west virginia

STATE OF WEST VIRGINIA

BROADBAND STRATEGIC PLAN

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EXECUTIVE SUMMARY

A lack of broadband availability and adequate speeds continues to plague rural areas in West Virginia as evidenced by current broadband maps and the outcry of West Virginia citizens. There is still a severe digital divide that exists in West Virginia as a result of the lack of robust broadband coverage across the State. The West Virginia Geological and Economic Survey, Office of GIS Coordination (WVOGC), in coordination with the WV Broadband Deployment Council, and assistance from the Delta Development Group, Inc. (Delta) and L.R. Kimball, facilitated West Virginia's Broadband Strategic Planning effort to begin bridging that divide. The planning team developed the goals and objectives in this plan by reviewing existing State broadband projects, analyzing the 11 regional broadband plans developed by the State's regional planning and development councils, interviewing broadband providers, researching best practices, and discussing existing programs with federal, state, and local governments. This Plan includes goals and objectives in four areas: organization, education and demand promotion, infrastructure support, and economic development.

An analysis of the 11 regional plans revealed that regions across West Virginia deal with similar challenges with regard to broadband deployment and in identifying their challenges, many regions made very similar goals and strategies for broadband deployment and adoption. The most common challenges to implementation that were identified include geography, population density and the interest in and willingness of providers to make initial capital expenditures. The biggest challenges identified in the plans were funding and leadership. The majority of the regional broadband plans recommend strategies to promote education and outreach to inform citizens of the benefits of broadband, alleviate the fear of broadband utilization, and encourage adoption. Additionally, many recommend targeted infrastructure improvements to reach unserved and underserved areas and improve the overall reliability and speed of broadband. Furthermore, many focused on economic development to drive the expansion of broadband services with targeted aggregation and policy changes to encourage broadband expansion.

This Broadband Strategic Plan recognizes the challenges and strategies presented by each region and state-level efforts and plans for a centralized organization to coordinate efforts and communication. The education and demand promotion goals focus on increasing broadband utilization and demand while the economic development goals coordinate economic growth opportunities and broadband deployment efforts. Infrastructure objectives support broadband deployment to unserved and underserved areas while increasing overall speed and reliability.

The organization goals involve the foundation of a coordinated effort and plan for a lead agency to coordinate education, implementation and adoption within the State as well as a new sustainable funding program for broadband initiatives and programs. The implementation of the Broadband Strategic Plan requires the participation of many partners including multiple state agencies, local government entities, colleges and universities, school districts, and the private sector. However, it is recommended that the State designate a lead agency to monitor and facilitate the implementation of the Plan. A centralized approach will help to coordinate the multiple partners in this collaborative effort and help to ensure that one agency understands all of the diverse broadband efforts that are happening around the State, and how the efforts combine to increase the broadband availability, reliability, and

speed of access in the State of West Virginia. Currently, the WVBMP is the only entity in the State that collects broadband data and develops and updates maps of broadband coverage in the State. While the West Virginia Broadband Mapping Program (WVBMP) was developed as a response to a federal program, it has since become integral to state and local broadband planning and priorities. The federal program that funds this program will expire in January 2015, however, the WVBMP's work will still be necessary for the continued expansion of broadband deployment efforts in the State. Currently, the Broadband Deployment Council (BDC) is the only State entity focused on the big picture for broadband in the State and it has been essential to the efficient and effective management of broadband initiatives in the State, but it will sunset in December 2014. In order to continue the BDC's important mission and continue the progress achieved in the last few years, a broadband task force or advisory board is needed beyond the BDC's current sunset date of December 2014.

The actionable objectives for the remaining three goal areas, education and demand promotion, infrastructure support, and economic development, make up the remainder of the plan. Goals related to education and broadband adoption include developing and implementing a State-wide awareness campaign with the goal of increasing broadband utilization and take-rates, the promotion of broadband education, support of cost reduction of Internet access and equipment and support the development of applications and services that increase broadband demand. Infrastructure goals focus a lot on leveraging existing programs and resources and include leveraging existing BTOP investments to increase broadband availability, support Gigabit City developments and work with, the incumbent provider to align the Connect America Fund (CAF) with state goals and objectives. Economic development goals think outside of the proverbial broadband box and introduce alternative ways to get broadband planning and implementation to be a consideration for related programs and planning efforts including incorporating broadband planning into existing land use planning legislation and incorporating "Dig Once" considerations into new statewide policies and legislation.

INTRODUCTION

The State of West Virginia has made investments in both the availability and promotion of broadband services. The investments came from State funding through the West Virginia Broadband Deployment Council (BDC), and federally-funded Technical Assistance Grants administered by the West Virginia Broadband Mapping Program (WVBMP). These efforts have made improvements to the broadband landscape in West Virginia. According to the Federal Communications Commission (FCC) Broadband Progress Reports, the State's adoption of fixed broadband has increased from 47% in December of 2008 to 59.2% in June 2011. This means that 59.2% of the population that have broadband services available have procured the service. Therefore, broadband promotion and education efforts are still needed.

The West Virginia Geological and Economic Survey, Office of GIS Coordination (WVOGC) in coordination with Delta Development Group, Inc. (Delta) and L.R. Kimball facilitated West Virginia's Broadband Strategic Planning effort. The planning team consisted of representatives of the Governor's Office, the Broadband Deployment Council, the Office of Technology, Office of GIS Coordination, broadband providers, L.R. Kimball and Delta. The planning team reviewed existing State broadband projects (e.g., broadband mapping and speed test surveys), analyzed the 11 regional broadband plans developed by the State's regional planning and development councils, interviewed broadband providers, researched best practices, and discussed existing programs with federal, state, and local governments. This document outlines West Virginia's Broadband Strategic Plan. The analysis of the State's programs and the regional broadband plans demonstrate that more planning, deployment, and development of broadband initiatives is needed to decrease the digital divide that West Virginia citizens experience from the lack of full broadband deployment, inadequate speeds, and low adoption.

While adoption of available broadband has increased in recent years, there are still large swaths of the State that do not enjoy broadband coverage. Coverage maps from the WVBMP and the FCC continue to demonstrate areas of West Virginia that are unserved or underserved by current broadband networks. The WVBMP has procured speed test data for the State. When comparing the speed test data to the WV/FCC definition of Broadband (i.e., 4 Mbps download and 1 Mbps upload), only 63% of the tests taken in 2014 (January – June) had speeds that qualify as broadband service under the FCC definition. Table 1 below highlights the speed test results for the last three years.

Table 1 – Broadband Speed Test Data

Year	Number of Speed Tests	Percent of Tests Meeting Broadband Speed Definition[1]
2014	201,488[2]	63%
2013	556,896	59%
2012	576,549	48%

[1] Broadband speed definition is based on the FCC's definition of broadband of 4 Mbps download and 1 Mbps upload) See the FCC's Sixth Broadband Deployment Report for more information.

[2] This number represents data collected during January-June of 2014.

The 11 regional broadband plans also conclude that broadband is not widely available in West Virginia and suggest recommendations to improve broadband availability and adoption. Each region surveyed its residents and businesses as part of its regional broadband plan. The majority of respondents had an Internet connection. However, the regional speed test results indicated those actually receiving speeds that meet the FCC broadband definition were between 28%-49% of respondents depending on the region.

The regional surveys revealed that West Virginians are not satisfied with their broadband options and view broadband as critical to growth and competition in the State. Residents are generally dissatisfied with Internet speed, cost, access, and reliability. Conversely, businesses are satisfied with Internet speed, cost, access, and customer service. Both residents and businesses are dissatisfied with competition/choices in the broadband market place, and in most areas, respondents cited only one or two providers to choose from.

Mapping projects, regional surveys, interviews with providers, and the continued request for broadband funding demonstrates both a need and a desire for improving broadband access, speed and availability in West Virginia. West Virginia's Broadband Strategic Plan focuses on four (4) main areas for improvement – Strategic Direction Objectives, Education and Demand Promotion, Infrastructure Development, and Economic Development. The strategic objectives for each area are highlighted below.

Strategic Direction

- Identify a lead agency
- Develop a Connect West Virginia Fund as a sustainable funding program for broadband initiatives and programs

Education and Demand Promotion Objectives

- Develop and implement a State-wide awareness campaign with the goal of increasing broadband utilization and take-rates
- Promote broadband education
- Support cost reduction of Internet access and equipment
- Support the development of applications and services that increase broadband demand

Infrastructure Development Strategic Objectives

- Leverage BTOP investment to increase broadband availability
- Support Gigabit City developments
- Work with incumbent provider to align the Connect America Fund (CAF) with state goals and objectives

Economic Development Strategic Objectives

- Incorporate broadband planning into existing land use planning legislation
- Incorporate "Dig Once" considerations into new statewide policies and legislation

The plan also recommends appointing one central agency/department to oversee and facilitate the implementation of the Broadband Strategic Plan. Additionally, the WVBMP and the monitoring of speed test data should continue as a way to measure the overall progress of the Broadband Strategic Plan and the return on investment for the State of West Virginia.

BROADBAND BACKGROUND INFORMATION

REGIONAL PLAN SUMMARY

At the request of the State, each regional planning and development council facilitated the development of a regional broadband strategic plan. In order to develop the plans, a regional broadband planning team (RBPT) was formed for each region with representatives from government, healthcare, education, the broadband community, and the private sector. These individuals were recruited based on their experience with broadband technology, and their breadth of local knowledge and experience of broadband challenges. The goal of the project was to outline the current broadband environment, to make recommendations for expanding and enhancing broadband in each region, and to provide strategies to state and local governments for implementation. Funding for the regional broadband strategic plans was provided by the West Virginia Geological and Economic Survey, Office of GIS Coordination (WVOGC) through a grant from the National Telecommunications and Information Administration (NTIA). Appendix A contains a link to each regional broadband plan.

Each region surveyed its residents and businesses as part of the plan. The majority of respondents had an Internet connection. However, the regional speed test results indicated those actually receiving speeds that meet the FCC's definition of broadband were only between 28%-49% of respondents depending on the region. Residents are generally dissatisfied with Internet speed, cost, access, and reliability. Conversely, businesses are satisfied with Internet speed, cost, access, and customer service. Both residents and businesses are dissatisfied with competition/choices in the broadband market place, and in most areas, respondents cited only one or two providers to choose from. Overall, businesses and residents see broadband as critical to growth and competition.

The majority of the regional broadband plans recommend strategies to promote education and outreach to inform citizens of the benefits of broadband, alleviate the fear of broadband utilization, and encourage adoption. Additionally, targeted infrastructure improvements to reach unserved and underserved areas and improve the overall reliability and speed of broadband services are recommended. Furthermore, a focus on economic development to drive the expansion of broadband services with targeted aggregation and policy changes to encourage broadband expansion are suggested.

While the plans outline many strategies, they also identify the challenges and difficulties to implementation. Some challenges include geography, population density and the interest in and willingness of providers to make initial capital expenditures. The main challenges identified in the plans were financial (i.e., who will pay for implementation?) and leadership (i.e., who owns and implements the plans?).

BROADBAND SPEED TEST

The West Virginia Broadband Mapping Program procures speed test data for the State. The speed test measures and records the actual upload and download speed of the Internet connection at the time of the test. A review of the speed test data collected in 2014 (January – June), 2013, and 2012 was performed to determine if speeds were meeting and/or exceeding the State and FCC's definition of broadband speeds of 4 Mbps download and 1 Mbps upload. HB2979 of 2013 amended the definition of broadband in West Virginia to match the FCC definition of broadband and automatically change when the FCC definition is updated. The FCC definition is currently 4 Mbps download speed and 1 Mbps upload speed in accordance with the methodology described in FCC Report 12-90.

