

**EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL ECONOMIC COUNCIL**

**RECOVERY ACT INVESTMENTS IN BROADBAND:
LEVERAGING FEDERAL DOLLARS TO CREATE JOBS AND CONNECT AMERICA**

“One key to strengthening education, entrepreneurship, and innovation in communities...is to harness the full power of the Internet, and that means faster and more widely available broadband.”

- President Barack Obama, September 21, 2009



DECEMBER 2009

EXECUTIVE SUMMARY

Broadband touches nearly every aspect of the U.S. economy, providing Americans with unprecedented opportunities in employment, education, health care, entrepreneurship, and civic participation. For millions of Americans without adequate access to broadband, however, the possibility of falling behind in the knowledge-based economy is real. Recognizing this concern, the American Recovery and Reinvestment Act provided \$7.2 billion to stimulate economic growth and create jobs by expanding the deployment and adoption of broadband services. The Administration is now announcing the first of the Recovery Act broadband awards.

By leveraging federal dollars, the Administration's Recovery Act investments will expand broadband access throughout the nation and provide more Americans—in both urban and rural areas—with the opportunity to succeed in the digital age. Among the awards are investments in “middle-mile” networks, which connect unserved or underserved communities to the Internet backbone. These investments will maximize the impact of federal dollars by encouraging private service providers to build connections to homes and businesses using the publicly funded infrastructure. In rural areas and areas with low population density that are difficult to reach, Recovery Act awards will fund investments in the “last mile” of service, which will help provide connections to homes and businesses that would otherwise go without high-speed Internet access.

Recovery Act investments will also leverage federal dollars by targeting community institutions that provide critical services in urban and rural areas, including schools, libraries, and hospitals. Middle-mile projects will connect these institutions directly to broadband services, helping to improve the quality of their services and exposing new users to broadband opportunities at work, school, and other venues. Funding for public computer centers, including those in urban and suburban areas, will promote digital literacy among the new generation of workers through one-time investments in equipment, hardware and software, and basic training.

These critical broadband investments will create tens of thousands of jobs and stimulate the economy in the near term. By providing broadband-enabled opportunities to previously underserved communities, these investments will also lay the foundation for long-term regional economic development and foster a digitally literate workforce that can compete in the new knowledge-based economy.

“Here, in the country that invented the Internet, every child should have the chance to get online...that’s how we’ll strengthen America’s competitiveness in the world.”

- President Barack Obama, December 6, 2008

RECOVERY ACT INVESTMENTS IN BROADBAND: LEVERAGING FEDERAL DOLLARS TO CREATE JOBS AND CONNECT AMERICA

Introduction

President Obama is committed to bringing the transformative power of broadband Internet access to all Americans. He believes that broadband investment will help stimulate economic growth and create jobs while connecting more Americans to high-speed Internet and helping to address our health care, education, and energy challenges. The President's broadband initiatives will help ensure that all Americans have access to affordable broadband services and the opportunity to develop digital skills so they can compete and succeed in the world's expanding knowledge-based economy. In order to close the broadband gap in America and realize President Obama's vision, the Administration is announcing the first grant and loan awards for Recovery Act projects that expand the deployment and adoption of broadband services throughout America.

The American Recovery and Reinvestment Act provides \$7.2 billion to expand broadband services, create jobs, and stimulate economic growth. The projects receiving the first Recovery Act broadband awards will leverage federal dollars by stimulating private sector investment and connecting critical community institutions to broadband. Targeted federal investments will expand broadband access throughout the United States and provide more Americans with the opportunity to succeed in the digital age.

Recovery Act broadband investments will support the deployment of infrastructure for "middle-mile" connections that link unserved and underserved areas of the country to the Internet backbone. The new infrastructure will make it cost-effective for private service providers to enter these areas and build "last-mile" local connections to homes and businesses. In the most rural parts of America, strategic Recovery Act investments in last-mile connections will foster new economic opportunities, much as rural electrification did 70 years ago. These connections will allow small businesses to reach national and international markets, enhance the quality of life in rural communities, and provide rural residents with the types of education and health care resources available to their counterparts in the rest of the country.

Recovery Act awards will also help to establish or enhance broadband access at community "anchor institutions"—schools, libraries, hospitals, and other institutions that provide important public services. Funding to connect and upgrade these community hubs, including public computer centers in urban and suburban areas, will maximize the reach of federal dollars by allowing thousands of workers, students, and job seekers to experience the benefits of broadband. These investments will help build the new generation of digitally skilled workers and increase broadband adoption in homes and businesses.

Of the Recovery Act funds, \$4.7 billion is allocated for the Broadband Technology Opportunities Program (BTOP). BTOP grants will support projects that expand the deployment of broadband infrastructure into unserved and underserved areas, enhance the capacity of public

computer centers, and support the sustainable adoption of broadband service by users. The grants for this program, administered by the U.S. Department of Commerce, will also support projects that provide access, equipment, and training at anchor institutions, which offer outreach and assistance to vulnerable populations.

