor institutions, public safety, healthcare, education, and economic development. Public/Private partnerships can further enable last-mile access for unserved communities.

Leveraging existing state technology assets, and future strategic IT procurement, to build a statewide broadband middle mile network will ensure that the broadband infrastructure deployment in all state buildings, and on state land, is maximized. Partnerships with commercial providers could also be forged to use wireless 4G/LTE network to serve remote rural locations, community anchor institutions and state agencies, where wireline connectivity would not be feasible.

The State's fiber optic infrastructure has grown regionally over time, as determined by opportunity and need. Many different organizations have constructed, own and operate these regional fiber networks, including counties and BOCES. They are operated independently, in most cases do not interconnect, and a complete inventory is unknown. Many of these networks were built and operated with public funds, and may have unutilized capacity.

10.6 NYS Broadband Gigabit Corridors

Governor Cuomo has proposed ten Innovation Hotspots throughout the state as part of this 2013 Budget to spur economic development. To enhance the incentive package for recruitment of companies, Gigabit networks should connect institutional users in the selected areas. Companies selecting the incentive package would receive use of these networks at no charge for a period of two years.

10.7 Enact "Dig Once" Policies

Laying fiber optic cable is an expensive proposition because of the cost of labor and regulatory approvals required to gain access and dig the trenches required to install fiber. Dig Once policies require a thoughtful analysis of the opportunities to lay fiber when road and bridge projects commence. By digging trenches, providing conduits, and laying fiber during the road construction process, over 90% of the total cost is avoided in areas where access to fiber would benefit local communities.

10.8 Streamline "Makeready" Activities

Access to Rights of Way (ROW), tower siting, local regulations, and the pole attachment process varies from municipality to municipality. Access to federal and state property during the "makeready" process is even more complicated and time-consuming. By standardizing the entire makeready process, including uniform state agency procedures to access state property, providers would be incentivized to build broadband networks, resulting in faster installations at lower costs.

To successfully implement a broadband deployment project, a provider must place equipment and cabling across multiple geographic boundaries and jurisdictions where permitting requirements and procedures vary greatly across cities, right-of-way owners, and projects – increasing cost and deployment time. New York should enact legislation requiring local governments to use a standard ROW application, to make decisions concerning the grant of a ROW using standard criteria, and to make that decision within an established period of time.

New York State must streamline regulatory approval process for tower siting, pole attachments, and access to rights-of-way. Model permitting standards, encouraging collaboration among providers, and clearing regulatory barriers speed broadband expansion efforts and encourage investment.

a. Coordinate with state agencies on right-of-way issues, provider access to towers, right-of-way and other government resources that may be needed to improve broadband access.

b. Model ordinance to facilitate sharing of state owned assets, right of way, and terms of condition, use requirements, and fees for access to public facilities.

10.9 Promote High Speed Broadband Access for Economic Development

Building broadband networks is critical for economic development – but only if institutions are aware of the capacity while they are deciding on a location. Providing business prospects with current information regarding network capacity, access to dark fiber, and the technological potential of municipalities, counties, and sites would encourage new companies to relocate to New York, and expand their geographic options beyond the borders of urban areas.

NYC Connected

More than 300,000 New Yorkers, living in the five boroughs of New York City have been touched by NYC Connected initiatives. Funded in part by the American Recovery and Reinvestment Act's Broadband Technology Opportunities Program, NYC Connected is increasing broadband adoption and creating public computer centers across all of New York City.

NYC Connected is composed of three programs:

- NYC Connected Communities expands the availability of public computer centers in high poverty areas. Investing in libraries, public housing facilities, senior centers and community centers across the five boroughs, the program provides more than 1,000 new work stations, and offers new resources for digital literacy, employment support, and other critical services.

- NYC Connected Foundations provides over-age, under-credited students at more than 40 city public high schools with access to free computers, digital literacy training and broadband subsidies.

- NYC Connected Learning has provided more than 20,000 low-income sixth-grade students with free computers, discounted broadband service, high-quality digital educational resources and digital literacy training.

In addition, a public/private partnership between New York City and AT&T, is now making Wi-Fi available, free of charge, at 26 locations in 20 New York City parks.

To see a video on NYC Connected visit http://www.youtube.com/watch?v=431EoGKckIo.