Out of the 201,488 respondents that took the speed test in January – June of 2014, 63% had broadband speeds that met the FCC's definition. In 2013, there were 556,896 test takers and 59**%** reported having broadband speeds that met the FCC definition. In 2012, 576,549 tests were taken with 48% having broadband speed according to the same definition.

The data was reviewed and organized to show the top broadband providers throughout the State, the number of tests taken, and number of tests that met or exceeded 4Mbps down and 1Mbps up. The findings are outlined in Table 2 below. Additionally, the results of the broadband speed test data have been organized by county and can be viewed in Appendix B.

Table 2 - Broadband Speed Test Data

Broadband Providers	Number of Tests	Number of Tests at or above 4Mbps/1Mbps[3]	Percentage of Tests at or above 4Mbps/1Mbps
2014 (January – June)	**201,488**	**126,812**	**63%**
Frontier Communications	49,108	5,650	12%
Suddenlink Communications	72,127	57,843	80%
Comcast Cable	45,607	40,025	88%
Time Warner Cable	6,116	4,730	77%
Shentel Service Company	5,408	3,849	71%
Armstrong Cable Services	1,717	1,154	67%
WVNet	1,858	1,726	93%
LUMOS Networks	3,262	1,436	44%
Other*	16,285	10,399	64%

[3] The minimum standard for broadband speed set forth in the state statute §31-15C-2 is defined at 4 Mbps download and 1 Mbps upload speed.

2013	**556,896**	**330,398**	**59%**
Frontier Communications	139,323	15,134	11%
Suddenlink Communications	193,524	150,589	78%
Comcast Cable	124,767	108,792	87%
Time Warner Cable	13,251	7,706	58%
Shentel Service Company	14,750	9,501	64%
Armstrong Cable Services	4,814	3,154	66%
WVNet	4,865	4,358	90%
LUMOS Networks	9,616	3,833	40%
Other*	51,986	27,331	53%
2012	**576,549**	**278,500**	**48%**
Frontier Communications	154,674	5,490	4%
Suddenlink Communications	195,894	129,750	66%
Comcast Cable	120,319	97,994	81%
Time Warner Cable	4,994	1,280	26%
Shentel Service Company	14,851	7,642	51%
Armstrong Cable Services	5,224	3,223	62%
WVNet	5,577	4,386	79%
LUMOS Networks	11,554	3,620	31%
Other*	63,462	25,115	40%

*The category “Other” represents all providers with speed test data that are not included in this top broadband providers matrix. Please refer to Appendix C for the entire list of providers.

As the speed test data shows, West Virginia is making progress in improving the broadband infrastructure. However, there is still work to be done to ensure that 100% of our citizens have access to broadband at minimally defined speeds.

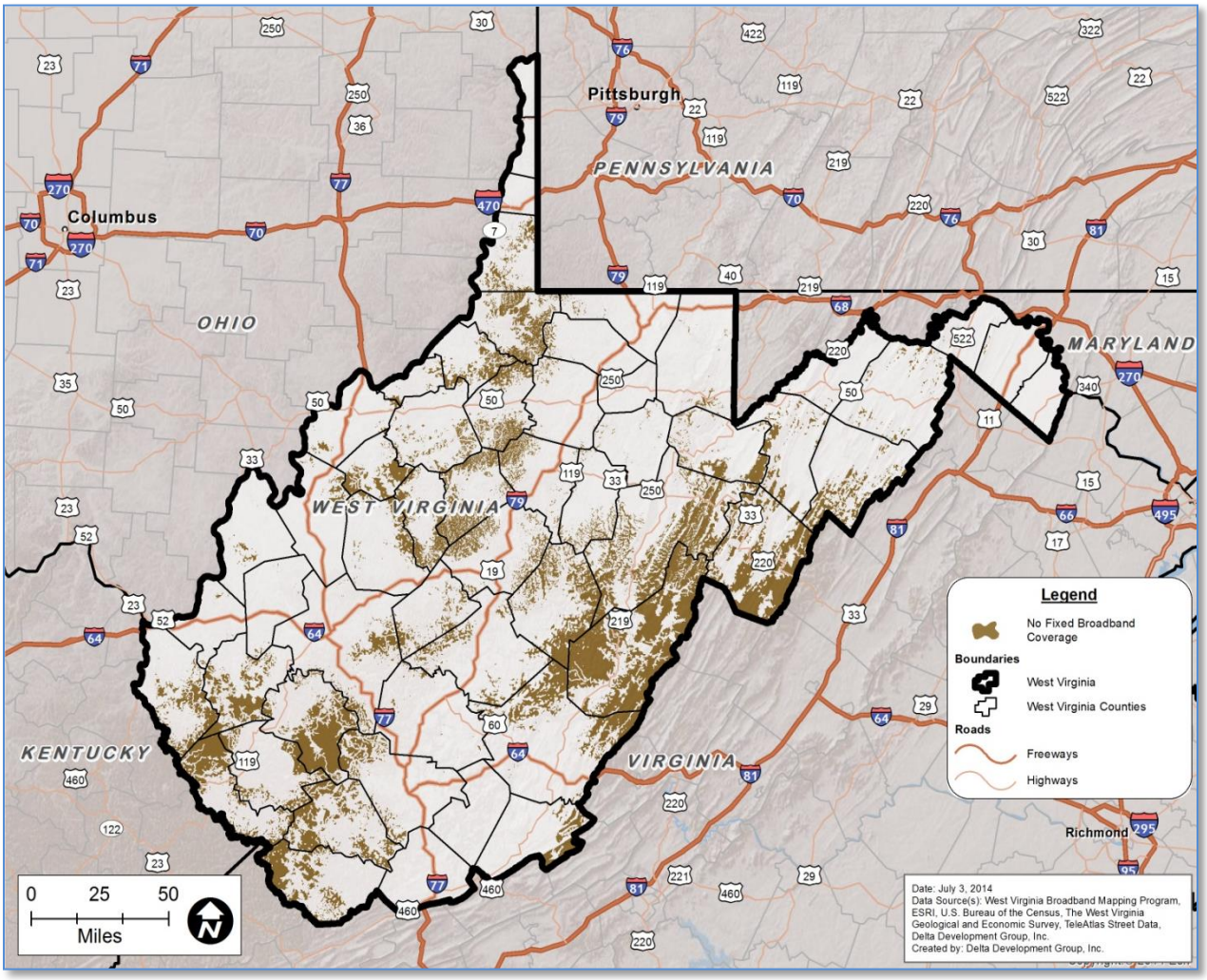
MAPPING PROGRAM SUMMARY

The following sections summarize three (3) diverse mapping projects (i.e., WVBMP, FCC Mapping Layer and the State's Broadband Type map). While the WVBMP, the FCC mapping layer, and the State's Broadband Type map have all been created with different parameters and purposes, they all use the same base data, and demonstrate the need for continued investment and build out of the State's broadband infrastructure to increase service to the unserved and underserved.

WEST VIRGINIA BROADBAND MAPPING PROGRAM

Both the FCC and State maps were created using WVBMP mapping data. The WVBMP worked with broadband providers throughout the State to map broadband availability information. All providers submitted coverage data on a biannual basis that shows their service area by census block level. From this information, mapping layers are generated to depict total provider coverage areas, coverage areas by provider type (e.g., DSL, cable), and areas with no provider coverage. The map below highlights areas with no fixed/wired broadband providers. Therefore, residents and businesses in these areas are unable to procure fixed broadband services.

Figure 1: No Fixed Broadband Coverage



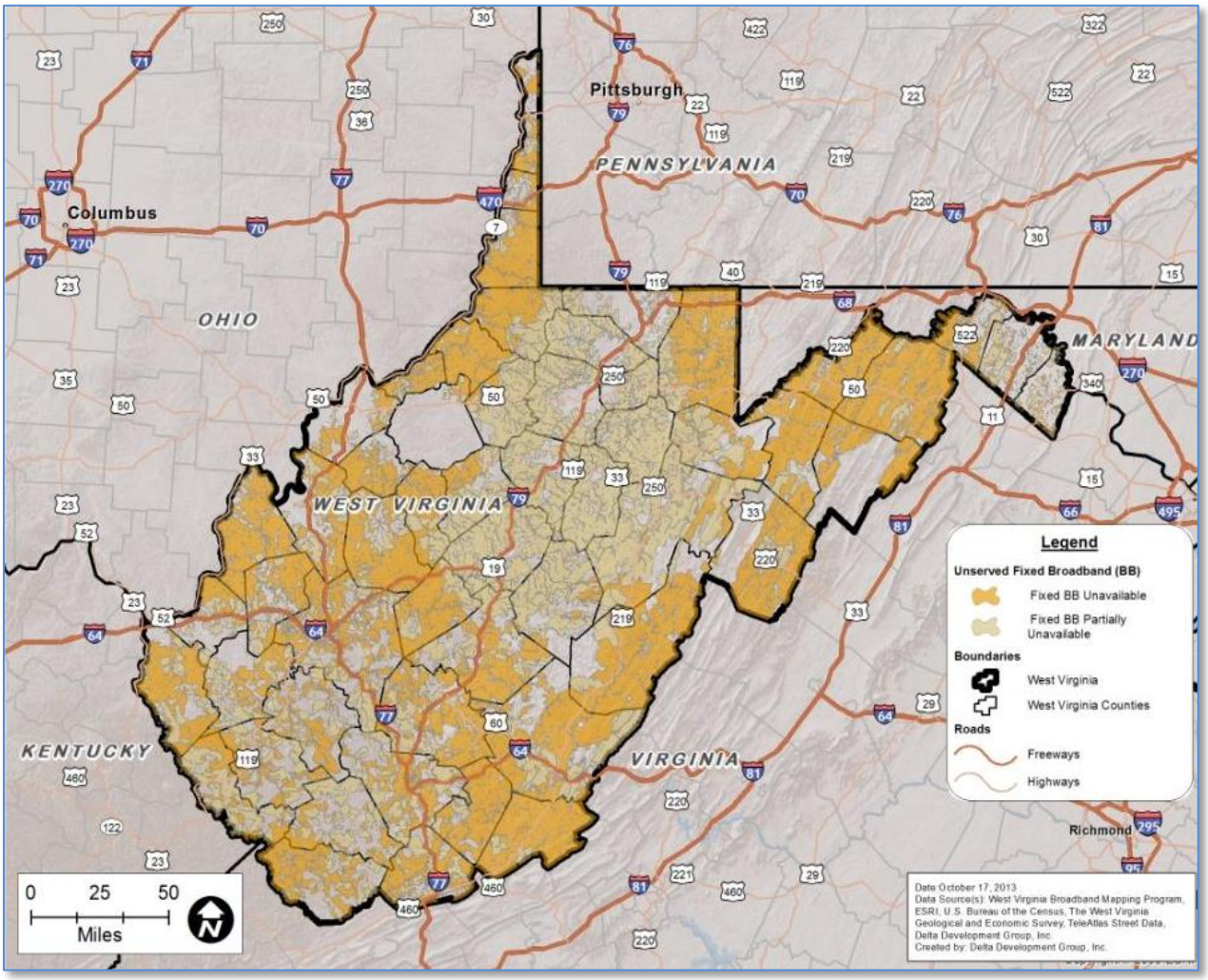
To view all the mapping layers on the interactive map developed by the WVBMP, go to http://www.wvcommerce.org/business/wvbmp/default.aspx#.

