The Broadband Technology Opportunities Program

Expanding Broadband Access and Adoption in Communities Across America

Overview of Grant Awards

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"The state of our economy calls for action, bold and swift. And we will act, not only to create new jobs, but to lay a new foundation for growth. We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together."

President Barack Obama
Inaugural Address, January 20, 2009

Introduction

President Obama recognizes the transformative power of broadband and has articulated a compelling vision of a nationwide, 21st-century communications infrastructure. The Department of Commerce and the National Telecommunications and Information Administration (NTIA) are committed to fulfilling the President's goal of harnessing the power of broadband technology to promote economic growth, create jobs, and lay the foundation for long-term prosperity for all Americans.

Broadband infrastructure serves as a key engine of economic development, enabling communities to attract, retain, and expand job-creating businesses and institutions. For example, over broadband connections, small and rural businesses are able to buy and sell their goods and services in both near and distant markets. The deployment of broadband infrastructure creates direct jobs—such as construction workers and technicians—but also leads to indirect job creation, for instance, by allowing companies to expand to new markets, lowering entry barriers for entrepreneurs, and providing a platform for innovative new business models. With access to broadband and the skills to use it effectively, Americans are better able to succeed in the 21st-century's knowledge-based economy and businesses can operate more effectively. Indeed, broadband networks and applications are significantly improving the efficiency of virtually every sector of the U.S. economy.[1]

Broadband can improve America's quality of life in other ways as well, helping us to address challenges in education, health care, public safety, and energy. With broadband, for example, students can access resources to supplement those found in their own classrooms or at their local libraries. Telemedicine applications over broadband connections enable doctors to bring the latest medical advances to patients in remote areas, resulting in more timely, efficient, and cost-effective treatments. Broadband service and applications help fire, police, and other public safety personnel better respond to emergencies. Broadband enhances "smart grid" technologies that facilitate more efficient energy use. Researchers and scientists can use high-speed connections to collaboratively develop the new ideas that will keep our country in the lead globally. Broadband can enrich countless more facets of American life.

"Today, high-speed Internet is transforming the landscape of America more rapidly and more pervasively than earlier infrastructure networks. Like railroads and highways, broadband accelerates the velocity of commerce, reducing the costs of distance. Like electricity, it creates a platform for America's creativity to lead in developing better ways to solve old problems. Like telephony and broadcasting, it expands our ability to communicate, inform and entertain."

Federal Communications Commission
National Broadband Plan
March 2010

1 See, *e.g.* U.S. Federal Communications Commission, *Connecting America: The National Broadband Plan*, Chapter 3

The Recovery Act and the Creation of BTOP

President Obama signed The American Recovery and Reinvestment Act of 2009 (Recovery Act) into law on February 17, 2009. It is designed to jumpstart the nation's economy, create or save millions of jobs, and make a down payment on addressing long-neglected challenges so that the country can thrive in the 21st century. The Act includes measures to modernize our nation's infrastructure, enhance energy independence, expand educational opportunities, preserve and improve affordable health care, provide tax relief, and protect those in greatest need.

The Recovery Act also contains initiatives that represent a significant step forward in making the President's broadband vision a reality, providing a total of approximately $7 billion to NTIA and the Department of Agriculture's Rural Utilities Service (RUS) for projects that will increase access to and adoption of broadband service across America.[2] Congress allocated more than $4 billion of that funding for the Broadband Technology Opportunities Program (BTOP), to be administered by NTIA, with the following goals:

1. To provide access to broadband service to consumers residing in unserved areas of the country;
2. To provide improved access to broadband service to consumers residing in underserved areas of the country;
3. To provide broadband access, education, awareness, training, equipment, and support to community anchor institutions (*e.g.,* schools, libraries, medical facilities), or organizations and agencies serving vulnerable populations (*e.g.,* low income, unemployed, aged), or job-creating strategic facilities located in state- or federally designated economic development areas;
4. To improve access to, and use of, broadband service by public safety agencies; and
5. To stimulate the demand for access to and use of broadband, economic growth, and job creation.

To fulfill these statutory objectives through BTOP, NTIA awarded Recovery Act-funded grants in three project categories: (1) deploying **broadband infrastructure**; (2) creating and expanding **public computer centers**; (3) and promoting the **sustainable adoption of broadband services**. NTIA also invested Recovery Act funding in grants to every state, U.S. territory, and the District of Columbia as part of the agency's State Broadband Data and Development (SBDD) program, which advances the purposes of both the Recovery Act and the Broadband Data Improvement Act. The SBDD grants support broadband projects initiated by the states to increase their participation in the digital economy. The grants also support broadband data collection activities to populate NTIA's upcoming national broadband map, another Recovery Act initiative.

NTIA's State Broadband Data and Development Grant Program (SBDD)

SBDD implements the purposes of both the Recovery Act and the Broadband Data Improvement Act, which envisioned a comprehensive program—led by state entities or non-profit organizations working at their direction—to facilitate the integration of broadband and information technology into state and local economies. Economic development, energy efficiency, and advances in education and health care rely not only on broadband infrastructure, but also on the "digital literacy" and tools to leverage that infrastructure.

NTIA awarded a total of $293 million to 56 grantees, one from each of the 50 states, five territories, and the District of Columbia, or their designees. Grantees will use this funding to support the efficient and creative use of broadband technology to better compete in the digital economy. These state-created efforts vary depending on local needs but include programs to assist small businesses and community institutions in using technology more effectively, conduct research on barriers to broadband adoption, implement innovative applications that increase access to government services and information, and support state and local task forces to expand broadband access and adoption.

Since accurate data is critical for broadband planning, another purpose of the SBDD program is to assist states in gathering data twice a year on the availability, speed, and location of broadband services, as well as the broadband services that community institutions use. The data will be used by NTIA to update its publicly searchable, interactive national broadband map. NTIA will publish the national map by February 17, 2011. Summaries of each grant award are provided at NTIA's State Broadband Data and Development Grant program website available at *www.ntia.doc.gov/SBDD*.

2 Congress allocated $2.5 billion for the Broadband Initiatives Program (BIP), to be administered by RUS.

This report begins with a brief summary of the BTOP application process and results, followed by separate sections on each of the three BTOP project categories identified above with brief descriptions of representative projects. The report then highlights various stakeholders that will benefit from BTOP projects, such as schools, small businesses, public safety agencies, and the unemployed, with additional examples of illustrative projects. The report also includes statistical information about the program and process, including where to find information about all projects awarded. NTIA believes that BTOP projects, brought to their successful conclusion, will serve as models for future investments that will further accelerate and expand access to and adoption of broadband across America.

Administering BTOP

NTIA awarded BTOP grants in two funding rounds. This approach allowed NTIA to begin awarding stimulus funding as quickly as possible while also accommodating applicants that needed additional time to prepare their proposals. In addition, this approach allowed the agency to incorporate lessons learned during the first round to improve the program's second round.

NTIA issued its first Notice of Funds Availability—essentially program rules—jointly with RUS on July 1, 2009. NTIA awarded approximately one-quarter of program funding in that initial round. Before issuing rules for the second funding round, the agency sought public comment on ways to improve the program. Based on feedback from stakeholders and on NTIA's own experience, the agency announced modified rules for the second funding round on January 15, 2010. NTIA's modifications made the application process more user-friendly, increased program efficiency, and better targeted program resources.

In both funding rounds, NTIA received an overwhelming response from a diverse range of applicants. In total, NTIA received more than 2,800 applications requesting in excess of $36 billion, approximately nine times greater funding than available. The sheer volume of applications underscores the strong demand for broadband access that exists across America and made the grant process highly competitive.

After a rigorous multi-step review process including input from states, territories, and tribal entities, NTIA invested approximately $3.94 billion in 233 projects that will benefit all states and territories. NTIA awarded grants to fewer than one in ten applicants. The chart below summarizes these awards (see Appendix B for states and territories impacted by all awards).

*BTOP Applications**

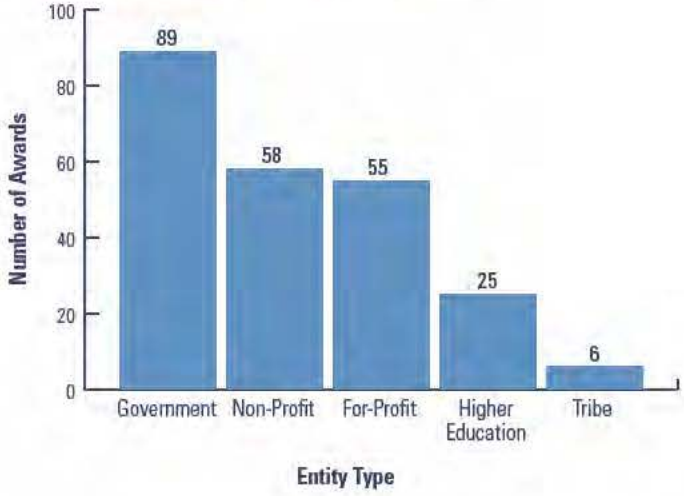
Project Type	Infrastructure	Public Computer Centers	Sustainable Broadband Adoption	**Total**
Number of Applications	1,582	670	608	**2,860**
Amount Requested	$29.6 B	$2.9 B	$4.2 B	**$36.7 B**

* Note: This chart does not include applications filed solely with RUS.