APPENDICES

Appendix A
Broadband Links

New York State Broadband Websites

1. Governor Cuomo's Regional Economic Development Council Guidebook
   http://www.governor.ny.gov/regional-council-guidebook.pdf

2. Governor Cuomo's Regional Economic Development Council Consolidated Funding Application (CFA)
   http://www.esd.ny.gov/ConsolidatedFundingApplication.html

3. New York State Broadband Program Office – New York's single point of contact for state broadband news, events, funding opportunities, and announcements
   http://www.nysbroadband.ny.gov/

4. New York State Broadband Adoption Study
   http://www.nysbroadband.ny.gov/themes/broadband/images/BroadbandAdoption.pdf

5. New York State Broadband Map - The State of New York has undertaken a massive effort to build a statewide broadband map showing usage and access to broadband technology to measure and assess the existing broadband landscape
   http://www.broadbandmap.ny.gov/map

6. New York State Broadband Speed Test - The faster the connection, the greater the opportunities. The State Office of Cyber Security is conducting the "New York State Speed Test" to collect actual broadband speeds consumers are experiencing and where they are located.
   http://www.nyspeedtest.org/

Federal Broadband Websites

7. BroadbandUSA website: Monitors how American Reinvestment and Recovery Act (ARRA) broadband funds are being spent throughout the United States.
   http://broadbandusa.gov/

8. Website dedicated to digital literacy resources and collaboration opportunities.
   http://www.digitalliteracy.gov/

9. Federal Communications Commission (FCC)
   http://www.fcc.gov/

10. National Broadband Availability – Rural and Urban Areas
    http://www.broadbandmap.gov/download/Broadband%20Availability%20in%20Rural%20vs%20Urban%20Areas%20June%202011.pdf

11. National Broadband Plan
    http://download.broadband.gov/plan/national-broadband-plan.pdf

12. National Broadband Map
    http://www.broadbandmap.gov/

13. The National Telecommunications and Information Administration (NTIA) – provided federal American Recovery and Reinvestment Act (ARRA) broadband funding for the Broadband Technology Opportunities Program (BTOP) and State Broadband Data and Development (SBDD) grant programs.
http://www.ntia.doc.gov/

14. *NTIA Report: Exploring the Digital Nation: Home Broadband Internet Adoption in the U.S*. - November 2011- prepared by the Economics and Statistics Administration and the National Telecommunications and Information Administration in the U.S. Department of Commerce on broadband adoption at home.
http://www.ntia.doc.gov/files/ntia/publications/esa_ntia_us_broadband_adoption_report_11082010_1.pdf

15. Universal Service Rural Health Care Pilot Program, FCC: Provides funds to cover 85% of the cost of constructing statewide or regional broadband telehealth networks and of connecting those projects to dedicated nationwide broad band telehealth networks and the public Internet.
www.usac.org/rhc-pilot-program/

International Broadband Strategy

16. The Broadband Commission for Digital Development aims to boost the importance of broadband on the international policy agenda and believes that expanding broadband access in every country is key to accelerating progress towards these goals by the target date of 2015.
http://www.broadbandcommission.org/

17. OECD Broadband Portal – Collection of comprehensive global broadband statistics
http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_100.html

Broadband Reports

18. The Economic Impact of Rural Telecommunications: The Greater Gains. This study presents evidence about the direct and indirect economic effects of the rural telecommunications industry.
http://www.hudson.org/files/publications/RuralTelecomOct2011.pdf

19. Pew Internet Report | August 2010 - This report is based on the findings of Americans' use of the Internet and provides information on the issues, attitudes and trends shaping America and the world. The report explores the impact of the internet on families, communities, work and home, daily life, education, health care, and civic and political life.
http://pewinternet.org/~/media//Files/Reports/2010/Home%20broadband%202010.pdf

Federal Broadband Funding

20. This website is a central storehouse for information on more than 1,000 federal grant programs which provide access to approximately $500 billion annually in federal awards.
http://grants.gov/

21. Broadband Technology Opportunities Program (BTOP), National Telecommunications and Information Administration, Dept. of Commerce:
www.ntia.doc.gov/broadbandgrants

22. Broadband Initiatives Program (BIP), Rural Utilities Service, U.S. Department of Agriculture
www.usda.gov/rus/telecom/arra-broadband.htm

23. Rural Broadband Access Loan and Loan Guarantee Program, Rural Utilities Service, U.S. Department of Agriculture
www.usda.gov/rus/telecom/broadband.htm

24. Community Connect Broadband Grants, Rural Utilities Service, U.S. Department of Agriculture. Grant funding to applicants proposing to provide broadband service on a "community-oriented connectivity" basis to rural communities of fewer than 20,000 inhabitants.
www.usda.gov/rus/telecom/index.htm

25. NTIA BTOP: Grant Awards Overview Report December 2010
http://www.ntia.doc.gov/files/ntia/publications/ntia_report_on_btop_12142010_0.pdf