FCC UNSERVED AND PARTIALLY UNSERVED BROADBAND ANALYSIS

The FCC developed a map that outlines areas unserved and partially served by fixed/wired broadband, with advertised speeds of 3 Mbps download and 768 Kbps upload. The area of this map is greater than the WVBMP broadband map above, because it shows both areas that are completely unserved and also those with service below the above-mentioned speeds. The FCC map was created using WVBMP mapping data developed from data provided to the State by West Virginia broadband service providers.

The FCC data layer also represents areas of the State that are eligible for FCC broadband funding opportunities and are allowable areas for expenditure of current and future Connect America Funding (CFA) received by broadband providers. The CAF is discussed in more detail in S.O.9. of this Plan.

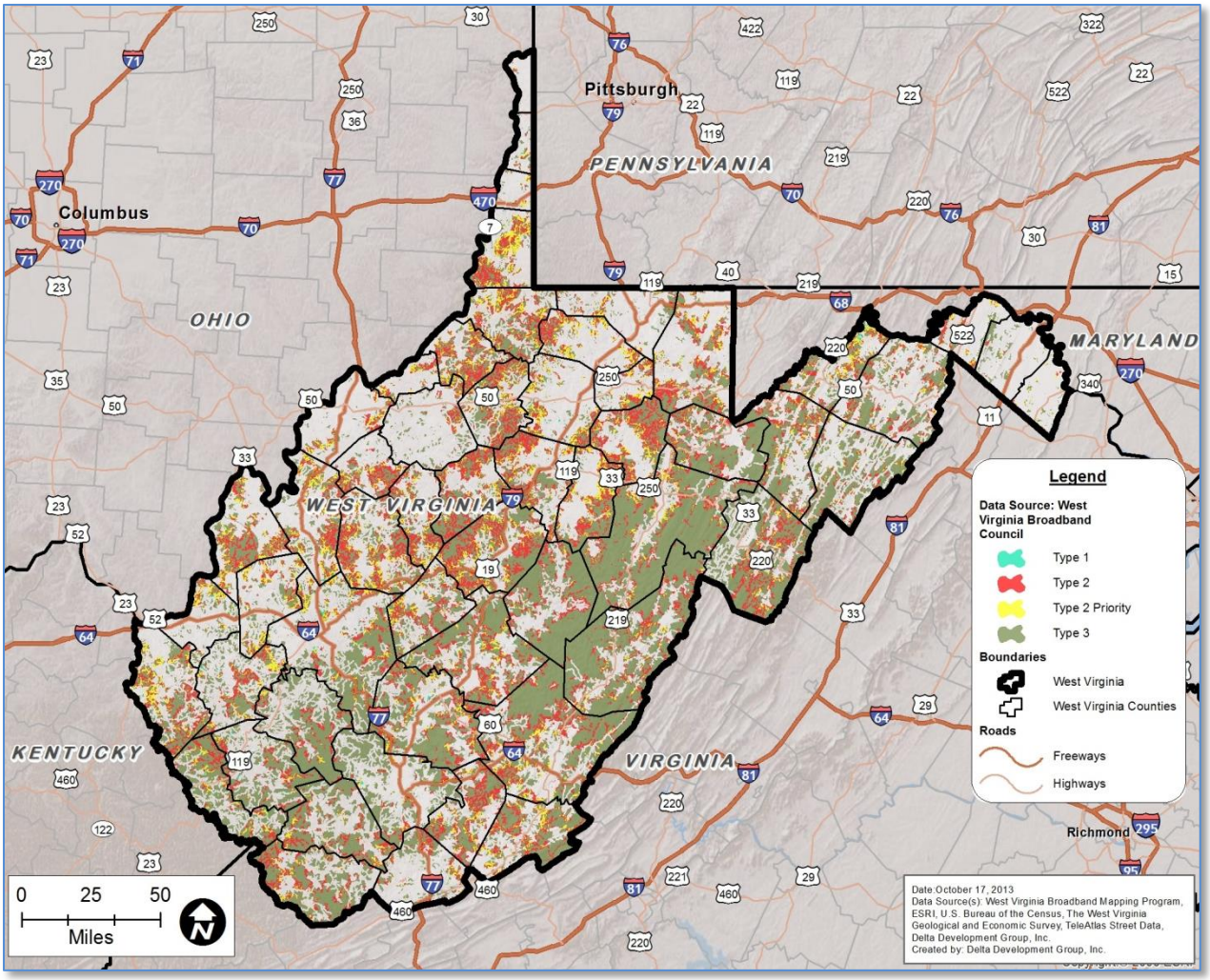
Figure 2: Unserved Fixed Broadband



WEST VIRGINIA PRIORITY AREA

WVBMP map data were generated to depict Type 1, 2, and 3 areas based on definitions outlined in West Virginia Code 31-15C-1 that establish areas eligible to receive West Virginia Broadband Deployment Council grant funding. Type 2 and 3 areas are eligible for West Virginia Broadband Deployment Council grant funding. A Type 2 unserved area is an area in which broadband may be deployed by broadband service providers and other entities in an economically feasible manner, provided some form of public money is made available. A Type 3 unserved area is an area in which, at present, cable or wireline broadband cannot be deployed in an economically feasible manner and an intermodal approach employing other technologies, such as satellite and wireless, is required to provide that area with high-speed Internet access. A Type 1 unserved area is defined as an area in which broadband may be deployed by service providers in an economically feasible manner and is not eligible for Broadband Deployment Council grant funding.

Figure 3: Priority Type Areas



RECENT BROADBAND PROJECTS

Over the past several years, there have been significant investments aimed at improving the broadband environment in West Virginia. Projects have been implemented to raise awareness, provide education, and improve broadband infrastructure. These projects were supported by diverse funding mechanisms that were made available through the Broadband Technologies Opportunities Program (BTOP), the West Virginia Broadband Deployment Council, the West Virginia Geological and Economic Survey, Office of GIS Coordination (WVOGC), and the Connect America Fund (CAF). For reference, a comprehensive list of recently funded broadband projects has been included in Appendix D. A review of regional plans, meetings with providers, and an examination of existing investments reveals that demand for additional Broadband investments outpace funding availability.

CURRENT WEST VIRGINIA GRANT PROGRAMS

TECHNICAL ASSISTANCE GRANT PROGRAM

As of the creation of this Plan, the WVBMP[4] provided two rounds of grant funding to support broadband use and adoption throughout the State. The awarded grant projects include activities that provide "broadband related train-the-trainer, education, and online application development". The Broadband Technical Assistance Grant Program is part of the State Broadband Initiative (SBI), which was established thanks to a grant from the NTIA to fulfill the goals of the American Recovery and Reinvestment Act of 2009.

- In 2012 the first round received 64 grant applications requesting $1,442,403 in funding. The program funded 33 grants totaling $677,625.
- In 2014 the second round received 129 grant applications requesting $3,210,185 in funding. The program funded 39 grants totaling $842,213.

Funding for the Technical Assistant Grant programs expires at the end of January 2015.

BROADBAND DEPLOYMENT COUNCIL GRANT PROGRAM

The Broadband Deployment Council (BDC) provides grants to fund broadband deployment projects that bring affordable broadband to unserved areas of West Virginia. There are two types of Broadband deployment projects – infrastructure and demand stimulation. Infrastructure projects are those that bring affordable broadband service to people and businesses that do not currently have it and may never have it without some sort of public funding. Demand promotion projects are those that help people and businesses understand and value the benefits that broadband service would bring to them, and cause them to want to use that service. A list of funded projects can be found in Appendix D.

[4] WVBMP has three components; Mapping, Planning, and Technical Assistance Projects. Technical Assistance Grants are funded by the NTIA and administered by the West Virginia Geological and Economic Survey (WVGES).

- In the first round of funding (2012), 24 grant applications were received requesting $7,204,831.50 in funding. The BDC awarded $2,051,278 to support broadband projects.
- In the second round of funding (2013), 7 grant applications were received requesting $339,170 in funding. The BDC awarded $156,660 to support broadband projects.
- Thus far, in the third round of funding, the BDC received requests for $6,719,891.57 and awarded $1,013,002.70 in grant funding.

During the first three rounds of funding, all supported projects were infrastructure-based. To date, no demand promotion projects have been funded. Funding for the Broadband Deployment Council Grants will sunset on December 31, 2014.

PROVIDER MEETINGS

The Broadband planning team held meetings with broadband providers and industry representatives to review regional findings, identify potential State goals, and collect feedback on industry issues and potential solutions[5]. All providers agreed that there is a need to grow broadband access and increase base broadband speeds available in West Virginia. Additionally, providers support projects that provide outreach and education to increase demand and utilization.

However, providers do have varied opinions on how to best expand their own networks. These can range from increased middle mile infrastructure to last miles support. Therefore, a funding program with the flexibility to support the best projects in all of these categories was recommended.

[5] Between March 28, 2014 and April 17, 2014 the Broadband Planning Team met with representatives from CityNet, Frontier Communications, Suddenlink, and the Cable Operators Association.

WEST VIRGINIA STRATEGIC DIRECTION

The strategic direction section outlines the strategic objectives identified during the strategic planning process. The section is divided into four focus areas: (1) strategic direction, (2) education and demand promotion, (3) infrastructure, and (4) economic development. Each focus area outlines the strategic objective and the specific goals to accomplish the objective.

STRATEGIC DIRECTION OBJECTIVES

A strategic direction for broadband in West Virginia needs to start with a centralized State agency that will coordinate Broadband programs and initiatives in the State, and create/identify funding sources and programs to carry out the objectives in this Plan and future plans for broadband in West Virginia.

STRATEGIC OBJECTIVE S.O.1: IDENTIFY A LEAD AGENCY

It is recommended that the State identify a lead agency to facilitate the implementation of the objectives, goals, and tasks set forth in this Plan. The lead agency should be selected based on its breadth of experience working with broadband-related challenges and available resources that can devote considerable time and effort to lead and coordinate the State's broadband initiatives.

STRATEGIC OBJECTIVE S.O.2: DEVELOP A CONNECT WEST VIRGINIA FUND AS A SUSTAINABLE FUNDING PROGRAM FOR BROADBAND INITIATIVES AND PROGRAMS.

It is recommended that the lead agency develop a Connect West Virginia fund (Connect WV) to support broadband projects that improve access, speed, and utilization. A successful program should use grants, determined by applicant need and project impact, in conjunction with low-interest loans. The Connect WV program is distinct from the Technical Assistance Grant and the Broadband Deployment Council Grant programs in its ability to not just provide grants but also establish a revolving low-interest loan fund to support broadband infrastructure development. Targeted projects should focus on the following areas:

- Infrastructure
- Demand Promotion
- Broadband Education
- Demand Aggregation

The lead agency should work with the legislature to develop a funding model to increase broadband infrastructure, demand promotion, demand aggregation, and broadband education that utilizes the frameworks of existing state grant programs. The federal government and the State have funded multiple projects in West Virginia. These projects have helped to improve the broadband environment in the State. However, as demonstrated by the regional broadband strategic plans, speed test data, and mapping projects, there is still room, and a need, to improve the broadband environment in West Virginia. Additionally, interviews with service providers highlight the economic inability of the private

sector to reach some unserved areas with middle mile or last mile services. Without public funding support, the return on the capital expenditure is not available for broadband providers. Funding for the State's current grant programs (i.e., Technical Assistance Grant and the Broadband Deployment Council Grant) are sunsetting January 2015 and December 31, 2014, respectively.