BTOP Awards

Project Type	Infrastructure	Public Computer Centers	Sustainable Broadband Adoption	**Total**
Number of Grants	123	66	44	**233**
Amount Requested	$3.48 B	$201 M	$250.7 M	**$3.94 B**

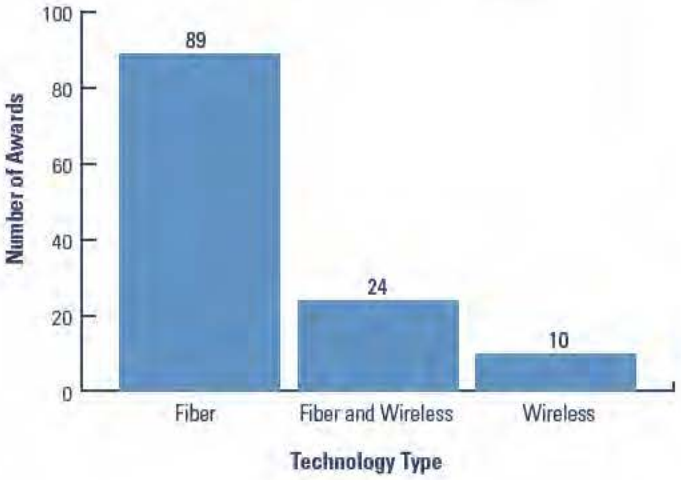
Figure 1 BTOP Awards by Grantee Entity Type



Broadband Infrastructure Grants: Focusing on the Middle Mile

A modern communications infrastructure is essential to preserving America's global competitiveness. The bulk of BTOP investments awarded—123 grants totaling more than $3.48 billion—are funding the construction or upgrade of approximately 120,000 miles of broadband networks employing multiple technologies, including (and as shown in the chart below) fiber-optics, wireless, and other technologies. These investments will add approximately 70,000 miles of new broadband facilities to the nation's infrastructure.

Figure 2 BTOP Infrastructure Awards: Technology Types



The vast majority of these investments are in high-speed, high-capacity "middle mile" infrastructure. To understand the role of middle mile facilities, first consider that the nation's Internet infrastructure is comprised of three discrete but interconnected parts. At the highest level is the national "Internet backbone," which consists of the principal data routes that transport massive amounts of Internet traffic within and between the countries and continents of the world. At the local community level are the "last mile" connections, which a local broadband provider (such as a phone or cable company) might build to deliver high-speed Internet into homes or small businesses. The link between the national Internet backbone and local last mile connections is referred to as the "middle mile."

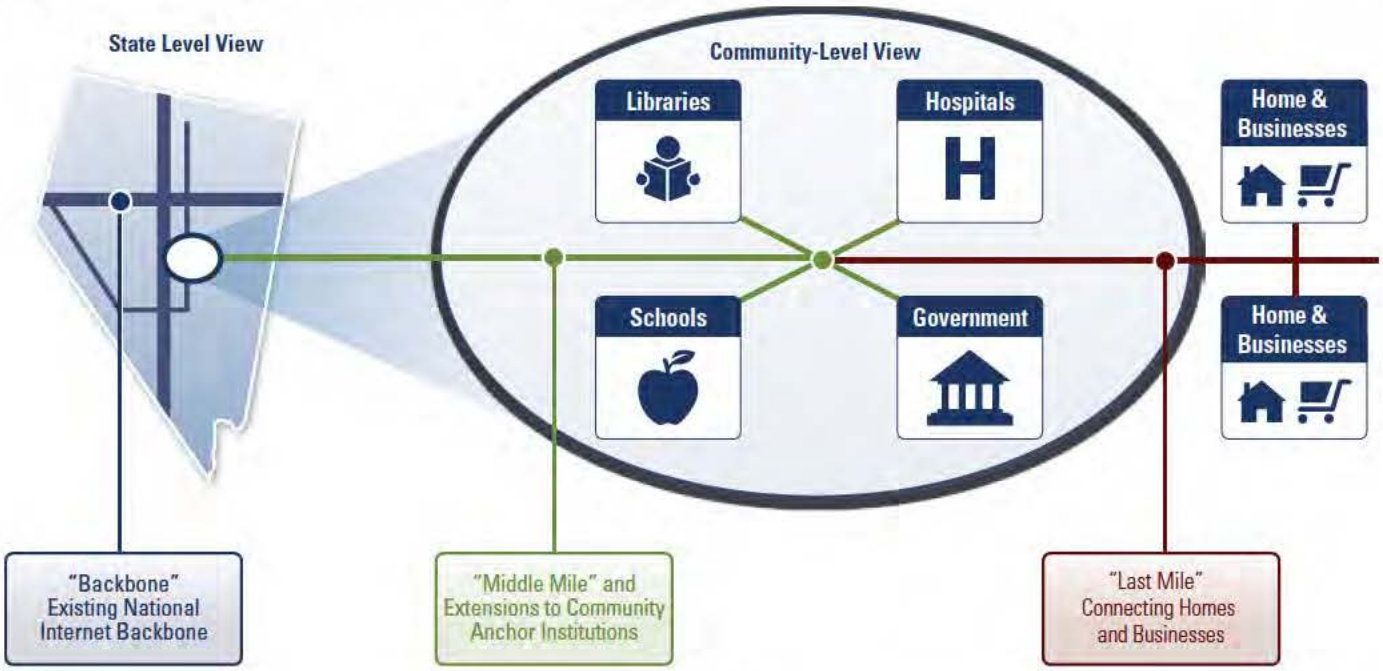
Expanding middle mile infrastructure throughout areas of the United States will provide a number of important benefits to the American public. Adequate middle mile infrastructure is not only critical to carrying the broadband traffic of many communities quickly and simultaneously to and from the Internet backbone, but it also reduces the cost to broadband service providers of building the "last mile" infrastructure that connects homes and local businesses to the Internet.[3] Those costs, particularly in more rural areas, can be prohibitively high for last-mile providers. By lowering the cost of last-mile connections, investments in middle mile facilities allow existing Internet service providers to enhance or expand their offerings, and facilitate the entry of additional Internet service providers into the market to build connections to homes and businesses. NTIA-funded middle mile projects will therefore leverage public and private dollars to extend the reach of high-speed Internet into communities that would otherwise lack adequate access to broadband and its many opportunities.

BTOP middle mile projects must adhere to "open network" requirements and ensure that any requesting party, such as a last-mile service provider, can utilize the new infrastructure to provide service to homes and businesses. In other words, the middle mile infrastructure is not solely for the use of the BTOP grantee. In this way, middle mile projects lay the foundation for the provision of more competitively priced broadband services. Since NTIA will invest in middle mile infrastructure in areas encompassing an estimated 40 million households and 4 million businesses, the open access requirements have the potential to catalyze millions of dollars in additional private sector investment, as local telecommunications providers will be able to connect to the new infrastructure and extend new and improved high-speed Internet service to additional customers. Much like the interstate highways that link together the nation's roads and streets, middle mile broadband facilities play a critical role in the healthy functioning of the nation's broadband infrastructure and are a necessary foundation for more affordable broadband services to homes and businesses.

In addition, expanding middle mile broadband service increases the effectiveness of community anchor institutions in fulfilling their

3 See National Economic Council Recovery Act Investments in Broadband: Leveraging Federal Dollars to Create Jobs and Connect America (Dec. 2009) available at *http://www.whitehouse.gov/sites/default/files/20091217-recovery-act-investments-broadband.pdf*, pgs. 3-8

Figure 3 "Middle Mile" Projects Promote Sustainable Job Creation and Economic Development.



missions. Schools, libraries, community colleges and universities, medical and healthcare providers, public safety entities, and other community support organizations rely increasingly on high-speed Internet connectivity to deliver vital services. Improving broadband capabilities for these anchor institutions can therefore help improve education, health care, economic development, and other aspects of everyday life.

Middle mile projects can create jobs and pave the way for a ripple effect of economic development throughout the communities they touch. According to analysis released by the National Economic Council in 2009, overall Recovery Act investments in broadband are expected to create tens of thousands of jobs in the near term and expand economic development and job opportunities in communities that would otherwise be left behind in the new knowledge-based economy.