Because of the importance of broadband to rural communities and rural economic development, the Recovery Act also allocates \$2.5 billion for the Broadband Initiatives Program (BIP). Administered by the U.S. Department of Agriculture, BIP will award grants, loans, and grant/loan combinations to support projects that deploy broadband infrastructure into rural areas, helping to ensure that rural businesses, communities, and citizens have the same opportunities afforded by broadband as all other Americans. These grants and loans will provide enhanced connectivity to critical rural facilities such as hospitals, schools, and community colleges.

Box 1. Broadband Basics

Consumers obtain broadband service from “last-mile” providers that offer broadband connections through one of several technologies: cable modem service provided by a cable television company; digital-subscriber-line (DSL) service provided by a telephone company; wireless access provided by a satellite company; or other forms of wireless service that enable Internet access on mobile devices and laptop computers, such as commercial mobile service, Wi-Fi, or Wi-MAX service. For a growing number of Americans, high-speed broadband is also available from providers of fiber-to-the-home.

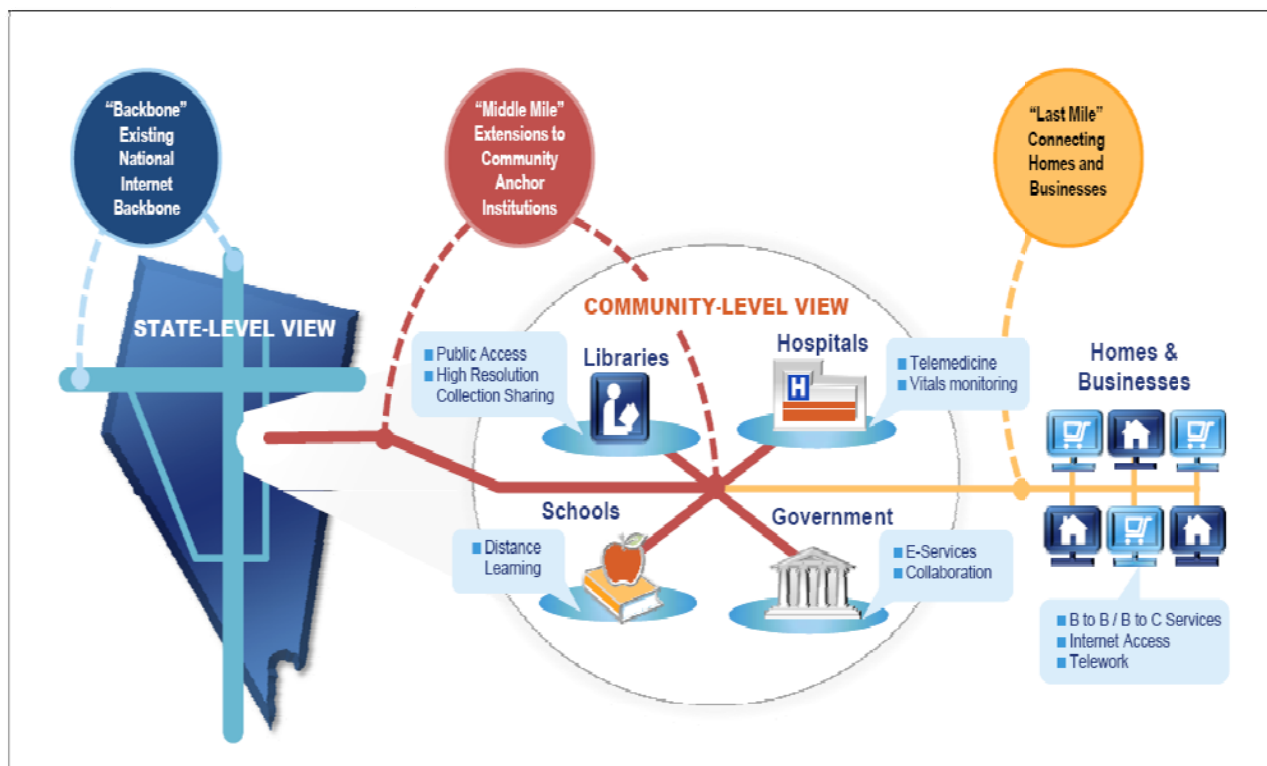
Less than a decade ago, most consumers connected to the Internet via a narrowband “dial-up” connection over a telephone line. Today, broadband provides transformative benefits to users in all sectors of the economy. It allows for the transmission of voice, data, and media services into homes and businesses at much faster speeds than dial-up. Multiple applications can run simultaneously, so that a consumer can, for example, talk on the phone and browse the Web at the same time. Software, music, and video downloads occur in seconds rather than hours, and businesses can take advantage of real-time two-way teleconferencing. Broadband in schools, universities, and libraries supports distance learning, research, and real-time video instruction. In hospitals, doctors’ offices, and community clinics, broadband can facilitate remote medical consultations, patient care, and resource sharing, reducing the need for patients to travel long distances to receive medical care. Federal, state, and local governments use broadband to provide e-government services to citizens.