The loan portion of the program will establish a revolving loan fund, which enables funding of new projects as previously awarded loans are repaid. The revolving loan program ensures the state will maintain funding and a mechanism to continue to invest in modernizing infrastructure into the future. It is recommended that loans and grants focus on large infrastructure projects while grants alone are used to support demand promotion, education, and demand aggregation projects, as outlined in the following strategic objectives. Additionally, in order to leverage the State's investment with private funding, the State should require a funding match.

GOAL S.O.2.1: DEVELOP CONNECT WEST VIRGINIA FUND ADMINISTRATION STRUCTURE AND SUPPORT.

To avoid the creation of a new entity and to leverage existing expertise, it is recommended that the lead agency implement Connect WV program policy, application development, and award project funding. Additionally, it is recommended that the State continue the BDC beyond December 2014 and use its depth of expertise to review and recommend applications for funding awards. The Council has expertise in the area of broadband and has evaluated and awarded broadband grants for the past three years.

Once projects are selected by the BDC, it is recommended that the lead agency work with either the West Virginia Development Office or the Infrastructure and Jobs Development Council (IJDC) to administer the funding process for the BDC. The Development Office currently administers the BDC Grants and the IJDC has the experience and processes in place to provide funding services. Such services would include administering funds appropriated to the Connect WV program, administering individual project accounts, and entering into agreements with applicants for grant and loan funds. See Figure 4 that shows the recommended organizational structure.

Figure 4: Recommended Organizational Structure

GOAL S.O.2.2: DEVELOP GUIDELINES AND PROCEDURES.

Building on the policies and procedures of existing broadband grant programs, the lead agency should develop procedures and applications for Connect WV that support the goals and objectives of the West Virginia Strategic Broadband Plan. Core areas that will need to be identified include:

- Eligibility criteria
    - Who can apply
    - Allowable uses of funds
    - Local match requirements
- Grant and/or loan terms
- Evaluation criteria

Additionally, to ensure that State funds are utilized to the broadest benefit possible, it is recommended that the State adopt certain standards and regulations for projects that receive Connect WV program funding. When possible projects and recipients should:

- Provide Open Access to subsidized facilities and equipment*
- Meet current WV/FCC speed goals*
- Support West Virginia's broadband goals and initiatives
- Demonstrate the utilization of private, state, and federal funding
- Participate in federally-funded programs to provide reduced-cost broadband services (e.g., Connect-to-Compete, Lifeline)

**Potential Language is provided in Appendix E.*

GOAL S.O.2.3: IDENTIFICATION OF FUNDING SOURCE.

It is recommended that a new funding source be established to support Connect WV. Other states have developed similar programs with funding sources that include: direct appropriation, telecommunications surcharge, and/or the issuance of bonds. Additionally, partnerships to capitalize the Connect WV program should be explored with federal agencies such as the Appalachian Regional Commission, the U.S. Department of Agriculture's Rural Utility Services, and the FCC. See Appendix F for a summary of other state funding programs.

GOAL S.O.2.4: MONITOR SUCCESS OF CONNECT WV INVESTMENT

In order to monitor the success of the Connect WV fund, it is recommended that the State continue to support the WVBMP and speed test data acquisition and utilization. The WVBMP works directly with broadband providers to collect broadband data and develop and update maps of broadband coverage in the State. The lead agency and the BDC should utilize the broadband maps to monitor the progress of providing broadband service to unserved and underserved areas of West Virginia.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.2:

- Number of Grants
- Number of Loans
- Decrease in unserved areas as identified by the WVBMP
- Increase in average speed test data

EDUCATION AND DEMAND PROMOTION STRATEGIC OBJECTIVES

A community's quality of life can be significantly improved through adoption and utilization of broadband services. Here are some prime examples of why broadband connectivity is relevant, and how it can greatly enhance the daily lives of West Virginians:

- Keeps communities competitive by putting broadband in the forefront of economic development
- Allows greater access to health care services and information
- Exposes citizens to enhanced learning tools and higher education options
- Provides citizens with greater access to employment opportunities
- Improves emergency response communications and operations
- Enables citizens to share in entertainment and social engagement activities
- Increases productivity and efficiency, and reduces the carbon footprint

Broadband utilization is very important especially when it comes to education and employment. Educational institutions are using broadband services to deliver their programs and curricula. Educators are particularly concerned about the movement toward distance learning and the far-reaching implications of students not having the ability to participate remotely for lack of broadband services. In today's environment, the majority of employers advertise jobs exclusively through online job services. Those seeking employment are at a disadvantage if they can't access the Internet to conduct job searches, fill out applications, post their resumes, and schedule interviews.

Education and demand promotion is a vital component of the plan that will naturally increase the adoption rate and encourage greater utilization within the communities of West Virginia. Outreach efforts focused on promoting the value and benefits of broadband should be achieved through a properly crafted awareness campaign and the development of applications that increase broadband demand. Broadband education should be promoted through targeted training programs and other teaching mechanisms meant to bolster levels of interest and usage. Some programs do exist that offer affordable Internet access and equipment through the support and delivery of low-cost products, services, and programs, but more programs should be created and offered throughout the State to increase the use of broadband.

STRATEGIC OBJECTIVE S.O.3: DEVELOP AND IMPLEMENT A STATE-WIDE AWARENESS CAMPAIGN WITH THE GOAL OF INCREASING BROADBAND UTILIZATION AND TAKE-RATES.

The overarching goal of this objective is to bridge the digital divide by developing and delivering an awareness campaign to boost broadband subscribership to non-connected users, and in partially served and underserved communities in the State of West Virginia.

It is the desire of the State to increase broadband utilization and take-rates across West Virginia. In order to accomplish this, it is recommended that a state-wide awareness campaign should be developed and implemented. The campaign would target specific audiences, communicate the benefits and opportunities that broadband can offer, and demonstrate how the Internet can connect people to the things that interest them the most. See Appendix G for examples of how other states have implemented broadband adoption and demand promotion initiatives.

GOAL S.O.3.1: IDENTIFY A LEAD ORGANIZATION TO OVERSEE EFFORT.

It is recommended that the lead agency seeks partner organizations or entities to lead this objective. The partner entities should be ones that have demonstrated strong leadership and governance, and have extensive experience developing and delivering effective outreach campaigns. The lead agency should provide oversight and guidance to the partner entities, particularly in determining costs and identifying funding for the campaign. The lead agency should also play a significant role in helping to align partnerships throughout this process.

GOAL S.O.3.2: PARTNER WITH PROVIDERS TO HELP IDENTIFY TARGETED AREAS WITH LOW TAKE RATES.

The lead agency should begin to develop partnerships with broadband providers who can provide valuable insight about areas that experience lower take rates. Generally, low subscribership is common among vulnerable populations such as, low income families, elderly citizens on fixed incomes, multi-lingual residents, and non-connected users (i.e., those who don't see the value or benefits of having access to the Internet or those residents who can't get access to it.) The lead entity should work with providers to accurately identify and evaluate low take rate areas. The partner entities should use this information to gain a clear understanding of current utilization, and to focus awareness efforts on those areas where lower broadband adoption rates tend to occur.

GOAL S.O.3.3: FORM AN AWARENESS CAMPAIGN TEAM.

The lead agency should be responsible for identifying and recruiting resources to form a campaign team. The team should be comprised of volunteer members from the professional community and the public domain. However, team members could be compensated if sufficient funding is identified for this effort. Broadband carriers and local libraries should be encouraged to get involved in aspects of developing the campaign. In addition, job services, YMCA, churches, senior citizen centers, or any public entity that is well-established and trusted in the community may be consulted to provide input to the campaign efforts.

The team should be responsible for planning, organizing, and promoting the awareness campaign. The awareness campaign should primarily be promoted to parts of the state identified in the findings from the previous goal. The campaign planning process should consist of the following key activities:

- Identify the target audience
- Create a tailored, compelling, consistent message
- Organize grassroots outreach to local champions
- Leverage community leaders and public officials
- Coordinate a media relations strategy (social, earned, paid)
- Develop a comprehensive implementation plan and timeline
- Identify funding, and create and manage a budget
- Create persuasive collateral materials (talking points, fact sheets, brochures)

Overall, the goals of the awareness campaign should

- Communicate the relevancy of broadband utilization
- Demonstrate how broadband improves the way people live, work, and play
- Ultimately drive demand, persuading consumers to adopt broadband services

GOAL S.O.3.4: ENLIST THE ASSISTANCE OF REGIONAL COUNCILS AND WELL-ESTABLISHED ORGANIZATIONS TO REINFORCE CAMPAIGN EFFORTS.

The lead agency should approach the campaign from a grassroots perspective, involving local leaders and peers to network and promote awareness and digital literacy. To begin, the Regional Councils should be enlisted to assist with media outreach. Seven out of the 11 Councils included goals to develop an awareness campaign as part of their regional strategic plan. The lead agency should be responsible for coordinating and supplying information and the materials to the regions for media distribution (e.g., radio broadcasts, newspaper advertisements, website content, etc.).

Additional support from local, well-established organizations should be sought. Participation in these programs from the community colleges and universities (e.g., WVU and Marshal University) should be strongly encouraged. By forming these relationships, the campaign team can leverage the exposure that West Virginia colleges, universities, and other higher educational institutions have in the community to raise awareness of broadband capabilities.

Other prospective leadership groups that can help to perpetuate broadband awareness efforts include, but are not limited to:

- Workforce WV
- WV Board of Education
- WV Commission on Higher Education
- Future Generations Rural America and Graduate School
- Partnership of African American Churches
- West Virginia Library Commission
- Congressional Districts
- Chambers of Commerce

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.3:

- Successfully developing and implementing a state-wide awareness campaign.
- Increasing the broadband adoption in the low take rate areas.

STRATEGIC OBJECTIVE S.O.4: PROMOTE BROADBAND EDUCATION.

The overarching goal of this objective is to eliminate consumers' fears of using the Internet and demonstrate the relevancy of being a connected user.

A key element that will impact increased broadband demand and utilization is education. Clearly an issue of understanding the importance of broadband access and usage, consumers can make better decisions if they are properly informed about choices that are available to them. Broadband advocates understand the value of broadband, and therefore, are at a distinct competitive advantage when it comes to finding employment, better health care, banking services, access to entertainment, etc.

Conversely, non-adopters are isolated from broadband and are subject to barriers including career and educational opportunities, health care assistance, governmental services, and social media. Non-adopters must perceive broadband access as a way to enrich their lives. Consumers should be encouraged to take advantage of broadband and further explore valuable opportunities that may be missed by not fully utilizing the Internet. However, consumers have very valid concerns, and throughout the regional planning process and surveys they cited the following reasons for not subscribing:

- Content is irrelevant and it's a waste of time
- Potential risk of exposing children to inappropriate material
- A fear of having their identity stolen
- Lack of access to broadband services
- High cost in general, especially unaffordable for the elderly, and fixed or low income families

The regional plans also found that small business owners experience their own set of challenges if they don't subscribe to broadband or if they don't have a suitable broadband connection. These challenges limit their capabilities to grow and diversify business operations. Without a thorough, working knowledge and a keen understanding of how to get the most out of access to robust broadband, businesses are at a competitive disadvantage. However, broadband can make a difference for businesses if they understand how to leverage it. Business broadband can enhance operations, improve sustained growth, and create efficiencies. With broadband, businesses can capitalize on opportunities such as having an effective web site presence, connecting with customers and suppliers, and expanding to global markets.