NTIA targeted BTOP awards to projects that will provide high-speed middle mile networks and connect community anchor institutions to broadband, thereby maximizing the benefits of Recovery Act dollars and laying a foundation for economic development for years to come.

Connecting Communities Through Local Anchor Institutions

When it comes to evaluating the broadband needs of communities, there are significant differences in the services required by anchor institutions and the needs of families and small businesses. For example, community anchor institutions—such as schools, libraries, hospitals, and public safety facilities—generally demand much faster speeds than typical household consumers.

As NTIA reviewed infrastructure applications, it found that the strongest, most sustainable proposals were those where communities took a comprehensive approach in defining their critical broadband needs. These projects proposed to invest in middle mile networks to make high-speed Internet access available throughout their communities as well as to provide community anchor institutions with new or improved Internet connections at "industrial strength" speeds. NTIA calls these "comprehensive community infrastructure projects" because they engage a wide range of local partners, addressing the needs of multiple target groups and leveraging public and private resources. Connecting anchor institutions or improving their connection speeds can have a multiplier effect throughout a community: as residents discover

the benefits of broadband access at work or at school, they are generally more likely to adopt broadband at home.

NTIA funded projects of varying sizes, ranging from a single county to entire states, which embody this comprehensive community concept. Overall, these projects propose to connect or improve speeds for approximately 24,000 community anchor institutions, enabling improvements in distance learning, telemedicine, online job training, and other life-enhancing—or even life-changing—advancements to reach these communities. With further investment from local broadband providers, there is the strong potential to connect tens of thousands more anchor institutions, households, and businesses as a result of these grants.

Below are some examples of how these middle mile infrastructure projects will benefit communities:

The **West Virginia** Statewide Broadband Infrastructure Project will bring broadband to vastly underserved regions of the state and plans to connect or improve connection speeds for more than 1,000 community anchor institutions, including public safety agencies, schools, and libraries. While an estimated one-third of West Virginia schools have fiber connections today, nearly every K-12 school in the state is expected to have a high-speed Internet connection as a result of this project. The project will also improve access to health care, distance learning opportunities, and applications for emergency first responders. The project intends to spur affordable broadband service for up to 700,000 households, 110,000 businesses, and 1,500 additional anchor institutions by allowing local Internet service providers to connect to its open network.

Recognizing that BTOP infrastructure projects must be able to serve their communities years after the federal dollars run out, NTIA invested in projects to be built and managed by organizations with expertise in building regional networks to ensure sustainability. For example, in **North Carolina**, a not-for-profit broadband provider, MCNC, has been operating the North Carolina Research and Education Network in the urbanized, central region of the state for several years. Now, through two BTOP grants (one award to expand MCNC's network to underserved, mostly rural eastern and western regions of the state and a second award to further extend the network's benefits north and south), MCNC will support long-term statewide advancements in education, health, and other areas. Due to these BTOP grant investments, MCNC will expand the number of North Carolina counties that can access 1 Gbps or greater broadband service from 12 to 83 (out of a total of 100). This nearly 600 percent increase represents a substantial improvement in statewide broadband capabilities.

Demonstrating the value of public-private partnerships, a consortium comprised of established service providers Horizon Telecom, OneCommunity, and ComNet partnered with businesses and communities throughout **Ohio** to propose three funded projects to build 3,500 miles of new fiber broadband infrastructure across 82 counties in this economically distressed state. These projects will directly connect or improve connection speeds for over 2,400 community anchor institutions, supporting improvements in education, health care, and public safety; bolstering local economies; and providing opportunities for expanded residential and business broadband services. Currently only 25 counties have 1 Gbps service. The awardees estimate they will be able to offer 1 Gbps or greater service to the remaining counties in Ohio as a result of the BTOP grants, culminating in the provision of 1 Gbps or greater service in every county in the state.

Matching the most efficient and effective technology for their unique circumstances, GovNET obtained BTOP funding for a microwave-based wireless middle mile infrastructure project spanning all 15 counties of **Arizona**. This public-private partnership with the State of Arizona will construct an 8,430-mile network that will serve over 250 community anchor institutions.

Northern Illinois University's infrastructure project will leverage widespread collaboration among public and private stakeholders—including more than ten last mile broadband providers, such as cable operators and wireless companies—to benefit nine economically distressed counties in northwest **Illinois**. The project will build over 600 miles of broadband infrastructure, connect or improve connection speeds for over 500 community anchor institutions, and facilitate new and improved broadband service for as many

as 280,000 households and 16,900 businesses by enabling local Internet service providers to utilize the new infrastructure.

Thinking big with a **nationwide** infrastructure proposal, the University Corporation for Advanced Internet Development (also known as Internet2) put forth a nationwide infrastructure proposal—the 50-state United States Unified Community Anchor Network (U.S. UCAN) project, which will create a dedicated 100-200 Gbps nationwide fiber backbone with 3.2 terabits per second (TBps) total capabilities. The project will interconnect more than 30 existing research and education networks to support more secure collaboration for more than 121,000 community anchor institutions nationwide while facilitating service for up to an additional 97,000 institutions. The project will also advance public safety by providing opportunities for more than 6,000 Public Safety Answering Points (PSAPs) to secure new or enhanced connections to each other and to the Internet, and by facilitating the development of a Next Generation 911 system. Several other BTOP-funded projects will link in to this network, further extending these BTOP investments.

Increasing Broadband Access to Vulnerable Groups Through Public Computer Centers

Public computer centers can be a lifeline for people who cannot afford a computer or Internet access at home. In our Internet-based economy, individuals without the tools and skills needed to use technology effectively are cut off from many educational and employment opportunities. Public computer centers offer members of lower-income and other vulnerable groups opportunities to learn job skills, apply for jobs, and access health and education information online. A relatively small investment in a public computer center can benefit hundreds or even thousands of community members.

NTIA is investing $201 million in 66 public computer center projects throughout the country, which will expand and improve access to free broadband service at libraries, schools, community colleges, and other institutions. This investment will fund more than 35,000 new or upgraded workstations in more than 3,500 new or upgraded public computer centers, serving more than one million new users.

Below are a few examples of public computer center investments that will benefit communities:

The Mission Economic Development Agency, in collaboration with a national network of Latino-serving economic development organizations, plans to create and expand public computer centers in 13 communities in **Arizona, California, Colorado, Idaho, Maryland, Minnesota, Missouri, New Mexico, Pennsylvania,** and **Texas**. The project expects to add a total of 263 new workstations and replace 37 existing workstations, enabling the centers to serve an additional 2,500 users per week and train an estimated 3,000 users per year via English and Spanish-language curriculum. The project also plans to spur local economic development by providing customized technology training to help Latino entrepreneurs establish and grow their businesses.

WorkForce **West Virginia** will improve access to job information, career counseling, and skills training by upgrading and expanding 20 West Virginia One-Stop career centers. By replacing 165 existing computer workstations and adding 80 new ones, the centers will be able to provide high-speed Internet access and job training services to almost 2,300 additional users per week, nearly doubling the number of people using the existing centers.

The **City of Chicago**, where up to 40 percent of residents lack home broadband and over 60 percent of public libraries report average computer wait times of at least three hours, will upgrade and expand public computer center capacity at 150 locations, including libraries, community and workforce centers, public housing sites, senior centers, and community colleges. The city also will use its

public computer centers to provide hundreds of thousands of hours of training, focusing on digital literacy and online assistance for job seekers. The project will create 20 new public computer centers and upgrade 131 more with approximately 2,500 new workstations and 870 upgraded workstations. The centers impacted by the project will be able to accommodate an estimated 200,000 additional weekly users.

The Michigan State Library received two BTOP grants that, taken together, will bolster public computer center capacity throughout the entire state of **Michigan**. The projects will establish over 40 new public computer centers and upgrade over 250 more in colleges, libraries, public housing developments, and other community support organizations. The state will benefit from over 2,500 new workstations—nearly double the current amount—that can serve over 190,000 new users per week. The centers will offer training focused on online skills and developing job-seeking and job-creating strategies. The project also will provide hands-on experience to university and community college students by giving them on-the-job training in computer installation and upgrading processes.

Several BTOP projects plan to bring the benefits of broadband technology to their target audiences when it may be too difficult for user groups to come to the projects. This approach is especially important in very rural areas, where broadband access is often limited and geographic distances can be prohibitive. For example:

While upgrading numerous libraries across **Louisiana** with broadband and computer technologies, the State Library of Louisiana public computer center project also will deploy four mobile computer centers. These mobile computer and training labs will each be equipped with 16 workstations and will be used to reach remote areas, provide needed training, and help reduce the digital and educational divide that keeps many citizens vulnerable and disenfranchised.