Investments in the “Middle Mile”:
Catalyzing Private Sector Investment to Maximize the Impact of Federal Dollars

President Obama believes that government spending should catalyze, rather than supplant, private sector investment and innovation. In unserved and underserved areas, targeted public investment can spur commercial providers to offer affordable high-speed Internet access to homes and businesses. The Administration’s Recovery Act investments in broadband are designed to create jobs quickly and to leverage federal dollars to spur broadband access to all parts of the country without adequate service.

Investments in the “middle mile” extend the reach of the Internet into communities that would otherwise lack adequate access to broadband and its many opportunities. Moreover, Recovery Act middle-mile projects are specifically designed to improve connections to community institutions such as schools, hospitals, and libraries in order to enhance the quality of their critical services and reach large numbers of people. By focusing on these institutions, federal investment will connect more workers to broadband at their jobs, empower more children with digital skills through schools and libraries, and lead to increased broadband adoption in homes and businesses.

**Figure 1. Recovery Act Investments in the Middle Mile Will
 Connect Key Institutions and Enable Service to Homes and Businesses**



Source: National Telecommunications and Information Administration, U.S. Department of Commerce.

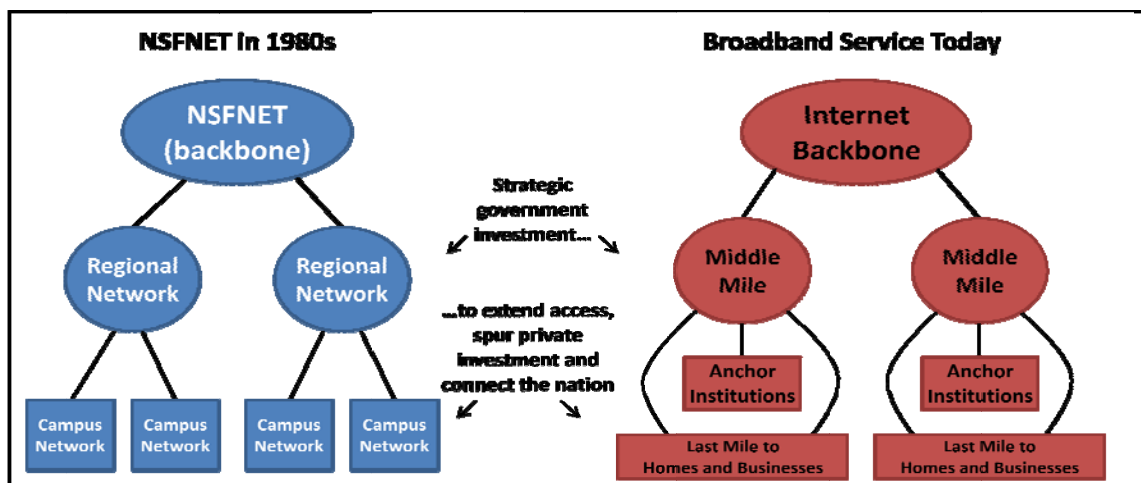
What is the “Middle Mile”?

The “middle mile” provides the critical link between the Internet backbone and the local networks that connect homes, businesses, and community institutions. The foundation of the nation’s broadband connectivity is the “Internet backbone,” a network of large, high-bandwidth fiber optic cables that span the country and the globe. To get broadband service into homes and businesses, Internet service providers such as telephone, cable, and wireless companies must connect their local networks—known as the “last mile”—to the Internet backbone. The “middle mile” is the critical connection between the Internet backbone and the last-mile local networks. When residents initiate a connection from their home, school, or work, the information flows from the last-mile network segment to the middle-mile infrastructure, which then directs the flow of traffic to the backbone network through an interconnection point. An Internet backbone provider then continues the transmission to a distant endpoint.

Middle-mile infrastructure is essential for bringing broadband to communities that were previously isolated or had only rudimentary connections. By lowering the cost of last-mile connections, investments in the middle mile allow Internet service providers to enter the market and build connections to homes and businesses. In addition, Recovery Act middle-mile projects are designed to connect directly to community anchor institutions, providing them with immediate Internet access and improving the critical services they provide.

The importance of middle-mile connectivity today has historical precedent in the embryonic stages of the development of the Internet more than two decades ago. In the mid-1980s, the National Science Foundation (NSF) funded the creation of NSFNET, a backbone network designed to connect university researchers across the country to each other and to six national supercomputer centers. To maximize the benefits of NSFNET, NSF provided seed funding for regional or mid-level networks that would connect many more university researchers.