GOAL S.O.4.1: CONDUCT A GAP ANALYSIS ON EXISTING PROGRAMS.

To assess broadband educational needs throughout West Virginia, the lead agency should conduct a gap analysis to 1) inventory existing programs or services that provide educational value (teach digital literacy, computer usage, online access, etc.), 2) identify essential programs that need to be developed, and 3) form partnerships with organizations that could lead in the development of training programs.

As part of the analysis, the lead agency should reach out to the following groups and organizations to determine if they already have applicable, broadband educational programs in place, avoiding duplication of efforts.

- Computers for Youth
- Chambers of Commerce
- Social clubs
- Women in Education (WE)
- Family Resource Networks
- WV Community Action Agencies
- Churches
- Microsoft
- Libraries

The lead agency should continue to identify additional groups to reach out to. Additionally, it would be helpful to ascertain if local and/or national organizations can provide equipment and resources to support these programs. To supplement the gap analysis, below is a list of groups that may be willing to sponsor, or already support, training programs:

Groups:	Programs:
Future Generations	Community centers equipped to train the public.
MissionWV	Free and reduced cost workstations.
WV Bureau of Senior Services **Osher Lifelong Learning Institute - WVU**	Senior centers and agencies that can provide computer labs for training the elderly.
Department of Agriculture	Programs that offer community development training.
Colleges/universities (working with employers)	Offer distance learning programs to train employees.
Libraries, colleges/universities, local school districts, AARP	Identify and provide basic Internet use and security courses for the general public and businesses. Develop work study programs to support local training and outreach, with funding through state scholarships,

utilizing college students to support training.

GOAL S.O.4.2: PROMOTE EXISTING EDUCATIONAL OPPORTUNITIES AND SERVICES.

The lead agency should partner and collaborate with public libraries, community centers, non-profit organizations, community groups, local organizations, academia, and the private sector (e.g., television and radio stations) to promote existing educational opportunities and services identified in the gap analysis. These partners will be the catalyst to coordinate outreach to parents, rural residents, vulnerable populations, the unemployed, minorities, and low-income families to inform them where, when, and how they can get access to the Internet. Outreach efforts could consist of:

- directing the public to libraries and computing centers for information, and access and training
- leveraging regular local TV and radio programs to announce courses or programs, focusing on
    - vulnerable populations
    - rural areas where lower-income citizens often reside
    - the older demographic audience
- newspaper advertising and point of presence material distribution
- incorporating information about available courses or programs through the awareness campaign

The lead agency should also consult with WorkForce WV and the WV Department of Education, two entities that can be pivotal in raising awareness of broadband educational opportunities. A model example of a successful program established by WorkForce WV is the One-Stop Public Computer Center Modernization program. WorkForce WV received funding from the NTIA BTOP grants to not only enhance support for the centers that provide critical services for the unemployed and low-income residents, but to also implement a robust outreach project that would attract thousands of new users to the centers. An element of the project included reaching out to the unemployed, veterans, senior citizens, and low-income individuals.

In addition to replacing and adding computer equipment across the state at One-Stop career centers, Workforce WV centers continue to support this endeavor by conducting ongoing online training and career counseling.

Under section 31-15C-4 of the West Virginia Code, the Broadband Deployment Council was given the power and duty to, “Cooperate and assist in the expansion of electronic instruction and distance education services by July 2014,” and to “promote awareness of public facilities that have community broadband access that can be used for distance education and workforce development. The Distance Learning Subcommittee was established to further these statutory items on behalf of the BDC.

Since the Distance Learning Subcommittee’s inception, the members have worked together to identify, understand, and navigate through the broadband access, bandwidth, and speed needs of K-12, higher education and workforce development in order to fully support West Virginia’s current and future distance learning initiatives. The continued support of the BDC beyond its sunset date of December

2014 is needed to promote and resolve the increasing bandwidth and speed needs of West Virginia's educational and work force development institutions in order to assure that West Virginia has the broadband infrastructure necessary to continue to be a leader in the use of cutting edge, broadband reliant technologies in our schools. A progress report of the Distance Learning Subcommittee's progress to the legislature can be found at the following link:

http://www.broadband.wv.gov/Strategic_Planning/Documents/RPT140212%20jcc%20West%20Virginia%20Broadband%20Deployment%20Council%20%20Distance%20Learning%20Subcommittee%20Report%20FINAL%20wad%20.pdf

The lead agency should coordinate with the Board of Education to help optimize the programs that are currently offered and continue to identify new opportunities to create and promote broadband education programs.

GOAL S.O.4.3: WORK WITH STAKEHOLDERS TO DEVELOP BROADBAND EDUCATIONAL COURSES.

In a concerted effort with promoting existing educational programs identified through the gap analysis, the lead agency will work with stakeholder groups, who should then be instrumental in creating content for the training courses. The content should be focused on the relevant needs of the consumers as identified through the gap analysis. Courses should be practical, basic computer and Internet skills classes, developed to accommodate all types of audiences.

The stakeholder group will also be tasked with discussing, reviewing, and selecting the best mechanisms for delivering broadband content. The best training formats tend to be online courseware, video and webinars, and downloadable podcasts. In person training can be delivered using specialized peer-to-peer programs, such as Broadband Buddies and Cyber-Sages.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.4:

- Number of existing courses offered and promoted.
- Number of new courses developed.
- Number of students taking advantage of the educational opportunities.

STRATEGIC OBJECTIVE S.O.5: SUPPORT COST REDUCTION OF INTERNET ACCESS AND EQUIPMENT.

The overarching goal of this objective is to increase subscribership of low income families by providing cost savings through programs that make available free and/or discounted high speed Internet services, computers, and installation services.

GOAL S.O.5.1: IDENTIFY CURRENT OFFERINGS BY PROVIDERS AND PROMOTE THEM THROUGH THE AWARENESS CAMPAIGN.

The lead agency should collaborate with providers to identify existing, low-cost Internet offers targeted to consumers that cannot afford broadband services. At best, these offerings would include free or reduced-rates on monthly Internet service, free or discounted equipment, and low or waived installation fees. Any programs that are offered by providers should be incorporated into the broadband awareness campaign promotion.

The lead agency should also consider opportunities to optimize existing WVNET infrastructure that supports high capacity, low cost Internet access for state institutions, state government agencies, K-12, public libraries, and county governments.

GOAL S.O.5.2: DEVELOP PROGRAMS THAT OFFER LOW-COST OR DISCOUNTED SERVICES.

If no such programs currently exist, the State should recommend the following alternative solutions:

1. Local Internet providers would create their own programs with incentives for consumers to sign up for Internet service.
   - If feasible, providers furnish free or low-cost Internet access, and/or free or discounted equipment and installation service (e.g., Comcast's Internet Essentials). This offering could be limited to a targeted audience, or be expanded to all the groups identified during the campaign development process.
2. If this type of offer is not considered to be feasible from the providers' perspective, the lead agency should work with providers to develop these types of programs or services that offer low-cost or discounted Internet access, equipment, and installation.
   - The lead agency should consider supporting reduced-cost Internet access programs through a state funding strategy. The lead agency should implement a state-wide broadband funding mechanism to subsidize programs that deliver similar benefits. The providers would be responsible for outlining eligibility requirements for these offers, or base eligibility on a families' participation in the National School Lunch Program (NSLP.) Provider participation in reduced-rate federal programs (e.g., Connect2Compete or LifeLine) would be a stipulation in the funding guidelines in order for providers to receive State grant money.
3. Additionally, the lead agency and broadband providers should monitor and explore opportunities to capitalize on national programs such as EveryoneOn, ConnectED or LifeLine.
   - EveryoneOn is sponsored by Connect2Compete (C2C). C2C is EveryoneOn's flagship program for families that qualify for the NSLP. The campaign's objective is to promote the importance of digital literacy skills, increase access to free computer and Internet training classes, and improve outcomes in disadvantaged communities. Cable companies are participants in this partnership, providing the broadband service, equipment, and installation to eligible members of the NSLP.

- ConnectED[6] is a direct initiative established by the President and is designed to enrich the lives of children in K-12 schools. Under this program, ConnectED will connect America's students to next-generation broadband and high-speed wireless in their schools and libraries. The FCC and companies like Apple, Microsoft, Sprint, and Verizon are providing support, and collectively pledging to connect more than 20 million more students over the next several years.
- Lifeline is an FCC-funded initiative that began as a program offering discounted telephone services to qualifying, low income residents. Currently, reforms are being evaluated to modernize the program, particularly restructuring the program to determine how LifeLine can be used to increase broadband adoption among existing LifeLine customers, and to help reduce monthly service costs (e.g., bundling phone and cable packages). Broadband providers would be solicited to submit applications to support the program, and find ways to help address other challenges such as cost of equipment and digital literacy.

Once a consensus has been made on the type of programs and services to offer, the lead agency and the providers will begin to work on a strategy to put programs and offerings in place. After successfully implemented, the program offerings should be promoted through the awareness campaign. The lead agency should encourage providers to also advertise these special offers as part of their own marketing strategies.

GOAL S.O.5.3: PARTNER WITH NATIONAL EQUIPMENT PROVIDERS TO PROVIDE DISCOUNTED EQUIPMENT BASED ON SPECIFIC FINANCIAL CRITERIA.

The lead agency should consult with national vendors to determine if they offer discounted equipment programs to low-income consumers. National equipment vendors include Microsoft, Dell, Hewlett Packard, ESRI, Apple, etc. If there are attractive vendor programs that support discounted equipment offers, the lead agency should arrange partnerships with the vendors and find ways to effectively promote those offers to the consumers.

The lead agency should also determine if school districts throughout West Virginia participate or enroll in programs that provide discounted rates for new or refurbished computer equipment. Schools in Minnesota, North Carolina, and Virginia, to name a few, take advantage of special programs designed to provide free or low-cost computers, software, and peripheral devices through vendors like Microsoft, CDW, Apple, Dell Hewlett Packard. See Appendix H for examples of school discount programs in other states.

If school districts do not participate or employ discounted equipment initiatives, or are unaware of available programs beyond E-Rate, the lead agency should work with schools to help them enroll in or develop similar programs by completing enrollment applications, contracting with resellers, engaging in

[6] ConnectED – The White House: Presidential Initiative, June 2013 – http://www.whitehouse.gov/issues/education/k-12/connected

purchase agreements. Additionally, these types of programs should be included in the awareness campaign promotion.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.5:

- Number of existing programs identified and promoted through awareness campaign.
- Number of programs developed that offer discounted services and equipment.
- Number of participants taking advantage of the low-cost offerings.

STRATEGIC OBJECTIVE S.O.6: SUPPORT THE DEVELOPMENT OF APPLICATIONS AND SERVICES THAT INCREASE BROADBAND DEMAND.

Increasing the availability of online content and services will increase demand and utilization of broadband. Online services can significantly improve the way local governments and agencies work with the public and realize efficiencies in providing services for their constituents. As the demand for more critical services grows, budgets are unfortunately shrinking. The presence of broadband has increased consumer expectations for, and consumption of, online services. The lead agency should support the development of on-line content, applications and services by local governments.

Under section §31-15C-4 (b) (3), the Broadband Deployment Council is granted authority to "Advise on deployment of e-government portals such that all public bodies and political subdivisions have homepages, encourage one-stop government access, and that all public entities stream audio and video of all public meetings."