The County of Crook, **Oregon**, will reach remote areas by equipping a bus to serve as a mobile computing and education center with 12 workstations and satellite broadband connectivity.

Promoting Sustained Adoption of Broadband Services

In the Recovery Act, Congress recognized that even in locations where broadband facilities do exist, many people do not subscribe to the service and therefore miss out on the benefits that broadband can provide.

NTIA invested nearly $251 million in 44 projects that use innovative approaches to increase sustainable broadband adoption among vulnerable populations.

The projects will address barriers to adoption and provide broadband education, training, and equipment, particularly to population groups that traditionally underutilize broadband technology. In the aggregate, the grant recipients estimate that their broadband adoption and awareness campaigns will reach a total of 40 million people. These targeted broadband adoption efforts will encourage vulnerable populations to share in the benefits of broadband.

Understanding Broadband Adoption Rates

In a survey commissioned by NTIA and conducted by the U.S. Census Bureau in the fall of 2009, the most commonly cited reason for not subscribing to broadband access at home was that the service is not needed. In addition, despite the growing importance of the Internet in American life, 30 percent of people still do not use the Internet at any location. Notable disparities in broadband adoption rates continue along demographic lines: people with low incomes, seniors, minorities, the less-educated, and the unemployed tend to lag behind other groups in home broadband use.

NTIA-awarded projects will employ a variety of innovative and rigorous methods to increase broadband awareness and adoption. For example, several projects will reach out to community members through local public schools. These projects will demonstrate the value of broadband through online tools that engage parents in their children's academic progress and enhance the students' classroom experiences. For example:

The Computers for Youth Foundation and the **Los Angeles** Unified School District plan to expand a successful pilot project that uses computer and Internet tools to increase family involvement in sixth-grade students' education. Students and their families will receive digital literacy training in English and Spanish, after which they will get a refurbished computer with educational software. The project, which will benefit an estimated 34,000 low-income individuals, will provide ongoing support for home computer usage, including a 24-hour bilingual technical help desk and free local repair services.

Similarly, the School Board of **Miami-Dade** County recently introduced a student/parent portal to enable parents to monitor their children's academic progress and communicate more easily with their teachers and schools. In 35 schools with the highest need, the project plans to offer 60,000 hours of computer training to 30,000 students and their parents, provide low-cost refurbished laptops to 6,000 students and their families, and offer discounted Internet service to 10,000 families.

ZeroDivide's Generation ZD Digital Literacy Program plans a training and broadband access program for low-income youth in communities across several Western states. The project intends to develop a new generation of broadband users through enhanced broadband services and outreach; approximately 8.7 million hours of teacher-led training for 146,000 individuals; and support services to those with disabilities. The project features collaboration with a youth media arts center that provides after-school mentoring and a community television station that provides computer literacy training.

While all sustainable broadband adoption projects are designed for populations that lag in broadband adoption, some projects place particular emphasis on outreach to specific cultural groups, among other vulnerable populations. For example:

The **Lowell** Internet, Networking and Knowledge project in Massachusetts will use public computer centers, outreach events, in-language training, and other methods to reach seniors and other specific populations in the Lowell and Merrimack Valley region, including the nation's second-largest Cambodian community.

The Mexican Institute of Greater Houston will address gaps in broadband adoption among Hispanic and English-as-a-Second-Language populations in the Greater Houston, Beaumont, and San Antonio, **Texas**, areas by utilizing its network of more than 100 community centers, many located at K-12 public schools, to conduct technology training sessions in Spanish for students and their families. The project plans to provide computer skills and broadband training to as many as 5,600 residents.

A **New York City** adoption project will target transfer school students—students between the ages of 16-21 who have disengaged from high school and are not on track to graduate. This group traditionally faces a significantly greater risk of poverty, crime, unemployment, and other challenges. Using broadband to get these young people back on track and learning new skills, the project plans an aggressive outreach program to both students and their families at 43 transfer high schools. The project will incorporate computer training, refurbished computer equipment, and Internet access subsidies. Students will receive computers and broadband access in the home after completing a 57-hour broadband training course, and their family members will participate in a three-hour digital literacy program.

Several other grants focus on linking individuals to local community resources and engaging local residents in expanding broadband awareness. For example:

In **50 cities and towns across 31 states and the District of Columbia**, the One Economy Corporation will train 2,500 youth to become "Digital Connectors," who will provide digital literacy training to others in their communities. This is one element of a

comprehensive program that also includes linking public housing developments to broadband, providing technical assistance training for residents, and creating online content targeted to low-income users.

In **Alaska**, the University of Alaska Fairbanks is leading a broad coalition that will implement a project to educate and empower residents of dozens of remote villages. The project will train 80 "Village Internet Agents" to teach digital literacy skills to their neighbors and to address the local hardware and software support needs of the communities, saving time and money. Villages will be able to certify telehealth coordinators who can bring broadband-enabled health applications to their villages.

Numerous projects include measures to address a key barrier to broadband adoption: the lack of computer equipment among some consumers. For example:

The Urban Affairs Coalition proposes a strategic outreach, access, and training program targeted to **Philadelphia** residents with no or limited at-home Internet access. The project will especially focus on economically and socially vulnerable populations, including at-risk youth, public housing residents, seniors, the homeless, and people living with HIV/AIDS. The project will distribute 5,000 laptop computers to public housing residents who complete a broadband training curriculum. Overall, the project will provide computer skills and broadband training to approximately 15,000 residents, offering as many as 100,000 training hours focusing on online connectivity, career building, community resources, and education.

The City of **Tallahassee**, Florida, plans to train middle school students to refurbish computers in partnership with Florida State University. The project will, in turn, distribute hundreds of refurbished computers annually to middle school students and their families, while also offering training and low-cost broadband services to low-income community members.

How Community Stakeholders Will Benefit

BTOP projects will act as "game changers" in communities across the country. Below are some examples of how individual projects will assist educational institutions, small businesses, public safety services, the unemployed and underemployed, healthcare services, libraries, minorities, Indian tribes, seniors, public housing residents, and people with disabilities. For descriptions of all BTOP projects, please visit *http://www2.ntia.doc.gov/GrantsAwarded* to view projects by grant category and by state impacted.

K-12 Schools, Community Colleges, and Universities

NTIA-funded infrastructure projects will directly connect or improve connection speeds for an estimated 8,000 K-12 schools, community colleges, and universities. Additionally, NTIA's public computer center grants will support broadband expansion at hundreds more schools nationwide. These projects will improve education by bringing distance learning to schools in remote areas, enabling students to conduct online research and gain technical skills, and helping teachers and parents to communicate with one another. For example:

The **South Carolina** State Board for Technical and Comprehensive Education will expand more than 50 public computer centers and create almost 20 new computer labs in the state's technical college system. Almost half the students at these 16 community colleges receive Pell Grant assistance and more than a third are minorities. The project will not only enable students to go online but also will open the centers to the general public for the first time, providing access to approximately 3,260 workstations and

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

Vice President Joe Biden
Announcement, December 17, 2009

training opportunities. As a result of the BTOP grant, the project will be able to accommodate 38,000 users per week—more than double the current number of users.

In **Virginia**, the Mid-Atlantic Broadband Cooperative (MBC) will deploy broadband infrastructure to connect 138 K-12 schools, primarily in unserved and underserved areas of southern and eastern Virginia. The new connections will enable these schools, many in isolated areas, to take advantage of distance learning and virtual classroom opportunities. MBC plans to improve broadband access for more than 58,000 students.

The University of **Utah** will extend the Utah Education Network's broadband services to 130 additional anchor institutions throughout the state, including elementary schools, public libraries, charter schools, and Head Start centers.

In **Indiana**, the Education Networks of America plans to improve educational opportunities throughout the state by deploying broadband infrastructure that will provide 100 Mbps connections directly to 145 public schools and libraries. These enhanced broadband capabilities will enable the state's schools and libraries to improve educational offerings and services for an estimated 290,000 students and library patrons.

The Foundation for **California** Community Colleges will provide an estimated three million hours of teacher-led training and educational support to increase digital literacy skills and encourage broadband usage among students and their families, especially among low-income Hispanic residents in California's Central Valley region. Almost 5,800 community college students will receive laptops for schoolwork and to communicate with their families.