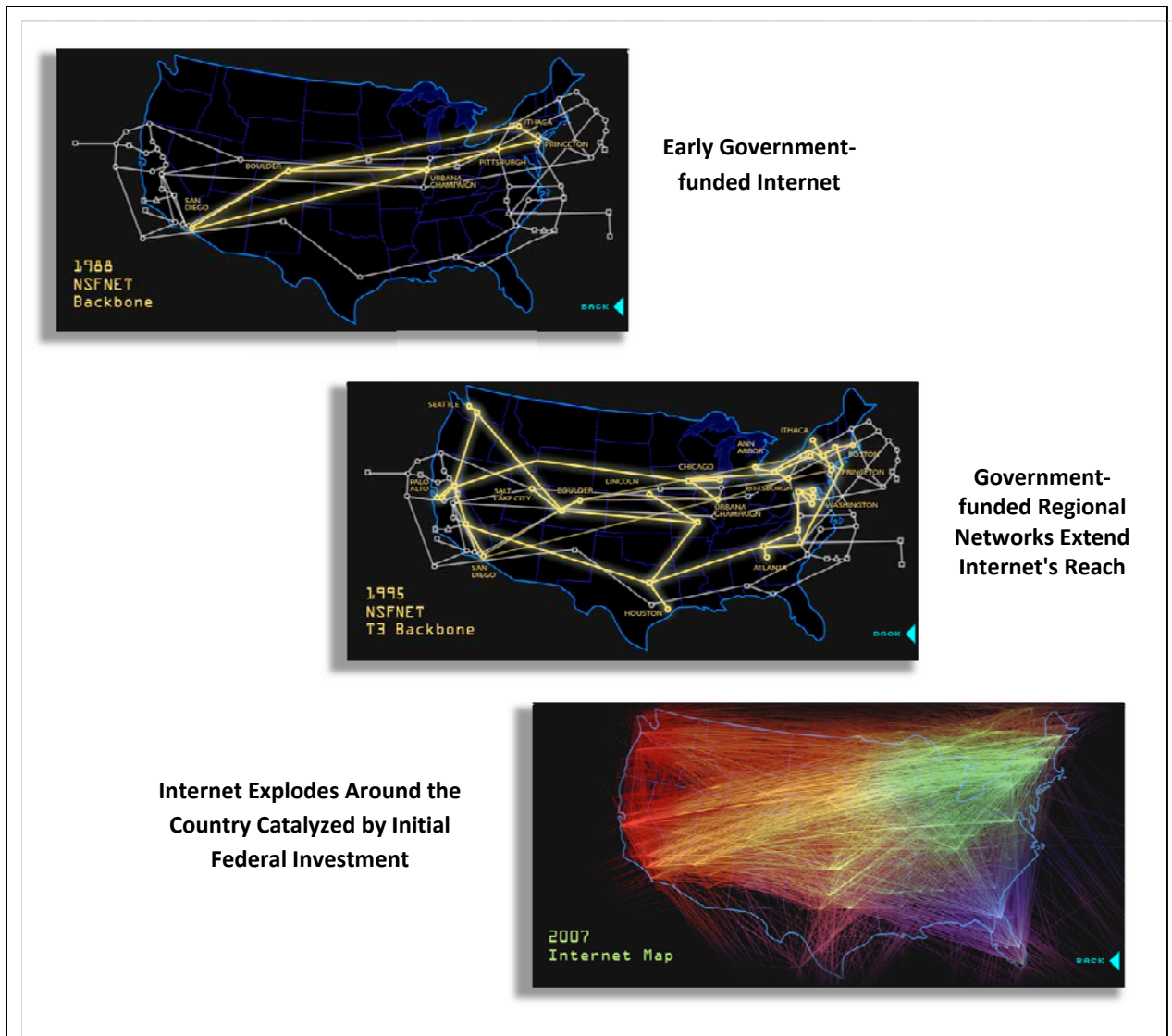
Figure 2. Historical Precedent for Middle Mile Investment



Source: Merit’s History: The NSFNET Backbone Project 1987-1995 (<http://www.livinginternet.com/doc/merit.edu/government.html>).

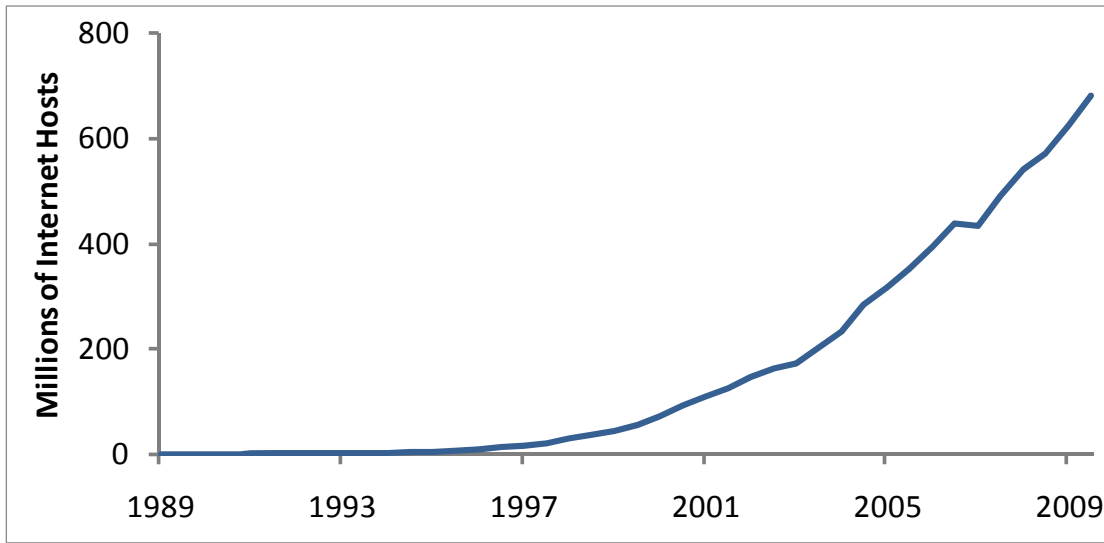
Regional networks provided the middle-mile glue that enabled universities around the country to become part of a single research community. This small amount of government investment also unleashed the phenomenal growth of the Internet service provider industry that we know today. Like the regional networks that connected the university research community two decades ago, middle-mile service today is essential to connecting consumers and community institutions in all corners of the United States to the national broadband infrastructure.