The E-Government Subcommittee was established to carry out these initiatives on behalf of the BDC. Members of the E-government Subcommittee represent the West Virginia Municipal League, County Commissioners Association, Office of Technology, Association of Counties, Broadband Deployment Council, WVNET, WV Interactive LLC, and the Community Connect Foundation.

The Subcommittee has been planning, collaborating, and establishing programs that service the public while encouraging broadband use.

The BDC, in conjunction with the E-Government Subcommittee has made strong progress toward its goals and continues to work to promote and improve e-government throughout West Virginia. The BDC should be continued beyond the sunset date of December 2014 so that it can continue to promote the use, need and advancement of broadband infrastructure across the state. A progress report for the E-Government Subcommittee can be found at the following link:

http://www.broadband.wv.gov/Strategic_Planning/Documents/RPT140212%20jccWest%20Virginia%20Broadband%20Deployment%20Council%20%20E-Government%20Subcommittee%20Report%20FINAL%20wad.pdf

GOAL S.0.6.1: IDENTIFY AND SUPPORT A FUNDING PROGRAM FOR DEMAND PROMOTION APPLICATIONS AND SERVICES

Currently, the WVBMP administers the Broadband Technical Assistance Grant Program. The program provides grants to support broadband related train-the-trainer, education, and online application development. To date the program has provided 72 grants to state, county, local governments and non-profits, specifically designed to improve and augment services and broadband delivery. However, the program is part of the State Broadband Initiative (SBI), which is funded by the NTIA and scheduled to end January 2015.

In order to increase broadband content and applications and thus drive demand and take rates for broadband services, it is recommended that the State continue to fund and support the Broadband Technical Assistance grant program. The current program has the policies and procedures in place to successfully implement and manage the process. This recommendation can be accomplished independently or as part of Strategic Objective 2 – Develop a Connect West Virginia Fund to Increase Broadband Availability, Reliability and Utilization.

GOAL S.O.6.2: MONITOR THE PROGRESS OF DEMAND PROMOTION APPLICATIONS

In order to monitor the success of demand promotion application and services, it is recommended that the State continue to support the WVBMP and speed test data acquisition and utilization. The WVBMP works directly with broadband providers to collects broadband data and develops and updates maps of broadband coverage in the State. Additionally, the lead agency should monitor the FCC's Broadband Progress Reports that track West Virginia take rate. A take rate measures the percentage of the population that has broadband services available and procured the service.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.6:

- Number of Grants
- Increase in take rate

BROADBAND INFRASTRUCTURE STRATEGIC OBJECTIVES

In order to have robust broadband availability, West Virginia must have the underlying network infrastructure to support broadband demand. Infrastructure includes both the accessibility (i.e., ability to receive access) and quality (i.e., getting the speed required to utilize modern applications and take advantage of the broadband connection to its fullest capabilities to improve business, education, medical care, social interaction, and entertainment). Neither accessibility nor quality are at the desired levels throughout the State. Therefore, the strategic objectives of the Infrastructure section focus on: (1) leveraging BTOP assets (2) supporting Gigabit City deployment and (3) collaboration of the CAF program.

STRATEGIC OBJECTIVE S.O.7: LEVERAGE BTOP INVESTMENT TO INCREASE BROADBAND AVAILABILITY.

The State of West Virginia received a Broadband Technologies Opportunities Program (BTOP) grant to expand high-speed Internet access to underserved regions. The project expanded the State's existing microwave public safety network, added approximately 675 miles of fiber, and deployed high-capacity routers. The expanded network connects anchor institutions, including public safety agencies, public libraries, schools, government offices, and other critical community facilities at speeds of up to 45 Mbps.

There is a desire from broadband providers and local communities to leverage this investment and further expand broadband availability throughout the community. However a complete list of assets, locations, and procedures is not available to assist in this type of endeavor. The lead agency should develop a set of guidelines that identify assets deployed as part of the BTOP program and outlines utilization procedures.

GOAL S.O.7.1: INVENTORY BTOP ASSETS.

It is recommended that the lead agency develop a complete list of BTOP assets to be shared with the provider community and the public. Promoting collaboration and competition in the broadband access market begins with identifying the assets which are eligible for use including, but not limited to,

- Facilities
- Towers
- Cable plants
- Broadband spectrums
- Active and passive transport and network gear
- Service providers
- Technical support personnel

Together, these assets constitute the current BTOP investment made on behalf of the State of West Virginia. Asset details such as type, location, condition, and operating state are an important part of the inventory.

GOAL S.O.7.2: DEFINE ELIGIBLE AND ACCEPTABLE USE OF BTOP ASSETS.

It is recommended that the lead agency outline eligible uses for BTOP assets in a set of guidelines. Individuals and organizations interested in leveraging assets must be informed on eligible and/or acceptable use. These issues concern permitted and restricted uses of assets and the purposes to which they are put to use. Rules defining exclusive versus shared use, priority versus non-priority use, and monitoring and reporting for denial or discontinuation of use must be clearly codified.

GOAL S.O.7.3: IDENTIFY ORGANIZATIONS THAT ARE ELIGIBLE TO LEVERAGE BTOP ASSETS.

The lead agency should identify the types of organizations that may use BTOP assets (e.g., private residents, publicly traded companies, privately held companies, non-profits, governmental organizations). With an understanding of the assets available, individuals and organizations must then determine whether or not they qualify to use certain assets.

GOAL S.O.7.4: OUTLINE COSTS.

Potential use of infrastructure assets may be limited by the costs associated with provisioning, installing, testing, operating, maintaining, and upgrading systems. There may be a one-time or capital investment and/or recurring operations and maintenance costs. Products and services associated with use may be leased or purchased and there may be additional administrative costs associated with permits and/or licensing with the proper authorities. These collective costs should be transparent to potential users and made available for cost/benefit analysis to promote fair competition and encourage collaboration.

GOAL S.O.7.5: DEVELOP LEGAL REQUIREMENTS/STANDARD CONTRACTING TERMS.

Interested parties must be aware of their legal requirements and any standard contracting terms and/or compliance reporting required. Operators must be fully informed of any Service Level Agreements (SLA) to which they will be held accountable for, or offered, as well as any global requirements, processes and procedures for corresponding routine maintenance and emergency maintenance that may result in service disruptions. These terms are vital to constructing the foundational agreements and setting consumer expectations, the absence of which could result in costly charge-backs and legal action.

GOAL S.O.7.6: STRATEGIC USE CASE.

The lead agency should develop and publish the guidelines and monitor use, concerns, and questions. It is important to consider these as organic documents and processes that must continue to be developed with additional details. The processes put in place by the lead agency should accommodate the growth of information and address this growth with the appropriate tools and technologies necessary for a proper provider/consumer “feedback loop” to occur.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.7:

- Development of Guidelines
- Utilization of BTOP investment to expand broadband availability and utilization

STRATEGIC OBJECTIVE S.O.8: SUPPORT GIGABIT CITY DEPLOYMENTS.

There are a handful of dynamics that tend to drive super high-speed broadband initiatives. These include economic development, government grants, social well-being and more. The viability of the initiatives is dependent on population density, the defining demographics of that population (e.g., income, education, etc.), the actual physical environment the target customers live in (e.g., road layout and terrain), public financing, how a network could be deployed in that environment, and the anticipated costs to acquire customers to name a few.

In an effort to expand access nationwide, in January 2013, then Federal Communications Commission Chairman Julius Genachowski issued a "Gigabit City Challenge," calling for all 50 states to have at least one community with gigabit Internet access by 2015. A number of private companies and organizations have begun to deploy and support Gigabit Cities (e.g., Google, GigU). The BDC along with the WVBMP are piloting a Gigabit feasibility study in Huntington, WV. It is recommended that the State continue to fund and support additional studies to model the feasibility of deploying Gigabit technology in selected geographic regions of West Virginia. The goal of the feasibility studies is to inform elected officials, the public, and broadband providers of the cost, timeframes, and return on investment to develop and deploy Gigabit technology.

GOAL S.O.8.1: DEVELOP GIGABIT CITY FEASIBILITY STUDY MODEL.

Utilizing the Huntington Gigabit study, the lead agency should develop a feasibility study model. Models help integrate and test scenarios on how the network can be designed, what that network will cost to deploy and operate, and how different pricing plans are likely to play out across different market conditions. The model would be used to develop and evaluate city-specific, street-by-street network designs, consider terrain realities, and evaluate the resulting economics using real-world demand and cost scenarios, including alternative market growth curves. Models are being used to develop alternative network topologies, including detailed equipment types, counts and capacities, and alternative fiber deployment strategies required to meet the real-world served by the network.

In West Virginia, feasibility study models of cities such as Morgantown, Charleston, Clarksburg, and other communities should be considered to understand how they may potentially support super high-speed Broadband to all homes and businesses.

The Gigabit Cities model serves the purposes outlined below:

- Costs, potential profitability, and ultimately, the viability of the network are estimated.
- Underlying geospatial/mapping model determines an efficient routing and architecture of the network.
- Underlying cost model's use of an extensive demand and demographic database provides the ability to understand potential take rates, costs, and the revenue flows related to the network plan to understand the economics of each "fiber-hood".
- The feasibility study looks at deployment costs, the costs to maintain the network and the return on investment.

GOAL S.O.8.2: SHARE FEASABILITY STUDY MODEL RESULTS.

The feasibility model output, maps, and reporting should be shared by the lead agency with city planners, broadband providers, and economic developers. The model would serve to support the following efforts:

- Develop an understanding of the economic feasibility of a gigabit speed network; city-wide or otherwise.
- Support advocacy to policy makers and stakeholders on the value of such a network.
- Manage procurement of a private partner to deploy or manage the network and business.
- Support existing providers and their understanding of market conditions and the potential opportunities for build-out of upgraded facilities.
- Manage architecture issues and other matters that may serve to expedite build-out.
- Analyze neighborhood demographics. Demand and economic data will help to effectively manage deployment and adoption.

Specific modeling techniques can help West Virginia advance broadband strategies and evaluate the cost-benefit of certain scenarios.

GOAL S.O.8.3: MONITOR PUBLIC AND PRIVATE FUNDING SOURCES.

The lead agency should monitor public and private funding sources to implement a Gigabit City deployment. Having developed the models and local support will give the State an edge in quickly preparing and responding to future funding opportunities. Some potential funding sources to monitor include:

- FCC
- Google Fiber
- GigU
- Broadband Providers

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.8:

- Development of Gigabit City Feasibility Study Models
- Implementation of a Gigabit City in West Virginia

STRATEGIC OBJECTIVE S.O.9: WORK WITH PROVIDERS THAT RECEIVE CAF FUNDS IN ORDER TO ALIGN WITH STATE GOALS AND OBJECTIVES

The FCC created the Connect America Fund (CAF) with the goal of helping to make broadband available to homes, businesses, and community anchors institutions in areas that do not have and will not otherwise receive broadband network services in the area. Currently, the West Virginia incumbent

telephone provider has received funding for Round 1 and is in the process of being funded for Round 2 of the CAF project. Round 2 will provides funding over a five year period for the incumbent's commitment to expand their network to agreed upon unserved areas. The lead agency should engage and work with the provider to help align their network expansion with the State's goals and objectives.

GOAL S.O.9.1: ENGAGE PROVIDERS THAT RECEIVE CAF FUNDS

The lead agency should review existing rounds of CAF applications to compare to the State's goals and objectives. Once the review is complete, it is recommended that a meeting with the incumbent provider should be scheduled to discuss priority areas and timelines. The meeting will also provide an opportunity for the State to share information on new economic development activities, infrastructure projects, and other broadband projects that could help with the network roll-out. The incumbent provider has already started working with several counties to discuss the prioritization of CAF implementation.