Small Businesses/Socially and Economically Disadvantaged Small Business Concerns

Small businesses will benefit not only through improved broadband services from BTOP-funded projects but also as BTOP awardees. Twenty-seven BTOP grant recipients are small businesses, of which three are socially and economically disadvantaged small business concerns (SDBs). For example:

In **Puerto Rico**, Critical Hub Networks, Inc., an SDB, plans to provide broadband connectivity for last mile Internet service providers and underserved areas, including the islands of Culebra and Vieques, by establishing a broadband "bridge" to the United States mainland and deploying high capacity middle mile networks on the islands. The project plans to deploy more than 180 miles of terrestrial middle mile microwave network.

Pine Telephone Company—a family-owned company that has built and operated communications networks in rural **Oklahoma** for nearly 100 years—will use wireless technology to deliver affordable broadband service to portions of rural, remote, and economically disadvantaged areas of southeast Oklahoma, including the Choctaw Nation.

Axiom Technologies, an SDB, received funding for a sustainable broadband adoption project to provide broadband education, training, access, equipment, and support to community-serving institutions and economically vulnerable populations in Washington County, **Maine**. The project also will help

local small businesses by providing training for healthcare professionals and by equipping local farmers and fishers with wireless broadband equipment and rugged laptops.

In addition, 62 BTOP projects involve SDBs as project partners, and 50 BTOP projects involve small businesses as project partners. For example:

In **Indiana**, Zayo Bandwidth, LLC will deploy a 626-mile fiber-optic network that will enable last-mile providers to serve an area with an estimated 480,000 households, 49,000 businesses, and almost 4,800 anchor institutions. Zayo Bandwidth has agreements with six SDBs to assist with project construction, cabling, and installation.

Beyond direct awards, small businesses can benefit indirectly from BTOP projects through increased broadband availability for themselves and their customers. The potential commercial benefits to small businesses are clear, including more affordable access to information and job training for employees; improved access to partners, vendors, and suppliers; faster, more cost-efficient outreach to potential and actual consumers through websites, e-mails, and e-commerce; more efficient business management through cloud computing and other online tools; and access to regional, nationwide, or even global markets. For example:

The Massachusetts Technology Park project will help connect **Massachusetts'** largely rural and economically challenged western region to the rest of the state's digital economy. The project partners recognize the significant economic challenges to the region and that broadband availability is key to a successful economic development strategy. The project will bring broadband fiber infrastructure within three miles of 99 percent of area businesses, facilitating high-speed connections to businesses and making the region more attractive to new businesses. It also will facilitate broadband to home office businesses and online entrepreneurs in the area, some of whom have been known to park outside of local libraries to do business using library Wi-Fi.

Several BTOP-funded projects focus specifically on training for small businesses, home businesses, and entrepreneurs. For example:

Small businesses are a major beneficiary of the Toledo-Lucas County Public Library public computer center project, which will focus on residents of the Toledo, **Ohio**, area who have lost jobs due to the distressed automotive industry. The project will feature retooling and training for displaced automotive workers and computer, job skills, and broadband-based classes for small business owners and those interested in starting small businesses. Offerings will address how to write business plans, how to start a business, business finances, and government regulations related to businesses.

Public Safety

A core goal of BTOP is to improve public safety entities' access to broadband. BTOP projects will connect approximately 5,000 public safety entities to broadband and otherwise facilitate emergency communications through an improved communications infrastructure.

The Enhancing Connectivity in **Northern Pennsylvania** project plans to increase broadband Internet connection speeds for community anchor institutions and underserved areas isolated by difficult, mountainous terrain across the northern half of the state by improving and leveraging the state's existing microwave public safety communications network. The project will enhance the interoperability of public safety communications across the region, improve health and safety services, and allow emergency medical service providers to connect to trauma and medical specialists quickly and reliably.

The OpenCape Corporation's middle mile project in **Massachusetts** will deploy a new broadband network that, among other benefits, will build needed public safety redundancy through a microwave network spanning the Cape Cod region and provide priority service to public safety and health service providers.

The Equipping **West Virginia**'s Fire and Rescue Squads project plans to stimulate broadband adoption among, and extend computer access and training to, low-income and predominantly rural communities across the state via facilities located in rural volunteer fire and emergency rescue stations. Each participating fire and rescue squad will be equipped with 11 computer workstations and real-time audio/video communication. Squad members will be able to enroll in online courses provided by local community and technical colleges to improve their skills and to learn about advances in the public safety field.

BTOP is also funding the first 700 MHz public safety interoperable wireless broadband networks, taking advantage of authorizations to deploy these networks granted by the Federal Communications Commission in May 2010. These are a critical set of demonstration projects that provide a head start on President Obama's commitment to support the development of a nationwide, interoperable public safety wireless broadband network.

The projects will be cutting-edge 4G networks that meet the FCC's standards for nationwide interoperability. Potential applications include uploading medical images and transmitting vital signs from ambulances and helicopters to hospitals to speed up diagnoses and improve care, and downloading the floor plans of burning buildings for use by firefighters before they arrive on the scene. The projects can enable first responders to respond more rapidly to accidents and crime scenes when seconds matter, and facilitate public safety workers from multiple jurisdictions in communicating and sharing data seamlessly.

Below are some examples of BTOP-funded 700 MHz public safety projects:

The State of **Mississippi** will build a 700 MHz network connecting every public safety agency in the state and ultimately serving over 9,900 public safety users. The current project plans include building or upgrading 134 towers to enable live streaming video capabilities, situational awareness during critical events, Computer Aided Dispatching, mapping and field reporting capabilities, and immediate database access to information for tactical response to routine and emergency situations. The project plans to provide 90 hospitals and 340 ambulances with enhanced voice, data, and video to facilitate improved care and coordination of critically ill or injured patients.

New Jersey plans to deploy an interoperable 700 MHz public safety wireless broadband network in a region that includes 160 law enforcement agencies and 200 fire departments, over half of the state's public safety responders, and that covers a population of 4.5 million. The project will enable uses such as streaming critical patient data from paramedics to hospital personnel; in-the-field access to criminal, fingerprint, and mug shot information; mobile access for firefighters to building blueprints and infrastructure diagrams; and video applications to improve situational awareness at incident command posts.

The **Los Angeles** Regional Interoperable Communications System Authority (LA-RICS), combining 80 public safety agencies and approximately 34,000 first-responders, will deploy a 700 MHz interoperable public safety broadband network throughout the Los Angeles, California, region. The service area covers over 4,060 square miles and approximately 10 million people. The current project plans include constructing 176 new wireless sites and leveraging 114 existing sites to enable computer-aided dispatch, rapid law-enforcement queries, real-time video streaming, medical telemetry and patient tracking, geographic information systems services for first responders, and many other broadband-specific applications. This is an ideal 700 MHz pilot project because the region is geographically diverse—consisting of mountains, deserts, valleys, and of coastline—and includes both heavily urban and very rural communities.

Unemployed and Underemployed People

BTOP projects will support job creation, workforce readiness, and economic growth in myriad ways. For example, workers will be needed to deploy broadband infrastructure that will, in turn, support indirect job creation in served communities. Other BTOP projects will bring resources to assist people who are unemployed and underemployed in finding new work. Among the many examples:

In **New York**, the Department of Labor plans to use broadband technology to bring occupational skills training and career planning services to residents of low-income areas where the training is not available locally. Interactive Video Presence technology will connect 20 of the state's One-Stop Career Centers to job-related services from three state organizations. The project plans to train more than 68,000 people through courses to help them compete in today's economy, including basic computer classes and certification for green jobs.

The **Arizona** Office of Economic Recovery plans to establish technology-equipped Job Help Hubs at 28 public and tribal libraries, where instructors and librarians will assist patrons with basic job search activities. The project also plans to install Virtual Workforce Workstations at approximately 200 libraries, which will help participants locate, re-train, and qualify for employment. The project, executed in partnership with the Arizona State Library, Archives and Public Records, will offer a combination of training and technology access useful to finding employment for up to 142,000 users per week.

The **Delaware** Department of State's project to upgrade equipment and expand training at 32 public computer centers throughout the state includes creation of Job/Learning Labs at select libraries in order to focus specifically on the needs of the unemployed. These labs will offer specialized training on resume building, job search, and interview skills. The project also plans to expand Spanish-language computer training programs in Wilmington, the area with the state's largest Hispanic population. Delaware plans to train as many as 2,000 residents with approximately 29,000 hours of teacher-led training over the three years of the project, with training to focus on digital literacy, test preparation, and workforce education.

Hospitals, Health Clinics, and Telemedicine Services

BTOP projects will directly connect or improve connection speeds for nearly 3,000 hospitals and other health care facilities. For example:

The ION Upstate New York Rural Broadband Initiative will expand a broadband middle mile network in Upstate **New York** and parts of **Pennsylvania** and **Vermont**. The project plans to extend its relationship with the New York State Office for Mental Health and the Bassett Hospital and Healthcare System to enable the state and Bassett to enhance their telemedicine practices and better serve rural residents.