Figure 3. Growth in Internet Connections Spurred by Early Targeted Federal Investments



Source: National Science Foundation, *NSF and the Birth of the Internet* (http://www.nsf.gov/news/special_reports/nsf-net).

Figure 4. Increase in Internet Hosts, 1989-2009



Source: Internet Systems Consortium (<https://www.isc.org/solutions/survey/history>).

Recovery Act Investments in the Middle Mile Will Spur Private Investment

Economic analysis shows that the private sector may under-invest in the middle mile, leaving many communities without adequate access to broadband services and opportunities. Underinvestment is not a problem in communities where the facilities of the last-mile provider are a short distance from the Internet backbone, since private providers can build the middle mile at low cost. In other cases, however, the distance from the community to the Internet backbone may be so large that the cost of upgrading middle-mile facilities to these communities is too high for a private provider to make a profit. This is especially true in rural communities, where consumers and businesses are often unable to obtain broadband services because of absent or inadequate middle-mile infrastructure. Although these communities may have limited Internet access at low speeds, without high-speed connections they cannot stream audio and video, run businesses online, take advantage of telemedicine, or enroll in distance learning courses. With more and more applications being created for broadband connections, those without high-speed Internet are losing online opportunities rapidly.

Strategic investments in the middle mile, including the Recovery Act awards announced today, leverage federal dollars to bring broadband services to communities that would otherwise be left behind. The Recovery Act investments in middle-mile infrastructure will lower the cost of providing last-mile services to these communities, attracting private service providers and sparking new broadband connections throughout the community. Importantly, the awards come with requirements for “open interconnection,” meaning that grantees must make any infrastructure funded with taxpayer dollars available for interconnection with other networks. This specification enables Internet service providers to enter the market and connect homes and businesses by building out last-mile connections from the publicly funded middle-mile network.

Project Spotlight: Under the first wave of Recovery Act awards, the North Georgia Network Cooperative will receive a \$33.5 million grant to **deploy middle-mile infrastructure** to eight counties in the impoverished Appalachian region of northern Georgia and North Carolina. The 260-mile fiber-optic ring is expected to deliver broadband speeds and reliability never previously available in the area. The fiber ring will directly connect 245 community institutions, including public schools, colleges and universities, hospitals, and government facilities. The proposed fiber ring also includes 2,600 **interconnection points** that will allow Internet service providers to build out **last-mile connections** to

end users. The middle-mile ring will provide broadband services with greater speeds and reliability to the struggling Appalachian communities of northern Georgia, creating jobs and introducing unprecedented opportunities for economic development. This project will also deliver last-mile service to approximately 24,000 households in previously inaccessible and unaffordable areas.

Figure 5. North Georgia Network Cooperative Proposed Middle-Mile Network



The Recovery Act broadband awards also stretch federal dollars by encouraging private investment in the middle-mile infrastructure itself. Most of the broadband awards require either matching grants or a loan component to ensure financial sustainability and to maximize the leverage of federal spending. In addition, many applicants are public-private partnerships that pool resources and expertise from businesses, local governments, and non-profits in the community.

Project Spotlight: Two of the middle-mile infrastructure awards announced today will go to **public-private partnerships**. One of these awards is a \$39.7 million grant to build middle-mile infrastructure in rural upstate New York. The grantee is a partnership between ION, a for-profit company based in the capital of Albany, and the Development Authority of the North Country (DANC), a public benefit corporation. These entities have pooled their resources and knowledge of upstate rural markets to develop a regional broadband plan that will immediately connect more than 100 community institutions, including libraries, state and community colleges, and health clinics. The project will also enable last-mile connections to 250,000 households and 38,000 businesses. In combination with ION and DANC's existing broadband

networks, this new middle-mile network will help facilitate service to a majority of rural areas in New York, as well as parts of Pennsylvania and Vermont.

Box 2. Middle Mile That Works: A Historical Example from Southern Virginia

In January 2004, the Commonwealth of Virginia formed the Mid-Atlantic Broadband Cooperative (MBC) to help address the lack of affordable telecommunications infrastructure and create jobs in rural southern Virginia. With \$6 million in seed money from the U.S. Department of Commerce and a matching state grant of \$6 million, MBC built a 700-mile “middle-mile” fiber-optic network in two years. With the help of additional state grant money, the network is now more than 800 miles long and continues to grow, running throughout Southern Virginia and stretching across 60 business and technology parks.