26. Rural Telephone Loans and Loan Guarantees, Rural Utilities Service, U.S. Department of Agriculture. Provides long-term direct and guaranteed loans to qualified organizations for the purpose of financing the improvement, expansion, construction, acquisition, and operation of telephone lines, facilities, or systems to furnish and improve telecommunications service in rural areas. www.usda.gov/rus/telecom/index.htm

27. Distance Learning and Telemedicine Loans and Grants, Rural Utilities Service, U.S. Department of Agriculture provides seed money to rural community facilities (e.g., schools, libraries, hospitals) for advanced telecommunications systems that can provide health care and educational benefits to rural areas.
http://www.rurdev.usda.gov/UTP_DLT.html

28. Universal Service High Cost Program, Federal Communications Commission (FCC) provides funding to eligible telecommunications carriers to help pay for telecommunications services in high-cost, rural, and insular areas so that prices charged to customers are reasonably comparable across all regions of the nation.
www.usac.org/hc/

29. Universal Service Schools and Libraries Program (i.e., E-rate), FCC provides discounts for affordable telecommunications and Internet access services to ensure that schools and libraries have access to affordable telecommunica tions and information services.
www.universalservice.org/sl/

30. Appalachian Area Development Program, Appalachian Regional Commission: Project grants to support self-sustaining economic development in the region's most distressed counties and areas. Includes funds for a Telecommunications Initiative involving projects that enable communities to capitalize on broadband access.
www.arc.gov/index.do?nodeId=21

31. Library Services and Technology Act Grants to States, Institute of Museum and Library Services, National Foundation on the Arts and the Humanities: Provides funds for library services including installation of fiber and wireless networks that provide access to library resources and services.
www.imls.gov/programs/programs.shtm

32. Native American and Native Hawaiian Library Services, Institute of Museum and Library Services, National Foundation on the Arts and the Humanities grants to support library services including electronically linking libraries to networks.
www.imls.gov/applicants/grants/nativeAmerican.shtm

33. Education Technology State Grants, Office of Elementary and Secondary Education, Department of Education Grants to State Education Agencies for development of information technology to improve teaching and learning in schools.
www.ed.gov/about/contacts/state/technology.html

34. Ready to Teach, Office of Assistant Secretary for Educational Research and Improvement, Department of Education Grants for a national telecommunication-based program to improve the teaching in core curriculum areas.
www.ed.gov/programs/readyteach/index.html

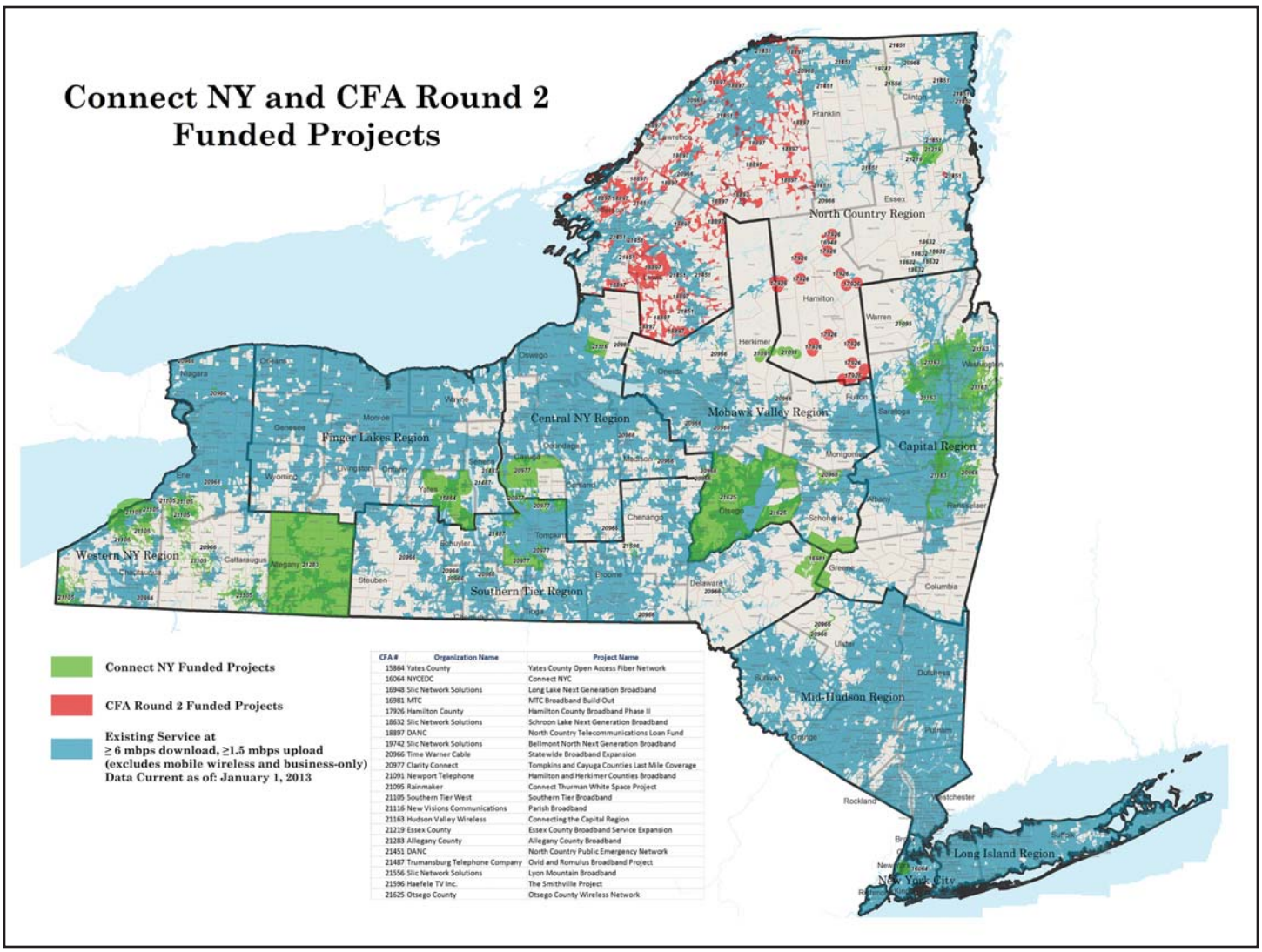
35. Special Education—Technology and Media Services for Individuals with Disabilities, Office of Special Education and Rehabilitative Services, Department of Education supports development and application of technology and education media activities for disabled children and adults.
www.ed.gov/about/offices/list/osers/index.html?src=mr/