The Pennsylvania Research and Education Network, or PennREN, is a partnership that includes universities, healthcare providers, and library associations. In addition to connecting community institutions in South and Central **Pennsylvania**, PennREN plans to become the main artery for the exchange of healthcare information across the state, linking the Hospital and Healthcare Services Association of Pennsylvania, the University of Pittsburgh Medical Center, Penn State Hershey Medical Center, the Pennsylvania eHealth Initiative, and the Mountain Health Care Alliance.

The Iowa Health System (IHS) will upgrade its 3,200-mile broadband network connecting or improving connection speeds for over 200 healthcare entities across **Iowa**, including hospitals, primary care physicians, medical facilities, community health centers, clinics, and other providers, many in rural locations. The project's broadband capabilities will improve healthcare delivery, telemedicine, 3-D imaging, diagnosis, monitoring, file transfer, electronic health records, research, and instruction. In addition, Central Iowa Hospital Corporation's Rural Telehealth Initiative sustainable broadband adoption project will complement the IHS infrastructure project. The Rural Telehealth Initiative project links healthcare providers, EMS units, city governments, and schools to foster demand for telehealth applications; improve health-related distance learning, mentoring, and patient education; enhance EMS capability and disaster readiness; and provide telehealth services to correctional facilities.

The Nevada Hospital Association will build and operate a telehealth network connecting 37 rural medical providers across **Nevada**, including the University of Nevada Medical Center, which cares for the largest percentage of poor and uninsured patients in the state, and the Indian Health Board of Nevada, which represents 13 tribal medical facilities. The network will entail construction of 224 new miles of fiber, use of an additional 453 miles of existing fiber, and 580 microwave miles. The network will enable videoconferencing, telemedicine applications, and use of electronic medical records.

Libraries

BTOP infrastructure projects will also directly connect approximately 2,000 libraries to broadband service, providing access and training to tens of thousands of users. BTOP public computer center and sustainable broadband adoption projects will connect hundreds more libraries. For example:

The **Arizona** State Library will improve and expand its public computer centers in more than 80 libraries throughout the state, including adding more than 1,000 computers to meet growing demand. It expects to serve more than 75,000 users per week and offer training in digital literacy skills.

The State Library of **Louisiana** will deploy more than 760 computer workstations to meet the needs of every library in the state system and deploy four mobile computer and training labs to bring Internet and job skills training to remote areas. With these additions, the libraries expect to serve an additional 42,000 users per week.

Wisconsin's Education and Library Broadband Infrastructure Buildout project plans to directly connect 385 libraries, 74 school districts, and eight community colleges (including two tribal colleges) to the existing high-speed BadgerNet Converged Network. The additional fiber connections are expected to upgrade 17 percent of the state's schools and 81 percent of the state's libraries to broadband speeds of between 20 Mbps and 100 Mbps, strengthening their ability to serve underserved communities throughout the state.

In **Rhode Island**, the Beacon 2.0 Library Computer Center project plans to expand computer capacity at all of the state's public libraries and create 10 new mobile computer centers to bring computer access and training into underserved communities with areas of high unemployment. The project aims to serve nearly 7,000 additional users per week.

Minority-Serving Institutions

A number of America's Historically Black Colleges and Universities (HBCUs) will implement innovative BTOP projects to serve students and local communities. For example:

North Carolina Central University's School of Law, an HBCU, plans to upgrade broadband services and deploy videoconferencing in five legal assistance facilities, while expanding access to its legal education programs. The project aims to serve low-income residents and undergraduates at NCCU's Legal AID of North Carolina offices and at four other HBCUs: Elizabeth City State University, Winston-Salem State University, North Carolina A&T University, and Fayetteville State University. The project will hold legal writing seminars for undergraduates to better prepare them for law school and to increase the representation of ethnic and economic minorities in the legal profession. The program also plans introductory law classes for high school students in the region.

Also in **North Carolina**, The Fayetteville State University/Fayetteville Metropolitan Housing Authority Computer Center will serve area residents with 30 new workstations and a range of training geared towards the needs of low-income persons, including basic computer and job skill courses, online GED and college courses, and personal finance courses.

Another HBCU, Coppin State University in Baltimore, **Maryland**, recently opened a new BTOP-funded 60-workstation computer center where students and faculty are helping Baltimore City residents learn computer skills. The university is offering training and educational courses on a regular basis, serving more than 500 users per week.

Florida A&M University, also an HBCU, will establish a new Center for Public Computing and Workforce Development to serve the public. The project's training and broadband programs will include disciplines such as public administration, education services, health care, social assistance, and agriculture. They also plan workshops geared to small businesses, with an emphasis on veterans, minorities, and women.

Indian Tribes

BTOP projects will serve Indian tribes by bringing broadband facilities to tribal lands and by expanding broadband adoption among tribal communities. Six tribal authorities received BTOP grants for infrastructure and public computer center projects, and at least 65 BTOP projects will benefit directly tribal communities throughout the United States.

In the Navajo Nation, the Navajo Tribal Utility Authority plans to deploy broadband infrastructure covering 15,000 square miles in **Arizona, Utah, and New Mexico**. This is an area with rugged terrain and significant poverty, where many residents lack basic telephone service. Among other benefits, the project plans to connect 49 Chapter Houses, which serve as community centers for the Navajo population, and pave the way to bring telemedicine services, such as remote diagnostics and patient consultations, to this rural population.

ZeroDivide's Tribal Digital Village Broadband Adoption program will target broadband adoption among the 15 Native American tribes in rural San Diego County, **California**, where adoption rates are only 17 percent. The project aims to raise broadband adoption to 70 percent by providing 8,900 tribal residents and 2,000 residents living in adjacent communities with broadband training, awareness, and adoption programs. Computer skills and broadband awareness training will be provided to as many as 1,000 residents over the life of the project, offering approximately 3,000 training hours focusing on online connectivity, career building, community resources, health care, and education.

The Nez Perce Tribe's 1,200 square mile reservation in rural **Idaho** will significantly benefit from BTOP-funded projects. NTIA awarded the Tribe a grant to build a 119-mile wireless microwave broadband network to connect as many as 18 community anchor institutions with speeds between 20 and 100 Mbps. The network will enhance distance learning through Northwest Indian College, the only Native American higher educational entity in the area. The Tribe's project will complement BTOP awards to First Step Internet, which will build a regional network of 10 microwave towers to extend high-capacity Internet service in the north-central part of Idaho and be used by the Nez Perce Tribe, and One Economy, which will extend its broadband adoption efforts into tribal communities.

Seniors

The growing population of seniors lags in broadband usage, with an adoption rate of 40 percent as compared to the national rate of 64 percent. Several BTOP-funded projects feature senior citizens as a major focus. For example:

Myway Village is partnering with the State of **Illinois** and the Illinois Low Income Senior Internet Coalition to expand a longstanding program that combines technology, training, and technical support in a manner tailored for the senior community. The project plans to engage residents in 23 senior housing communities, teaching an estimated 4,900 seniors the basics of e-mail, Web access, and other practical broadband applications. The project also intends to collaborate with local Workforce Investment Act organizations to help seniors who develop their digital literacy skills to find part time work.

The **City of Boston**'s sustainable broadband adoption project is tailored to the needs of seniors living in three public housing developments. The Connected Living program will provide specialized content, group training, and a peer training program that trains seniors as "personal ambassadors" to provide one-on-one guidance to other seniors.

The **City of New York**, which will create 11 new public computer centers and upgrade 82 more, is collaborating with the NYC Department for the Aging and the nonprofit Older Adults Technology Service (OATS) on a new public computer center that will provide a central location for training, curriculum development, technical support, and capacity building for over 300 senior service agencies across the city.

Residents of Public Housing

Several BTOP projects connect public housing sites to broadband, establish public computing centers in public housing communities, or target public housing residents for digital literacy training. These projects will reach individuals who lack the financial resources to adopt broadband at home and those who can benefit greatly from Internet-enabled training opportunities.

Maximizing BTOP Benefits

The U.S. Virgin Islands will benefit from complementary infrastructure, public computer center, and sustainable broadband adoption awards. BTOP funding will enable the Virgin Islands to construct 244 miles of new fiber directly connecting as many as 325 anchor institutions, establish or upgrade more than 50 public computer centers with 700 new computer workstations, and provide training in computer literacy skills to prepare island residents for work-at-home call center jobs. A multifaceted outreach campaign is planned to increase broadband subscribership and stimulate job growth among residents.