MBC is an open-access, non-discriminatory wholesaler whose members provide last-mile end-user services to homes and businesses in rural southern Virginia. The Cooperative’s 60-plus members include both small and large telecom and Internet service providers. These providers pay fees for access to MBC’s middle-mile network, which transports data between the end users and a large Internet interconnection point in northern Virginia. Open interconnection requirements have facilitated last-mile connections to homes and businesses at affordable rates.

Development of the middle-mile network has promoted regional economic development in southern Virginia and surrounding areas. Of the \$10.5 million spent by MBC last year, 79 percent of this money was spent on companies headquartered in Virginia; 32 percent was spent with Virginia companies with operational headquarters in southern Virginia; and 25 percent was spent with certified small, women, and minority firms registered in the Commonwealth. Over the past three years, MBC’s middle-mile broadband network has contributed to bringing thousands of jobs and hundreds of millions of dollars in private sector investment to southern Virginia.

Source: Mid-Atlantic Broadband Cooperative 2009 Annual Report and www.mbc-va.com/about_mbc/index.html.

Targeting Community Anchor Institutions in Urban and Rural Areas

Community “anchor institutions” are facilities such as schools, libraries, hospitals, and public safety agencies that provide critical services and reach large portions of the community each day. Providing broadband services at these institutions can maximize federal impact by improving the delivery of services, reaching thousands of new users, and encouraging broadband adoption in both urban and rural areas.

As part of middle-mile comprehensive community projects, Recovery Act investments will help connect community anchor institutions, improving the delivery of critical services and immediately connecting thousands of people to broadband. One of the goals of the Recovery Act middle-mile investments is to connect the anchor institutions within a given community directly to the backbone, with an eye toward improving the performance and effectiveness of these institutions and reaching large numbers of people. For example, health care providers will be able to monitor patient health remotely, consult with other medical professionals, and share medical records in real-time. Broadband connections in libraries will enable students to conduct research and locate information and allow workers to identify and apply for jobs. Schools and colleges will be able to stream audio and video content from other institutions, provide and receive instruction through online distance-learning programs, and facilitate training and skill development for adult learners.

Connection of anchor institutions can also help spur broadband adoption. Workers in hospitals, libraries, and government facilities will experience the benefits of broadband at work, and students will use broadband for homework, research, and communication at school. These experiences with broadband and improvements in digital skills can spur broadband demand at home and attract last-mile providers to the area.

Project Spotlight: The Biddeford Internet Corporation, a public-private partnership between service providers and the University of Maine, will receive a \$25.4 million Recovery Act grant to construct middle-mile infrastructure across rural Maine. The project, known as the “Three Ring Binder,” will include three fiber-optic rings extending from the most rural and disadvantaged areas of the state, to the coast, and through the mountainous regions of western Maine. The 1,100-mile network will pass more than 100 communities with 110,000 households, **600 anchor institutions**, and a number of last-mile providers. The project will connect 10 University of Maine campuses and outreach centers, three community colleges, and 38 government facilities. Broadband access will help these anchor institutions better serve students, workers, clients, and citizens. According to Biddeford, the New England TeleHealth Consortium and the Franklin County Healthcare Network will use this middle-mile infrastructure to implement advanced health care networks as part of an effort to **improve delivery of rural health care services.**

For urban and suburban areas in particular, Recovery Act investments in public computer centers and sustainable adoption will leverage federal dollars by facilitating digital literacy among a new generation of users. Many underserved communities are located in urban and suburban areas where broadband is available but adoption rates are low because of

insufficient exposure to the benefits of broadband or lack of affordability. The Recovery Act includes funding for computers, equipment, networking, hardware and software, and basic digital training at public computer centers such as libraries and community colleges. Through these one-time investments, federal funding will make broadband more accessible and affordable to more Americans, expose a new generation of workers and consumers to the benefits of broadband, help to improve American competitiveness in the world, and bolster digital skills in low-income and disadvantaged communities. Exposure to broadband benefits will motivate more Americans to use broadband as a tool to improve career and education decisions and enhance their quality of life. It will also encourage more users to adopt broadband in their homes. The Administration is also planning ways to measure the effects of investments in public computer centers.

Project Spotlight: Through a Recovery Act **Public Computer Center** grant, the Arizona State Library Archives and Public Records will help 84 public libraries in the state enhance service to their communities with additional public-access computers in their institutions. Located in areas where citizens have very limited access to computers or the Internet, the expanded capacity at these libraries will provide residents with access to a **wide range of online resources**, including government, business, and health information, while also facilitating training for job searches and skill development. The libraries will partner with a variety of government, not-for-profit, and tribal organizations in serving residents. The Arizona State Library expects the computer centers to serve more than 75,000 users per week and more than 450,000 residents in total.