GOAL S.O.9.2: MONITOR CAF FUNDING PROGRAM AND SUPPORT PROVIDER PARTICIPATION

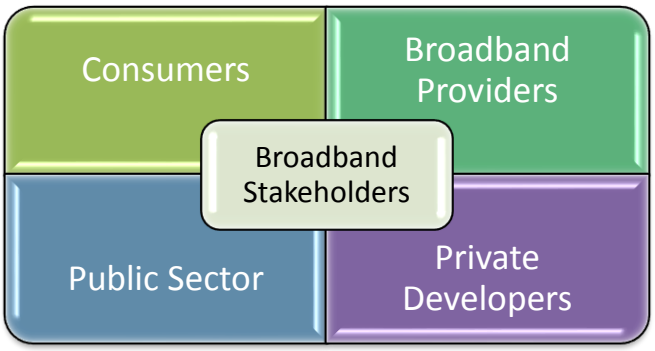
As Round 2 and Round 3 funding regulations and formulas are released and available for public comment, the lead agency should monitor, review, and provide the FCC with comments as appropriate. Additionally, if supplemental rounds of CAF funding are available to non-incumbent providers, the lead agency should communicate this opportunity to all broadband providers.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.9:

- Coordination with incumbent provider on CAF deployment

ECONOMIC DEVELOPMENT STRATEGIC OBJECTIVES

In today's economic environment, access to broadband services is a critical factor in growing and sustaining a vibrant economic base. Key stakeholders in the expansion and enhancement of broadband services include consumers (business and residential), the public sector, private developers, and broadband providers. The interests of each of these groups in broadband expansion and enhancement are interdependent, and one of the common threads that tie them together is economic development.



With increased dependence on technology, access to broadband is becoming a necessity and is utilized in the daily lives of community residents for things such as shopping, paying bills, research/reference, education, work, and entertainment. A business that is looking to locate, relocate, or expand will likely have broadband access as one of its top criteria for site selection. Broadband is also critical to retaining existing businesses that need access to this critical infrastructure to support the technologies that allow them to compete in the global market. A growing economic base is attractive to broadband providers and can attract more competition in the local broadband market. A growing economic base also means an increased tax base for taxing bodies, which is necessary to provide adequate, quality services to its constituents.

Because broadband is critical to economic development and sustainability, West Virginia's statewide broadband usage and strategy should include objectives that that will promote the expansion and enhancement of broadband services throughout the state. While many decisions regarding broadband expansion and enhancement will be made at local levels, the State can influence these decisions through statewide legislation and policies. Some states have begun to incorporate broadband into codes and statutes, beginning primarily with legislation establishing coordination and leadership. The National Conference of State Legislatures provides an overview of state legislation that has been enacted as of the end of 2013 (see http://www.ncsl.org/research/telecommunications-and-information-technology/broadband-statutes.aspx). West Virginia took the first steps in broadband legislation in establishing its Broadband Deployment Council and amending its broadband speed definition. The statewide broadband strategy can take broadband legislation to the next level through the following key strategic objectives:

1. Incorporate broadband planning into existing land use planning legislation (e.g., municipal planning codes governing subdivision and land development ordinances and comprehensive plans, etc.).
2. Incorporate broadband considerations into new statewide legislation and policies (e.g., "dig once" legislation).

The following section provides recommendations for goals and actions related to these strategic objectives.

STRATEGIC OBJECTIVE S.O.10: INCORPORATE BROADBAND PLANNING INTO EXISTING LAND USE PLANNING LEGISLATION.

Amending statewide legislation that governs municipal planning in West Virginia would likely be the most effective starting place for incorporating broadband planning into existing legislation. Local land use planning in West Virginia is governed by Chapter 8A of the West Virginia Code. State legislators can ensure that West Virginia municipalities consider broadband in the planning process by including a requirement in the State's municipality planning code. For example, there are three areas in Chapter 8A where broadband considerations could potentially be included: (1) Article 1 – General Considerations; (2) Article 3 – Comprehensive Plan; and (3) Article 4 – Subdivision and Land Use Ordinances.

GOAL S.O.10.1: DEVELOP PROPOSED AMENDMENT(S) TO EXISTING LEGISLATION.

Chapter 8A of the West Virginia Code requires that municipalities prepare and adopt a comprehensive plan, and to update the plan at 10-year intervals. The inclusion of broadband infrastructure in a local comprehensive plan can inform and enable prioritization decisions, can ensure that investments in broadband infrastructure are made in specific areas where they will yield the greatest benefit, and will demonstrate local commitment to the strategic development and expansion of broadband infrastructure. Broadband access should also be a consideration in subdivision planning for residential, commercial, and industrial development, potentially through the use of regulatory requirements for land development. Sub-division and land development ordinances, especially in designated growth areas, can ensure that developers provide adequate broadband infrastructure that will support the land uses targeted for specific areas.

To accomplish this goal, the lead agency should implement two primary action steps. First, due diligence should be conducted to determine the most appropriate and effective amendments that could be made to existing legislation to expand and enhance broadband access. The due diligence effort should include a thorough analysis of alternative amendments, the impacts of each, the population or groups that would be most impacted, and the extent to which they would be impacted. It should also consider who should be responsible for implementing resulting action steps, and funding sources to support any resulting mandates.

The results of the due diligence can be used to determine the amendment(s) that best achieve the strategic objective. Once the amendments are identified, legal counsel should be engaged to develop specific language for the proposed amendments. Examples of where and how existing legislation could potentially be amended include:

§8A-1-1. Legislative findings.

The general considerations in Article 1 include a list of legislative findings and related recommendations. Broadband could be added to this section as follows:

- Adding an item to the list of findings in §8A-1-1(a) worded such as: *"Promoting broadband development, expansion, and accessibility will assist in furthering economic development throughout the state of WV while ensuring digital information access to its residents."*
- Adding an item to the list of recommendations in §8A-1-1(b) worded such as: *"A goal of a governing body should be to promote and support broadband accessibility and development."*

A local comprehensive plan serves as a long-range "blue print" for a community or region that identifies its vision and goals for the future, and lays a foundation for future land use and policy decisions. Including broadband in local comprehensive plans is critical in providing a basis for policy decisions associated with the implementation of a local broadband strategy. Broadband can be incorporated in two areas of legislation related to comprehensive planning in Article 3 as follows:

§8A-3-1. Purpose and goals of a comprehensive plan.

- §8A-3-1(d) establishes a list of the purpose and goals of a comprehensive plan. Broadband could be added to this list by including an item worded such as: *"Promote and support the development, expansion, and accessibility of broadband and communication networks."*

§8A-3-4. Mandatory components of a comprehensive plan.

§8A-3-4 (c)(4) Infrastructure.

- This section establishes infrastructure as one of the mandatory components of a comprehensive plan and describes the content of the component as, "Designate the current, and set goals, plans and programs, for the proposed locations, capabilities and capacities of all utilities, essential utilities and equipment, infrastructure and facilities to meet the needs of current and anticipated future residents of the jurisdiction." A statement that would further describe the content to include broadband could be added and worded such as, *"This shall include all communication and broadband utilities and facilities to ensure statewide information accessibility and to promote economic development".*

§8A-4-2. Contents of subdivision and land development ordinance.
§8A-4-2 (a) A subdivision and land development ordinance shall include the following provisions:

- §8A-4-2(a) establishes a list of provisions that should be included in a subdivision and land development ordinance. Broadband could be added to this section by including broadband in the list of provisions through adding language such as noted in bold as follows: "The standards for setback requirements, lot sizes, streets, sidewalks, walkways, parking, easements, rights-of-way, drainage, utilities, ***broadband requirements***, infrastructure, curbs, gutters, street lights, fire hydrants, storm water management and water and wastewater facilities;

GOAL S.O.10.2 – SECURE SPONSORSHIP AND SUPPORT FOR PROPOSED AMENDMENTS.

After the proposed amendments have been developed, the BDC in coordination with the lead agency should begin the process of moving the amendments through the legislative process. Three key actions will be required to accomplish this goal. The first action should be for the BDC in coordination with the lead agency to engage legislators to sponsor the amendments. Concurrent with the coordination of sponsorship, the BDC should develop briefing materials designed to secure support for the amendments. The materials should include background information that provides a clear, compelling argument for the importance of the amendments and their passage.

Upon completion of the briefing materials, the BDC should (1) coordinate briefings with local elected officials, and planning and economic development agencies/organizations to gain their buy-in and unite support for the amendments; and (2) coordinate briefings with state legislators to encourage and communicate the importance of the amendments, and to encourage and secure individual support of their passage.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.10:

- Passage of recommended amendments

STRATEGIC OBJECTIVE S.O.11: INCORPORATE "DIG ONCE" CONSIDERATIONS INTO NEW STATEWIDE POLICIES AND LEGISLATION.

Each year, a substantial number of infrastructure projects are implemented throughout the State of West Virginia ranging from highway infrastructure, to water and sewer infrastructure, and other utility installation. In most cases, digging and/or trenching is involved in these projects in some form.

Broadband expansion and enhancement can be facilitated at the state level by implementing “dig once” legislation or policies that considers the deployment of Broadband infrastructure as part of any roadway or infrastructure projects undertaken. Even if it is not feasible at the time of construction to run fiber, providing Broadband providers with the opportunity to lay conduit at the time of development will minimize cost and inconvenience when fiber is feasible.

GOAL S.O.11.1 – EXPLORE “DIG ONCE” REQUIREMENTS FOR ALL STATE HIGHWAY PROJECTS.

According to the Federal Highway Administration (FHWA,) ninety percent of the cost of deploying broadband is incurred when the work requires significant excavation of the roadway. This means that it is 10 times more expensive to add broadband after a road is already built. A key goal for new broadband legislation and/or policy should be the exploration of “dig once” requirements for all state highway projects.

In response to a June 2012 Executive Order by the President, *Accelerating Broadband Infrastructure Deployment,* the U.S. Department of Transportation’s Federal Highway Administration released a work plan strategy in December 2012 that provides background best practices for implementing “dig once” policies (see http://www.fhwa.dot.gov/policy/otps/workplan.pdf). This document can provide a

foundation for the development of new legislation and/or policies in West Virginia. Examples of implementation approaches highlighted in the FHWA work plan strategy can be found in Appendix I.

It is recommended that the lead agency meet with the appropriate West Virginia Department of Transportation (WVDOT) leadership to discuss the importance of broadband to the state's economic sustainability and get their commitment to support statewide efforts to expand and enhance broadband. The lead agency in coordination with WVDOT leadership should conduct due diligence to determine whether "dig once" should be implemented as part of state highway construction/improvement projects, and if so, whether it should be implemented through new legislation or through the agency's policy/regulations.

The due diligence effort should include a thorough analysis of alternative approaches to implementing a "dig once" policy, the impacts of each, the population or groups that would be most impacted, and the extent to which they would be impacted. It should also consider who should be responsible for implementation, and identify funding sources to support any resulting mandates.

GOAL S.O.11.2 – EXPLORE "DIG ONCE" REQUIREMENTS FOR INFRASTRUCTURE PROJECT FUNDED THROUGH STATE AGENCIES.