36. Telehealth Network Grants, Health Resources and Services Administration, Department of Health and Human Services Grants to develop sustainable telehealth programs and networks in rural and frontier areas, and in medically unserved areas and populations.
www.hrsa.gov/telehealth/

37. Telehealth Resource Center Grant Program, Health Resources and Services Administration, Department of Health and Human Services: www.hrsa.gov/telehealth/

38. Licensure Portability Grant Program, Health Resources and Services Administration, Department of Health and Human Services provides support for state professional licensing boards to develop and implement state policies that will reduce statutory and regulatory barriers to telemedicine.
www.hrsa.gov/telehealth/

39. National Environmental Information Exchange Network Grant Program, Environmental Protection Agency provides funding to states, territories, and federally recognized Indian Tribes to support the development of an environmental Information Exchange Network, including broadband infrastructure.
www.epa.gov/exchangenetwork/grants/



CFA #	Organization Name	Project Name
15864	Yates County	Yates County Open Access Fiber Network
16064	NYCEDC	Connect NYC
16948	Slic Network Solutions	Long Lake Next Generation Broadband
16981	MTC	MTC Broadband Build Out
17926	Hamilton County	Hamilton County Broadband Phase II
18632	Slic Network Solutions	Schroon Lake Next Generation Broadband
18897	DANC	North Country Telecommunications Loan Fund
19742	Slic Network Solutions	Bellmont North Next Generation Broadband
20966	Time Warner Cable	Statewide Broadband Expansion
20977	Clarity Connect	Tompkins and Cayuga Counties Last Mile Coverage
21091	Newport Telephone	Hamilton and Herkimer Counties Broadband
21095	Rainmaker	Connect Thurman White Space Project
21105	Southern Tier West	Southern Tier Broadband
21116	New Visions Communications	Parish Broadband
21163	Hudson Valley Wireless	Connecting the Capital Region
21219	Essex County	Essex County Broadband Service Expansion
21283	Allegany County	Allegany County Broadband
21451	DANC	North Country Public Emergency Network
21487	Trumansburg Telephone Company	Ovid and Romulus Broadband Project
21556	Slic Network Solutions	Lyon Mountain Broadband
21596	Haefele TV Inc.	The Smithville Project
21625	Otsego County	Otsego County Wireless Network