“[Investing in broadband] is a first step toward realizing President Obama’s vision of a nationwide 21st-century communications infrastructure – one that encourages economic growth, enhances America’s global competitiveness, and helps address many of America’s most pressing challenges.”

- Vice President Joseph Biden, July 1, 2009

Creating Jobs and Enhancing Economic Development

Recovery Act investments in broadband deployment and adoption are designed to create jobs immediately. These investments can also facilitate long-term, sustainable economic development by bringing communities into the digital age. Broadband access service can provide small and large businesses alike with the ability to reach new and distant markets, introduce new business models to market and sell their goods and services, and drive innovation in business processes. For individuals, broadband can facilitate access to distance education, job opportunities, and skills training.

Recovery Act broadband investments will create tens of thousands of jobs in construction and other sectors, helping to put struggling communities back to work quickly. Recovery Act broadband projects must be substantially completed within two years of obligation. In this short period of time, they will create tens of thousands jobs and produce an immediate impact on local economies. Broadband investments will create many types of jobs throughout the nation. The most prevalent are construction jobs: the broadband service provider hires dozens or hundreds of workers to lay fiber in the ground or build towers for aerial connections. Before and during construction, workers are also needed for the engineering, design, and planning aspects of middle-mile and last-mile infrastructure. During construction and after completion, employees in the field manage installation, repair towers and lines, and interact with customers. Broadband service providers also create jobs indirectly through the purchase of equipment for broadband connections, such as networking equipment and construction machinery.

Evidence indicates a strong impact of broadband on economic development. A 2006 study by the Economic Development Administration in the U.S. Department of Commerce concluded that broadband access “does enhance economic growth and performance, and the assumed economic impacts of broadband are real and measurable.”¹ A more recent academic study finds that federal broadband investments will generate significant employment effects through regional economic development and induced innovation, also known as “network externalities.”² Consistent with prior research, the study finds that federal Recovery Act broadband investments could create hundreds of thousands of jobs over a four-year period by stimulating new businesses, market transactions, and innovative industries in previously underserved areas.

Recovery Act programs are targeted to maximize economic development opportunities. The Administration is directing Recovery Act investments to middle-mile connections and community anchor institutions in order to bring broadband to thousands of workers and consumers immediately and spark the spread of broadband services to homes and businesses throughout those communities. Open interconnection requirements make it easier for last-mile providers to interconnect their networks with the newly upgraded middle-mile infrastructure.

Project Spotlight: Through Recovery Act funding, the Consolidated Electric Cooperative (CEC) will receive a grant/loan combination of \$2.4 million to construct a 166-mile middle-mile network in North Central Ohio. The project will bring major-city connectivity into underserved areas and connect anchor institutions and the facilities of wireless Internet service providers. Lack of available fiber has been a barrier to **economic development** in the North Central Ohio area, but through this project CEC will be able to sell fiber to customers and to providers planning to offer last-mile service to the area. In addition, the CEC network will connect all 16 of its electric substations to support its **Smart Grid technology initiative**, facilitating the

¹ *Measuring Broadband's Economic Impact.* U.S. Department of Commerce, Economic Development Administration. National Technical Assistance, Training, Research and Evaluation Project #99-07-13829. February 2006.

² “Estimating the Economic Impact of the Broadband Stimulus Plan.” Raul Katz, Columbia Business School, and Stephan Suter, Polynomics AG. February 2009.

implementation of cutting-edge green technology and supporting economic development in the region.

Box 3. Broadband Economics 101

Many of the benefits of federal broadband investment can be explained using basic economic principles. One important benefit is what economists call “consumer surplus,” the difference between the price a consumer is willing to pay for a service and the price the consumer actually pays. Without federal investment in middle-mile infrastructure, certain areas of the country may be unserved or underserved because lack of good middle-mile infrastructure makes the cost of providing last-mile broadband service prohibitively high. Federal investment in the middle mile lowers the cost of providing last-mile service, encouraging private Internet service providers to enter these areas and offer broadband services to homes and businesses. If an end user in a newly served community would have been willing to pay \$120 per month for broadband service but only has to pay \$70 per month, then the end user gets a “consumer surplus” of \$50. Furthermore, the last-mile provider makes a profit, which is called “producer surplus.” The sum of consumer and producer surplus is the economic value created by the project.

Recovery Act broadband programs have been designed to maximize economic surplus. The programs target unserved and underserved communities because installing or upgrading the middle mile will have the greatest impact on last-mile prices (and thus on consumer surplus) in these areas. In addition, open access and interconnection rules facilitate last-mile networks via interconnection points with the middle-mile infrastructure, helping to ensure that every potential client in the community that wants to subscribe can do so at a price that corresponds to the cost of providing broadband service.

Investment in unserved and underserved areas, including public computer centers in urban areas, also creates economic value over the longer-term. These investments expose first-time broadband users to the benefits and uses of broadband, such as job search and training, distance learning, telemedicine, and audio and video streaming. Exposure to these opportunities can produce a more digitally literate workforce and promote broadband adoption at home.