Pursuing an innovative proposal, the **Tampa** Housing Authority and its broad array of partners will create some of the first "technologically smart communities" at 23 public housing sites. The project will install computers as appliances in housing units, provide broadband connections for residents, and train resident families in computer skills and digital literacy. The project is intended to reduce barriers to broadband adoption, while at the same time increase community education and employment skills and give residents the tools they need to escape poverty.

Boston's public computing center project is being implemented in collaboration with the Boston Housing Authority and will benefit 11 public housing sites across the city. The project will feature before- and after-school programs, digital literacy training, job readiness, workforce development, and alternative education programs.

The **Santa Fe** Civic Housing Authority's Public Computer Labs project is adding and expanding public computer centers and at two public housing sites, offering broadband access and computer training to low-income families, minorities, disadvantaged youth, and Santa Fe residents who are disabled and elderly.

People with Disabilities

Broadband technology can assist people with disabilities to live more independently, yet a substantial portion of this population is not experiencing the benefits of broadband. Numerous BTOP projects will help address this gap.

For example:

Communications Services for the Deaf, Inc. will assist people who are deaf and hard of hearing in communicating via the Internet with the hearing population and with each other. The project is employing a combination of discounted broadband service, computers for 4,500 people who are deaf or hard of hearing, technology training for an estimated 200,000 people from an online state-of-the art support center customized to the community's needs, public access to videophones at anchor institutions from coast to coast, and a nationwide outreach

initiative. The project also aims to measure the impacts of its various efforts and to identify ongoing barriers to adoption by people who are deaf and hard of hearing.

Wildwood Programs plans to deploy videoconferencing and other broadband capabilities to 75 human services facilities in upstate **New York** to increase institutional broadband subscribership among organizations that serve people with disabilities in the region. The project plans to make videoconferencing available to clients through a number of mediums, including from their home computers. Also, because many agencies providing service to people with disabilities have been slow to adopt high-speed services, the project intends to focus on remote staff training and coordination and act as a model and case study for the agencies as they incorporate broadband services into their client interactions. The project expects to provide computer skills and broadband training to as many as 900 residents.

The University of Hawaii System will update computers and improve accessibility in 54 computing centers statewide. Hawaii's Library of the Blind and Physically Handicapped (LBPH), which serves the blind population in **Hawaii** and the Pacific Islands and is a regional library for the Library of Congress's National Library Service for the Blind and Physically Handicapped, is one of the computer centers that will benefit from BTOP funding.

Conclusion

This report offers just some examples of how BTOP projects will benefit communities across the country. In the short term, these broadband investments promise to create jobs throughout the economy, ranging from manufacturing fiber-optic cable and other high-tech components, to installing fiber and broadband networking hubs. Workers will also build and upgrade public computer centers; network these centers; and install computers, hardware, and software. Trainers will implement outreach strategies and teach the digital literacy skills necessary in this globalized economy.

Given all that is at stake, NTIA is committed to ensuring that BTOP projects are completed on time, within budget, and deliver the promised benefits to communities across America. NTIA is placing a significant priority on overseeing the investments and providing grantees with the technical assistance necessary for projects to fully succeed. In addition, NTIA is promoting transparency and accountability by collecting and publishing data on the progress of these projects, which also will assist researchers around the country in assessing the impact of these broadband initiatives.

BTOP will have a strong and lasting impact in the communities affected, and its legacy will extend beyond the projects funded to provide valuable lessons and case studies that will inform future investment in broadband nationwide and for years to come.

Appendix A: Summary of BTOP Awards

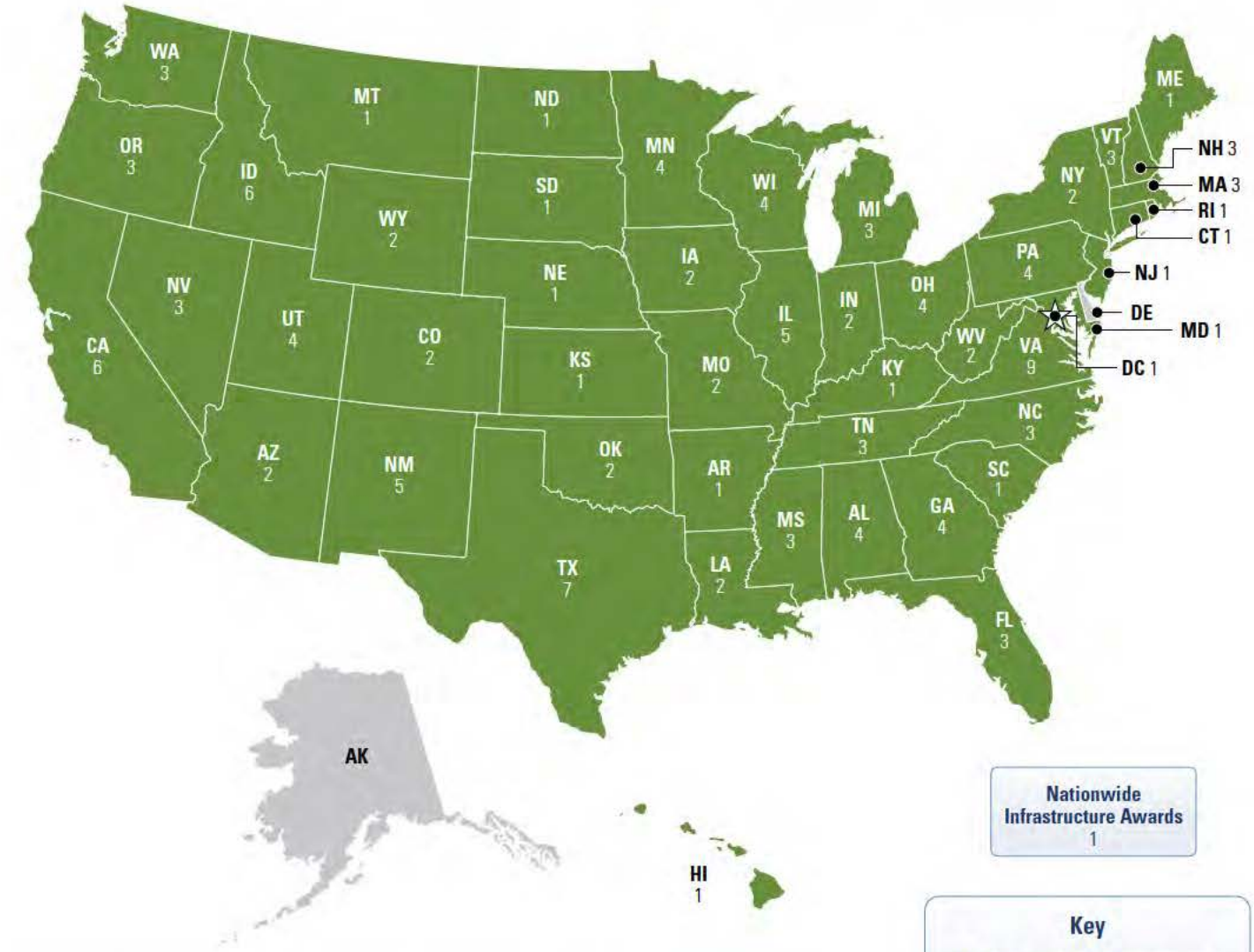
SUMMARY OF BTOP AWARDS	
Total projects awarded	233
Total federal funds obligated	$3,936,114,246
Total matching funds of Awardees	$1,424,224,182
Sum of the proposed grant and match dollar amounts	$5,360,338,428
INFRASTRUCTURE PROJECTS	
Total projects awarded	123
Total federal funds obligated	$3,484,410,151
Miles of network (*e.g.,* fiber) to be built with Federal award†	74,461
Miles of network to be upgraded with Federal award†	48,997
Total homes that last-mile providers could potentially serve by interconnecting with BTOP-funded infrastructure projects†	40,315,506
Total businesses that last-mile providers could potentially serve by interconnecting with BTOP-funded infrastructure projects†	4,286,934
Total anchor institutions that last-mile providers could potentially serve by interconnecting with BTOP-funded infrastructure projects†	134,902
Total anchor institutions to be connected directly by infrastructure providers upon completion of network build-out†	24,194
PUBLIC COMPUTER CENTER PROJECTS	
Total projects awarded	66
Total federal funds obligated	$200,966,535
Total new or upgraded Public Computer Centers†	3,793
Total new or upgraded computers/workstations†	36,628
SUSTAINABLE BROADBAND ADOPTION PROJECTS	
Total projects awarded	44
Total federal funds obligated	$250,737,560
Total target audience size†	43,709,050