Appendix B
Broadband Glossary

3G	Third generation mobile wireless broadband technology.
4G	Fourth generation wireless broadband, the stage of broadband mobile communications that will supersede the third generation (3G). Specifies a mobile broadband standard offering both mobility and very high bandwidth. Usually refers to LTE and WiMax technologies.
Asymmetric Digital Subscriber Line (ADSL)	Type of digital subscriber line broadband technology which transmits data over copper telephone lines.
Bandwidth	The amount of data transmitted in a given amount of time; usually measured in bits per second, Kilobits per second, or megabits per second.
Bit	A single unit of data, either a one or a zero. In the world of broadband, bits are used to refer to the amount of transmitted data. A kilobit (Kb) is approximately 1,000 bits. A Megabit (Mb) is approximately 1,000,000 bits.
BPL	Broadband Over Powerline enables broadband access using a combination of existing electrical power lines and fiber.
Broadband	High-speed Internet access, currently defined by the FCC as having data transmission speeds of at least 4 Mbps actual download and 1 Mbps actual upload.
Broadband Coverage	In wireless communications, refers to the geographic area in which one can obtain service.
Brownfield	Brownfields are abandoned or underused industrial and commercial facilities available for re-use.
Burst Rate	The maximum rate or "speed" which a network is capable of delivering within a short timeframe, typically seconds or minutes. This is usually expressed as a rate in Mbps.
Capacity	Ability of telecommunications infrastructure to carry information. The measurement unit depends on the facility. A data line's capacity might be measured in bits per second, while the capacity of a piece of equipment might be measured in numbers of ports.
Carrier of last resort	The carrier that commits (or is required by law) to provide service to any customer in a service area that requests it, even if serving that customer would not be economically viable at prevailing rates.
Census Block	The smallest level of geography designated by the U.S. Census Bureau, which may approximate actual city street blocks in urban areas. In rural districts, census blocks may span larger geographical areas to cover a more dispersed population.
Census tract	A small, relatively permanent statistical subdivision of a county, designed to contain roughly 1,000 to 8,000 people who are relatively homogeneous with respect to their demographics, economic status and living conditions.
Central Office (CO)	A telephone company facility in a locality to which subscriber home and business lines are connected on what is called a local loop. The central office has switching equipment that can switch calls locally or to long distances.
Common carrier	A telecommunications provider, such as a telephone company, that offers its services for a fee to the public.
Community Anchor Institution	Defined by the NTIA as schools, libraries, medical and healthcare providers, community colleges and other institutions of higher education, and other community support organizations and entities.

Competitive Local Exchange Carrier (CLEC)	The term and concept coined by the Telecommunications Act of 1996 for any new local phone company that was formed to compete with the ILEC (Incumbent Local Exchange Carrier). A company that offers local telephone service in competition with the legacy telephone company.
Customer Premises Equipment (CPE)	Equipment which resides on the customer's premise. Examples include set top boxes, cable modems, wireless routers, optical network terminals, and integrated access devices.
Dark fiber	A fiber optic cable that is laid and ready for use, but for which the service provider has not provided modulating electronics; usually contrasted to lit fiber, which is fiber optic cable in use to provide wired communications.
Digital Subscriber Line (DSL)	The use of a copper telephone line to deliver "always on" broadband Internet service.
Emergency Alert System (EAS)	A national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability to the President to address the American public during a national emergency. The system also may be used by state and local authorities to deliver important emergency information, such as AMBER alerts and weather information targeted to specific areas.
FCC	Federal Communications Commission: A Federal regulatory agency that is responsible for, among other things regulating VoIP.
Fiber to the Premise (FTTH)	A fiber optic deployment architecture in which optical fiber extends all the way to the customer's premise. Also known as Fiber to the Home (FTTH) or Fiber to the Building (FTTB). Typically using PON for residential deployments.
Fixed Wireless (FW)	Wireless service that uses fixed CPE and mobile portable devices to deliver data services.
Gateway device	A network device that acts as an entrance to another network and often is used to connect two otherwise incompatible networks.
Gigabit Ethernet (Gpbs)	A network transmission standard that provides a data rate of 1,000 megabits per second. (The National Broadband Plan recommends a speed of 1 Gbps for all community anchor institutions.)
Housing Units (HU)	Includes a house, an apartment, a mobile home, a group of rooms or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters.
Incumbent Local Exchange Carrier (ILEC)	The dominant local phone carrier within a geographical area. Section 252 of the Telecommunications Act of 1996 defines Incumbent Local Exchange Carrier as a carrier that, as of the date of enactment of the Act, provided local exchange service to a specific area; for example, Verizon, Windstream and Frontier. In contrast, Competitive Access Providers (CAPs) and competitive local exchange carriers (CLECs) are companies that compete against the ILECs in local service areas.
Internet gateway	The closest peering point between a broadband provider and the public Internet for a given consumer connection.
Internet Service Provider (ISP)	A company providing internet access to consumers and businesses.
ISDN	Integrated Services Digital Network: An alternative method to simultaneously carry voice, data and other traffic, using the switched telephone network.
ISP	Internet Service Provider: A company providing Internet access to consumers and businesses.
Kbps	Kilobits per second: 1,000 bits per second. A measure of how fast data can be transmitted.
Last Mile	Refers generally to the transport and transmission of data communications from the demarcation point between the end user's internal network and the carrier's network at the customer premise to the first point of aggregation in the carrier's network (such as a remote terminal, wireless tower location, or HFC node).