The job-creation effects of middle-mile investment also extend beyond the initial construction of the middle mile. To build last-mile networks in newly connected areas, local Internet service providers must hire employees and invest in plant and equipment. In this way, Recovery Act spending spurs additional economic activity that would not have occurred in the absence of federal investment. The aim of Recovery Act projects is to maximize the economic value of each dollar of federal spending.

Access for All: Bringing the Last Mile to Rural America

President Obama believes that all communities, whether urban or rural, should have access to the many opportunities afforded by broadband Internet service. In many parts of the country, strategic investment in the middle mile is the best use of federal dollars. Middle-mile investment can bring down the cost of last-mile service enough that private service providers can provide broadband services to homes and businesses at a reasonable price.

In highly rural areas of the country, however, low population density may mean that middle-mile investment is not enough to make last-mile service cost effective for private providers. For these communities, the government has an important role to play in bringing broadband service to homes, businesses, and rural anchor institutions. Just as President Franklin Roosevelt made a commitment seven decades ago to bring electrification to all communities in America, the Obama Administration is taking steps to ensure that rural areas are not left out of economic opportunity.

Recovery Act investments in rural last-mile connections will have significant economic development benefits for those areas. Broadband access can contribute to the economic development of rural areas, providing new connections to education and health care resources and access to new markets and business practices. Rural businesses can use broadband service to find new markets, make online retail sales, and engage in business-to-business transactions. Broadband can increase teleworking opportunities for rural residents, make government services more accessible and convenient, and reduce travel and out-of-work time for patients through telemedicine. A recent study by the U.S. Department of Agriculture's Economic Research Service found that broadband Internet availability in rural areas had positive effects on job creation, the formation of new businesses, and the retention and growth of existing small businesses.³

For rural areas that have been heavily dependent on one industry, changes or environmental factors in that industry—such as a drought or a drop in the price of a commodity—can affect a large proportion of the economic production in the community. Broadband-enabled employment is valuable in these areas because it allows for jobs that are flexible and untethered to local economic conditions. This buffer provides a safety net for rural areas when local conditions are unfavorable. At the jobs forum convened by President Obama this month, Angie Selden, CEO of Arise Virtual Solutions, emphasized the importance of rural broadband, noting that 23 percent of Arise's U.S.-based "home agents" reside in communities with populations smaller than 15,000 people.

Urban areas also benefit when rural citizens have access to broadband. Bringing broadband to rural areas can open up previously inaccessible markets to businesses in urban and suburban areas. Governments can engage more effectively with rural citizens who have broadband and improve service provision to these areas. Rural broadband access will also allow friends and relatives of people in rural areas to communicate more easily with their rural contacts.

³ *Broadband Internet's Value for Rural America.* U.S. Department of Agriculture, Economic Research Report Number 78. August 2009.

Project Spotlight: The Administration will award a last-mile grant to Rivada Sea Lion, an Alaska Native Corporation, to provide **4G wireless** high-speed broadband Internet service to approximately 30,000 residents in 53 **unserved, subsistence level communities** in southwestern Native Alaska. Rivada will design, engineer, and construct a multi-mode 4G last-mile remote network that spans 90,000 square miles and connects homes and businesses as well as anchor institutions such as health clinics, schools, and tribal government facilities. By using wireless and satellite technology rather than copper or fiber, the project will provide the **first broadband services to these Native Alaskan communities** at relatively low cost.

Project Spotlight: The Administration will also award a last-mile grant to the Bretton Woods Telephone Company in New Hampshire for a “fiber-to-the-home” project. This project will provide broadband to end users in the Bretton Woods community, a remote area in northern New Hampshire with a **tourism-based economy**. It will pass 386 households, 19 businesses, and six community anchor institutions, allowing all potential customers to receive two-way broadband service of up to 20 Mbps. The improved network is expected to **encourage tourism and promote development** of the local Bretton Woods economy.

Conclusion

President Obama believes that all Americans should have access to broadband and the transformative opportunities it affords. Broadband services allow individuals to access new career and educational opportunities. They help businesses reach new markets and improve efficiency. They support struggling communities that seek to attract new industries. And they enhance the government’s capacity to deliver critical services. For all these reasons, the Administration has targeted its Recovery Act investments in broadband to spur private investment throughout the nation, connect critical community institutions to broadband services, and encourage digital literacy and adoption in urban and rural areas.

Federal investments in the middle mile—which connects the Internet backbone to local networks—will encourage private investment in last-mile connections to homes and businesses, facilitating regional economic development in previously underserved areas and opening unprecedented opportunities in employment, education, health care, and entrepreneurship. Recovery Act investments will also connect and equip community anchor institutions, including public computer centers that provide broadband access and training to disadvantaged communities in urban and suburban areas. And targeted last-mile investments in rural areas will facilitate connections to homes and businesses that would otherwise be left behind in the digital economy.

These critical investments will create tens of thousands of jobs, stimulate the economy in the near term, and help to lay a foundation for the renewal of the American economy. They will advance President Obama’s vision of bringing the opportunities of broadband to all Americans and securing U.S. leadership in the new knowledge-based economy.