†Based on applicant-reported information

Appendix B: Geographic Distribution of BTOP Awards By Type

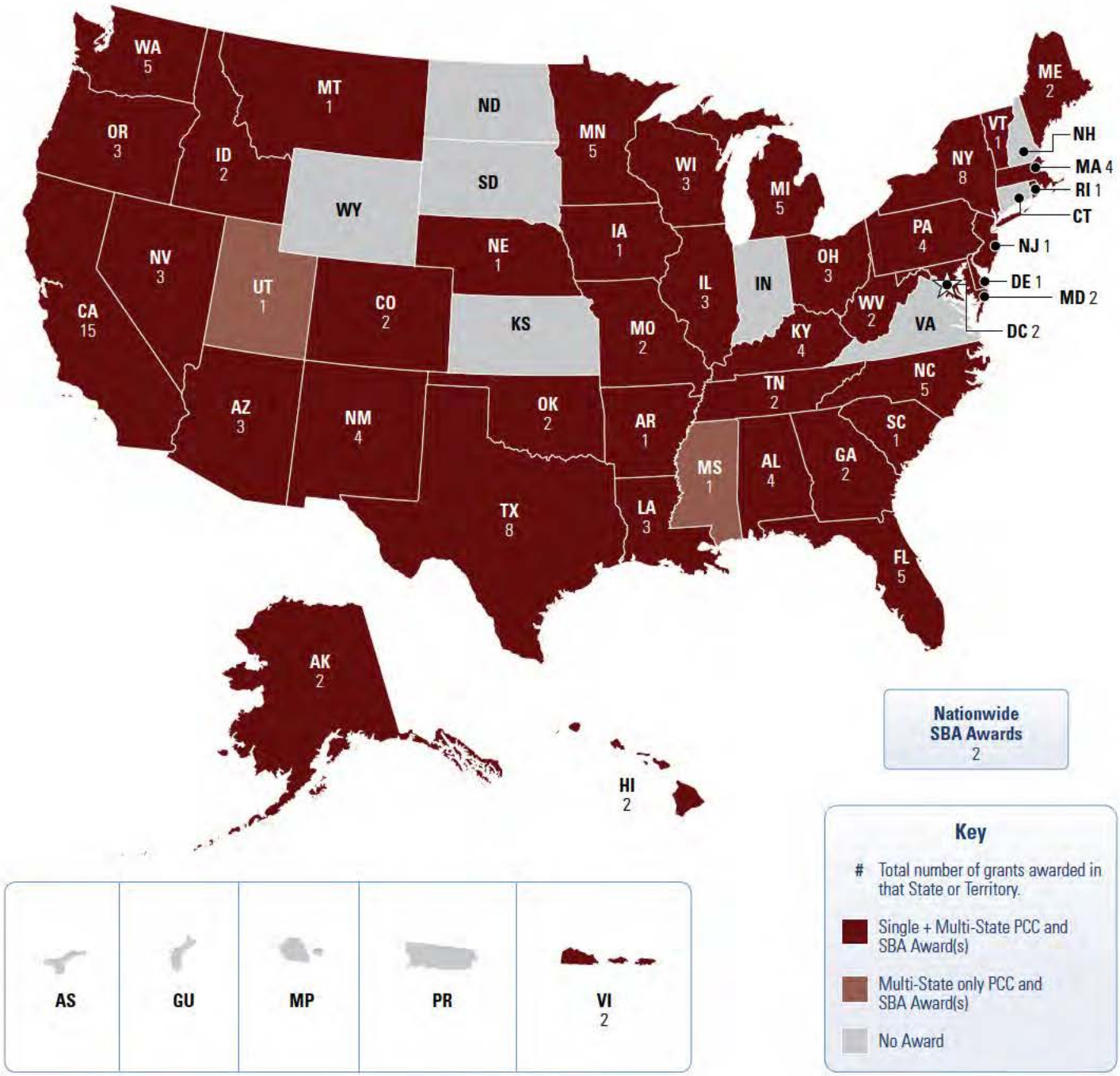
Infrastructure Projects

A list of all projects awarded, including descriptions and awardee-filed reports, can be found at *www.ntia.doc.gov/broadbandusa*.



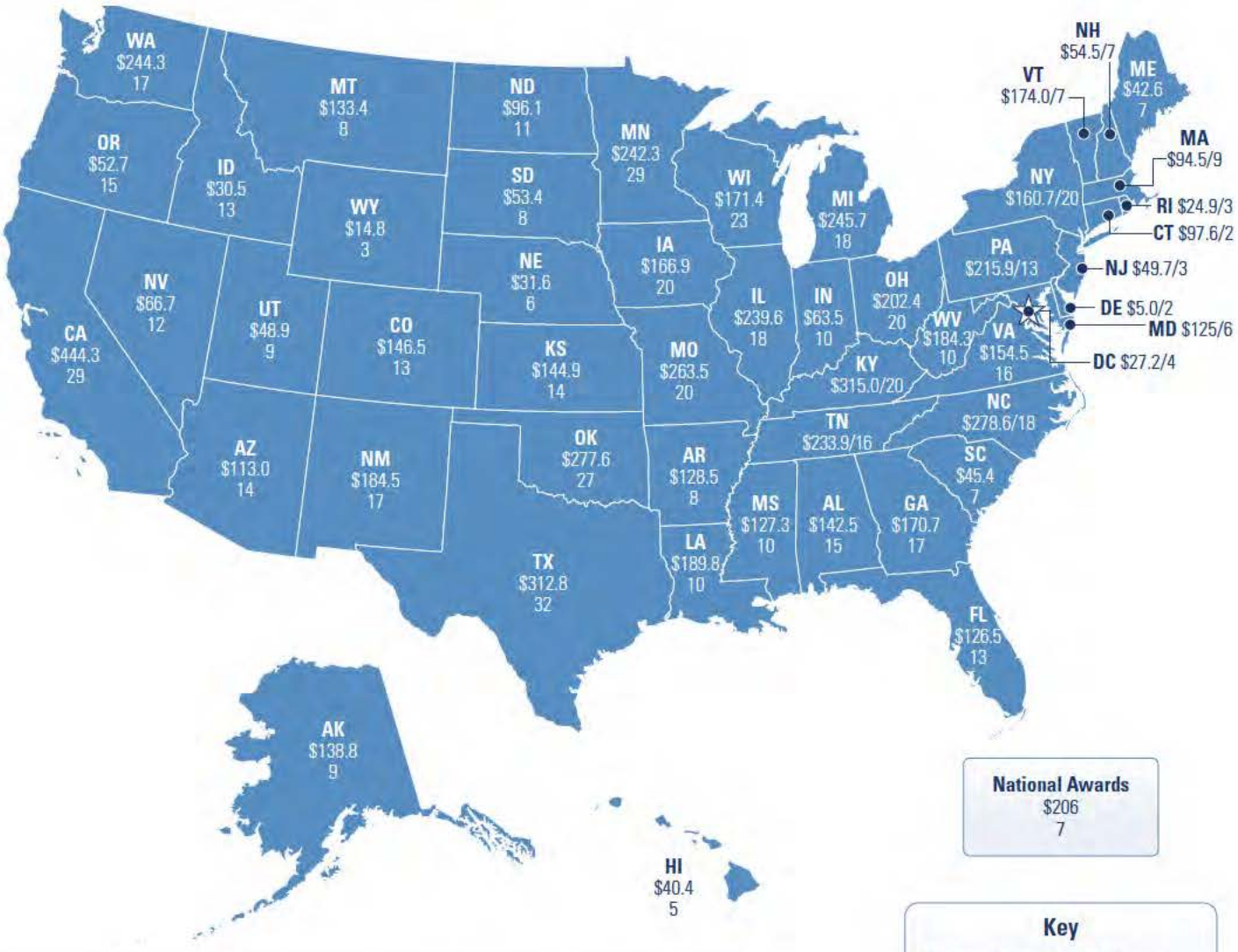
Public Computer Center & Sustainable Broadband Adoption Projects

A list of all projects awarded, including descriptions and awardee-filed reports, can be found at *www.ntia.doc.gov/broadbandusa*.



Appendix C: Geographic Distribution of All BTOP, SBDD and BIP Awards

Combined Investments Across All U.S. States and Territories



National Awards
$206
7

AS	GU	MP	PR	VI
$92.9	$7.5	$3.4	$41.1	$67.5
2	2	2	3	4

Key

$ Amount (in millions) of all BTOP, SBDD and BIP awards impacting that State or Territory (note: amount may include the estimated per-State share of any awards that impact multiple states.)

Total number of BTOP, SBDD, and BIP awards impacting that State or Territory.

BROADBANDUSA
CONNECTING AMERICA'S COMMUNITIES

National Telecommunications and Information Administration
U.S. Department of Commerce
Broadband Technology Opportunities Program
1401 Constitution Avenue, NW
Washington, DC 20230