Long Term Evolution (LTE)	A high performance air interface for cellular mobile communication systems. LTE technology increases the capacity and speed of wireless networks relative to current 3G deployments.
Loop	Connection from the network central office to the customers' premises.
Mbps	Megabits per second: 1,000,000 bits per second. A measure of how fast data can be transmitted.
Microcell	Cell sites with extremely limited, but targeted, coverage. Microcells may provide indoor coverage in skyscrapers or may be placed in fire trucks, police cars and ambulances.
Microwave	Microwave transmission refers to the technique of transmitting information over microwave frequencies, using various integrated wireless technologies.
Middle Mile	Refers generally to the transport and transmission of data communications from the central office, cable headend or wireless switching station to an Internet point of presence.
National Broadband Availability Target	The level of service set in the National Broadband Plan that should be available to every household and business location in the U.S. The initial target is an actual download speed of at least 4 Mbps and an upload speed of at least 1 Mbps, with a proposed review and update every four years by the FCC.
Next Generation 911 (NG911)	An emergency response system that integrates the core functionalities of the E911 system and also supports multimedia communications (such as texting, email, video and voice).
Offload	Shifting telecommunications traffic from one network to another to relieve network congestion.
Overbuild	Building excess capacity. In this context, it involves investment in additional infrastructure projects to provide competition.
Point of Presence (POP)	An access point to the Internet. A point of presence is a physical location that houses servers, routers, switches and aggregation equipment. A location where a communications carrier allows other carriers to access its network.
Point to Point (P2P)	A type of fiber to the premise network in which each endpoint is connected to its serving office via a dedicated fiber optic strand.
Public Safety Answering Point (PSAP)	A call center responsible for answering emergency calls and dispatching emergency services.
Right of Way	The right to pass over or occupy a particular piece of land.
RUS (Rural Utility Service)	A division of the United States Department of Agriculture, promoting universal service in unserved and underserved areas of the country with grants and loans.
Set Top Box	A standalone device that receives and decodes programming so that it may be displayed on a television. Set top boxes may be used to receive broadcast, cable, and satellite programming.
Smart Grid	The electric delivery network, from electrical generation to the premise.
Smart Meter	A digital meter (typically electric) located on the customer premises that records energy usage.
Spectrum Allocation	The amount of spectrum dedicated (or allocated) to a specific use. In wireless, spectrum allocation is typically made in paired bands, with one band for upstream and the other for downstream.
Spectrum Band	The frequency of the carrier wave in wireless communications. Radios can transmit on different frequencies in the same area at the same time without interfering. Frequency marks the division of different parts of spectrum for different uses. Frequency is measured in Hertz (Hz). The range of frequency typically used for radio communications is between 10,000 (10 kHz) and 30,000,000,000 Hz (30 GHz). Different frequencies have different natural properties: Lower frequencies travel farther and penetrate solids better; higher frequencies can carry more information (faster data rates, etc). The best balance of these properties for the purpose of cell phones is in the range of 700 MHz.
Subscribership	Subscribership is how many customers have subscribed to a particular telecommunications service or provider. (The subscribership rate for broadband services is also called the broadband adoption rate.)

Switched Network	A domestic telecommunications network usually accessed by telephones, key telephone systems, private branch exchange trunks, and data arrangements.
T1	A digital transmission link with a total signaling speed of 1.544 Mbps. It is a standard for digital transmission in North America.
Take rate	The ratio of the number of premises that elect to take a service divided by the total number of premises in a market area; effectively, a penetration rate of homes passed. (Also referred to as the Broadband Adoption Rate.)
Universal Service	The idea of providing every home in the United States with basic telephone service.
Unserved	Those housing units or individuals without access to a broadband network capable of offering service that meets the National Broadband Availability Target.
Upstream	Data flowing from your computer to the Internet (sending Email, uploading a file).
VDSL - Very High Bit Rate Digital Subscriber Line	A form of DSL similar to ADSL but providing higher speeds at shorter loop lengths.
Video On Demand (VOD)	A service that allows users to remotely choose a movie from a digital library and be able to pause, fast forward, or even rewind their selection.
VoIP - Voice Over Internet Protocol	A voice enabling technology that employs a data network (such as a broadband connection) to transmit voice conversations.
WiMax	Worldwide Interoperability for Microwave Access (WiMAX) is a telecommunications technology that uses radio spectrum to transmit bandwidth between digital devices. Similar to WiFi, WiMAX brings with it the ability to transmit over far greater distances and to handle much more data.
Wireless ISP (WISP)	An Internet service provider that provides fixed or mobile wireless services to its customers.

Appendix C
Common Broadband Abbreviations

3G	Third generation
4G	Fourth generation
ADSL	Asymmetric Digital Subscriber Line
AMPS	Advanced Mobile Phone Service
BDIA	Broadband Data Improvement Act
BIP	Broadband Infrastructure Program
BPON	Broadband Passive Optical Network
BTOP	Broadband Technology Opportunities Program
CAP	Competitive Access Provider
CDMA	Code-Division Multiple Access
CLEC	Competitive Local Exchange Carrier
CO	Central Office
CPE	Customer Premises Equipment
DOCSIS	Data Over Cable Service Interface Specification
DS1	Digital Signal 1
DS3	Digital Signal 3
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DTV	Digital television
E911	Enhanced 911
EAS	Emergency Alert System
EPON	Ethernet Passive Optical Network
ERIC	Emergency Response Interoperability Center
EV-DO	Evolution-Data Optimized
FCC	Federal Communications Commission
FS-ISAC	Financial Services Information Sharing and Analysis Center
FTTN	Fiber-to-the-Node or Fiber-to-the-Neighborhood
FTTP	Fiber-to-the-Premise
FW	Fixed Wireless
Gbps	Gigabits per second
GHz	Gigahertz (1 billion Hertz)
GPS	Global Positioning System
GSM	Global System for Mobile communication
HD	High definition
HFC	Hybrid Fiber Coaxial
HFM	Hybrid Fiber Microwave
HU	Housing Units
Hz	Hertz
ILEC	Incumbent local exchange carrier
IP	Internet Protocol
IPAWS	Integrated Public Alert and Warning System
ISAC	Information Sharing and Analysis Center
ISO	Independent System Operator
ISP	Internet Service Provider
IT	Information Technology
IT-ISAC	Information Technology Information Sharing and Analysis Center
IXC	Interexchange Carrier
kbps	Kilobits per second
Kft	Kilo-feet (1,000 feet)
kHz	Kilohertz (1 thousand Hertz)
kWh	Kilowatt-hour
LATA	Local Access and Transport Area
LEC	Local Exchange Carrier
LTE	Long-Term Evolution
Mbps	Megabits per second (1 million bits per second)
MHz	Megahertz (1 million Hertz)
MSA	Metropolitan service area
MS-ISAC	Multi-State Information Sharing and Analysis Center
NBP	National Broadband Plan
NG911	Next Generation 911
NIST	National Institute of Standards and Technology
NTIA	National Telecommunications and Information Administration
PBS	Public Broadcasting Service
PC	Personal Computer
PDF	Portable Document Format
POP	Point of Presence
PON	Passive Optical Network
POTS	Plain Old Telephone Service
PSAP	Public Safety Answering Point
PSBL	Public Safety Broadband Licensee
PSTN	Public Switched Telephone Network
QOS	Quality of Service
R&D	Research and Development
RBOC	Regional Bell Operation Company
RSA	Rural Service Area
RUS	Rural Utilities Service
SIM	Subscriber Identity Module
SLC	Subscriber Line Charge
SMS	Short Message Service
TDMA	Time Division Multiple Access
Telco	Telecommunications
TOP	Technology Opportunity Program
TV	Television
UHF	Ultra-high frequency
USF	Universal Service Fund
VDSL	Very high bit rate Digital Subscriber Line
VHF	Very High Frequency
VOIP	Voice Over Internet Protocol
WCS	Wireless Communications Service
WiMAX	Worldwide Interoperability for Microwave Access
WISP	Wireless Internet Service Provider
WPS	Wireless Priority Service

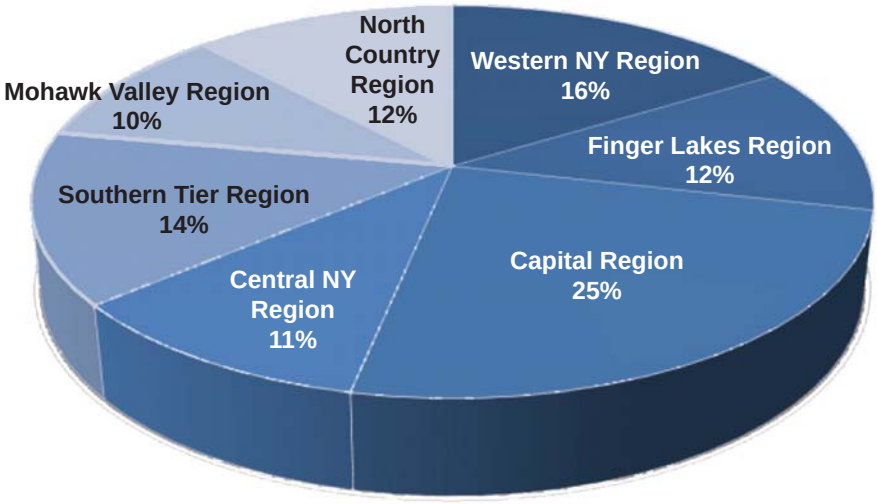
REDC	2010 Population	Estimated Population Without Access to ≥ 6 mbps download, ≥ 1.5 mbps upload	% Estimated Population Without Access to ≥ 6 mbps download, ≥ 1.5	2010 Housing Units	Estimated Housing Units Without Access to ≥ 6 mbps download, ≥ 1.5 mbps upload	% Estimated Housing Units Without Access to ≥ 6 mbps download, ≥ 1.5 mbps upload
Capital Region	1,079,207	161,000	15%	505,621	85,000	17%
Central NY Region	791,939	68,700	9%	344,778	31,300	9%
Finger Lakes Region	1,217,156	80,700	7%	528,490	34,500	7%
Long Island Region	2,832,882	85,700	3%	1,038,331	36,400	4%
Mid-Hudson Region	2,290,851	74,400	3%	901,589	30,900	3%
Mohawk Valley Region	500,155	66,800	13%	237,194	35,600	15%
New York City	8,175,133	245,000	3%	3,371,062	101,000	3%
North Country Region	433,193	77,900	18%	220,702	57,200	26%
Southern Tier Region	657,909	92,000	14%	307,071	53,000	17%
Western NY Region	1,399,677	106,000	8%	653,265	54,000	8%
Totals	**19,378,102**	**1,058,200**	**5%**	**8,108,103**	**518,900**	**6%**

DISCLAIMER: Housing Unit and Population numbers, percentages, and summed totals depicting broadband availability are rounded estimates adjusted to compensate for the prescribed data reporting methodology which assumes ubiquitous broadband availability in every reported census block.

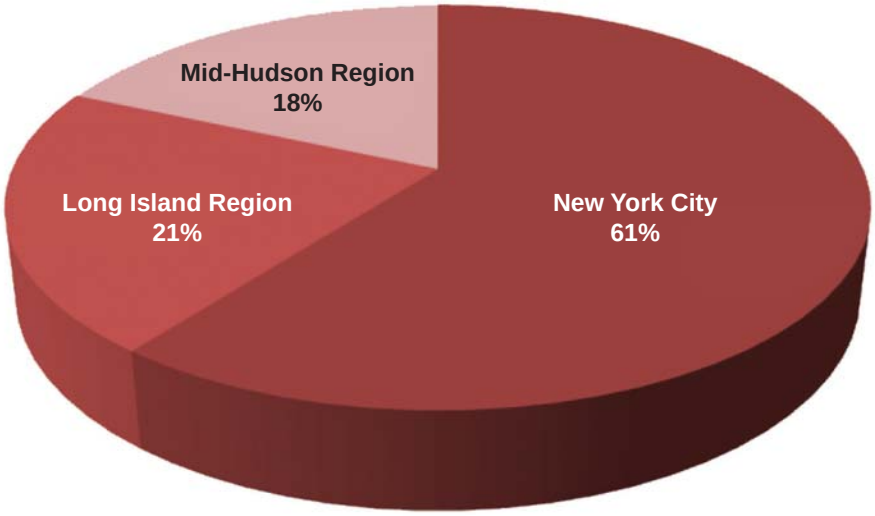
Population: 19.4 Million
Upstate: 6.1 million Downstate: 13.3 million

New York State Unserved Population 1,058,200

Upstate Population Unserved: 653,100
Percentage of Upstate Population by Region



Downstate Population Unserved: 405,100
Percentage of Downstate Population by Region



New York State
Broadband Program Office

www.nysbroadband.ny.gov
Phone: (866) 322-5787
Email: nysbroadband@esd.ny.gov

625 Broadway
8th Floor
Albany, NY 12245