In addition to state highway projects, another key goal could be the inclusion of "dig once" legislation and/or policy for state-funded water and sewer projects, or other utility projects requiring digging or trenching to accommodate utility installation. A number of state agencies provide funding which includes these types of projects as eligible uses, such as:

- West Virginia Department of Health and Human Resources
- West Virginia Department of Environmental Protection
- West Virginia Development Office, Department of Commerce
- West Virginia Department of Agriculture, Rural Development
- West Virginia Economic Development Authority

Accomplishing this goal will require three key action steps. First, the lead agency should conduct due diligence to determine which state agencies provide funding for infrastructure projects such as water and sewer or other utility installation. Next, meetings should be coordinated with leaders of each of the agencies. The objectives of these meetings should be to (1) discuss the importance of broadband to the state's economic sustainability; (2) get their commitment to support statewide efforts to expand and enhance broadband; and (3) encourage agency leaders to conduct due diligence to determine whether "dig once" should be included in the projects they fund, and if so, whether it should be implemented through new legislation or through the agency's policy/regulations.

The due diligence effort should include a thorough analysis of alternative approaches to implementing "dig once" requirements, the impacts of each alternative, the population or groups that would be most impacted, and the extent to which they would be impacted. It should also consider who should be responsible for implementation and the action steps required, as well as funding sources to support any resulting mandates.

PERFORMANCE MEASURES – STRATEGIC OBJECTIVE S.O.11:

- Development and implementation of a statewide “dig-once” policy
- The number of projects each year that include plans for the installation of broadband infrastructure during initial project construction
- The number of feet/miles of broadband infrastructure installed each year during initial project construction

PLAN IMPLEMENTATION

The Broadband Strategic Plan requires the participation of many partners (e.g. multiple state agencies, local government entities, colleges and universities, school districts, and the private sector). However, it is recommended that the State designate a lead agency to monitor and facilitate the implementation of the Plan (S.O.1). The lead agency should provide quarterly updates to the Broadband Deployment Council. A centralized approach will help to coordinate the multiple partners in this collaborative effort and help to ensure that one entity, the lead agency, understands all of the diverse broadband efforts that are happening around the State, and how the efforts combine to increase the broadband availability, reliability, and speed of access in the State of West Virginia.

In order to monitor the overall progress of broadband availability, utilization, and speed across the state, West Virginia should continue to support the West Virginia Broadband Mapping Program (WVBMP) and speed test data acquisition and utilization. If the program is continued, it will not only focus on maintaining current initiatives like broadband mapping, speed test data acquisition and technical assistance grants, but also focus on starting planned initiatives like the implementation of the statewide Broadband Strategic Plan and seeking out new initiatives like cost modeling and Gigabit Cities modeling that will effectively and efficiently further the goals of the program and that of the State. The mapping project outlines the advances in broadband infrastructure and availability.

The WVBMP is a key player in broadband planning and broadband deployment in the State. While the program was developed as a response to a federal program, it has since become integral to state and local broadband planning and priorities. The federal program will expire in January 2015; however, the WVBMP's work will still be necessary for the continued expansion of broadband deployment efforts in the State.

IMPLEMENTATION MATRIX

The following matrix outlines the 10 strategic objectives, and the goals and action items necessary to implement each of the strategies. The matrices can be used as a management tool to assist in the implementation process and can be updated and amended as necessary.

Strategic Objective S.O.1: Identify a Lead Agency		
Goals:	**Action Item**	**Time Frame**
Goal S.O.1.: Identify a lead agency.	1. Identify an agency that would facilitate the implementation of the plan. 2. Provide oversight and guidance throughout the process.	Year 1 Ongoing Oversight Year 1 – Year 5
Strategic Objective S.O.2: Develop a Connect West Virginia Fund as a Sustainable Funding Program for Broadband Initiatives and Programs		
Goals:	**Action Item**	**Time Frame**
Goal S.O.2.1:. Develop Connect West Virginia fund administration structure and support.	1. Select a lead entity. 2. Engage the BDC to review and recommend grant applications. 3. Utilize the IJDC structure to administer the funding process.	Initial Development Year 1 Ongoing Year 2 – Year 5
Goal S.O.2.2: Develop guidelines and procedures.	1. Develop grant/loan application. 2. Develop Evaluation Criteria.	Year 1
Goal S.O.2.3: Identification of funding source.	1. Identify funding source. 2. Monitor federal funding sources.	Ongoing Year 1 – Year 5
Goal S.O.2.4: Monitor success of Connect WV investment.	1. Utilize WVBMP to evaluate the program's effect on unserved and underserved areas. 2. Monitor speed test data to evaluate the program's effect on meeting or exceeding State and FCC definition of broadband.	Ongoing Year 1 – Year 5

Strategic Objective S.O.3: Develop and Implement a State-Wide Awareness Campaign with the Goal of Increasing Broadband Utilization and Take-Rates.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.3.1: Identify a lead organization to oversee effort.	1. Identify key agencies and/or organizations that would fill the role of the lead entity. 2. Provide oversight to lead agency to ensure strategic partnerships are formed, goals are achieved, and to monitor success.	Year 1 Ongoing Oversight Year 1 – Year 5
Goal S.O.3.2: Partner with providers to help identify targeted areas with low take rates.	1. Identify broadband providers willing to work with the lead entity to assist with this effort. 2. Assess available provider data and utilization information to identify and evaluate target areas. 3. Utilize State's survey and map data to supplement locations where low adoption rates occur.	Initial Development Year 1 Ongoing Support Year 2 – Year 5
Goal S.O.3.3: Form an awareness campaign team.	1. Seek volunteer members that possess the knowledge, skills, and expertise to serve on the awareness campaign team. 2. Determine the structure of the team, and roles and responsibilities of the team members. 3. Enlist the services of local libraries, churches, senior centers, and other public entities to help support the campaign. 4. Develop and implement the campaign.	Initial Development Year 1 Ongoing Promotion Year 2 – Year 5
Goal S.O.3.4: Enlist the assistance of regional councils and well-established organizations to reinforce campaign efforts.	1. Work with regional councils to assist with the promotion of the campaign including providing collateral materials, coordinating advertising, planning events, etc.	Initial Enlistment Year 1 Ongoing Support Year 2 – Year 5

Strategic Objective S.O.4: Promote Broadband Education.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.4.1: Conduct a gap analysis on existing programs.	1. Inventory existing broadband educational programs or services. 2. Identify programs that need to be developed to support education and demand.	Year 1
Goal S.O.4.2: Promote existing educational opportunities and services.	1. Partner with key community institutions, academia, private sector entities, and non-profits to support and promote programs. 2. Coordinate outreach to inform parents, rural residents, minorities, low-income families, etc. about access opportunities. 3. Engage credible organizations (i.e., Workforce WV, WV DOE) to assist with promotional efforts.	Year 1 Ongoing Year 2 – Year 5
Goal S.O.4.3: Work with stakeholders to develop broadband educational courses.	1. Form partnerships with groups that may be pivotal in developing the needed training programs. 2. Develop needed education programs identified in the gap analysis. 3. Design the programs to accommodate diverse audiences. 4. Identify mechanisms to deliver and propagate education programs throughout the communities.	Initial Development Year 2 Ongoing Promotion Year 3 – Year 5
Strategic Objective S.O.5: Support Cost Reduction of Internet Access and Equipment.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.5.1: Identify current offerings by providers and promote them through the awareness campaign.	1. Work with providers to identify low-cost programs available to consumers who cannot afford broadband services. 2. Leverage awareness campaign to promote low-cost programs, if available. 3. Consider working with WVNET to optimize WVNET's broadband infrastructure to provide support and access beyond existing	Year 1

	audiences (i.e., county/state governments, K-12 and higher education institutions, libraries, etc.) to the public.	
Goal S.O.5.2: Develop programs that offer low-cost or discounted services.	1. Work with providers to develop and implement incentive offerings to consumers. 2. Encourage broadband providers and school districts to participate in national programs that promote digital literacy and offer discounted services (e.g., EveryoneOn/C2C, LifeLine, and ConnectED.) 3. Consider developing a state-wide funding mechanism to subsidize programs, in the event providers deem incentive solution is not feasible. 4. Collaborate with providers to create strategies to put programs in place. 5. Promote programs through the awareness campaign.	Initial Development Year 2 Ongoing Support and Promotion Year 3 – Year 5
Goal S.O.5.3: Partner with national equipment providers to provide discounted equipment based on specific financial criteria.	1. Consult with national equipment vendors (i.e., Microsoft, Dell, Hewlett Packard, Apple) to seek opportunities to provide discounted equipment to low-income families. 2. Form partnerships with larger vendors to leverage buying power. 3. Encourage vendors to promote special offers to consumers. 4. Determine if schools participate in special discounted equipment offerings through vendors. 5. Work with schools to enroll or develop discount programs. 6. Include discount program information in the awareness campaign promotion.	Initial Development Year 2 Ongoing Promotion and Participation Year 3 – Year 5
Strategic Objective S.O.6: Support the Development of Applications that Increase Broadband Demand.		
Goals:	**Action Item**	**Time Frame**
Goal S.0.6.1: Identify and Support a Funding Program for Demand Promotion Applications	1. Review WVBMP Technical Assistance Grant Program 2. Continue to funding and support the WVBMP Technical Assistance	Year 1

and services.	Grant Program or incorporate the goals into S.O.5	
Goal S.O.6.2: Monitor the progress of Demand Promotion Applications	1. Utilize WVMP coverage maps and speed test data to monitor access and speed throughout the state 2. Track FCC Broadband Progress Reports to monitor WV take rate	Ongoing Year 2 – Year 5
Strategic Objective S.O.7: Leverage BTOP Investment to Increase Broadband Availability.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.7.1: Inventory BTOP assets.	1. Develop a complete list of BTOP assets to include a. Type b. Location c. Condition d. Operating State	Year 1
Goal S.O.7.2: Define eligible and acceptable use of BTOP assets.	1. Define eligible uses for BTOP assets. 2. Develop rules for utilization.	Year 1
Goal S.O.7.3: Identify organizations that are eligible to leverage BTOP assets.	1. Identify organizations eligible to utilize BTOP Investment a. Private Companies b. Non-profit Organizations c. Government Entities	Year 1
Goal S.O.7.4: Outline costs.	1. Identify implementation cost. 2. Identify maintenance and support cost.	Year 1
Goal S.O.7.5: Develop legal requirements/standard contracting terms.	1. Outline legal requirements for asset utilization. 2. Develop service level agreements.	Year 1
Goal S.O.7.6: Strategic use case.	1. Develop BTOP utilization guidelines. 2. Publish Playbook. 3. Monitor utilization and amend guidelines as necessary.	Initial Development Year 1 Ongoing Year 2 - Year 5

Strategic Objective S.O.8: Support Gigabit City Deployments.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.8.1: Develop gigabit city models.	1. Review Huntington Gigabit City Feasibility Study. 2. Develop repeatable Gigabit City Model to determine a. Cost: implementation and support b. Return on investment 3. Utilize model to conduct Gigabit City Feasibility studies for WV Communities.	Year 1 – Year 3
Goal S.O.8.2: Share model results.	1. Publish feasibility study results.	Year 1 – Year 3
Goal S.O.8.3: Monitor public and private funding sources.	2. Review private and public funding sources to support Gigabit City deployment a. FCC b. Google Fiber c. GigU d. Broadband Providers 3. Share potential funding sources with stakeholders.	Year 1 – Year 5
Strategic Objective S.O.9: Work with Providers that Receive CAF Funds in Order to Align with State Goals and Objectives		
Goals:	**Action Item**	**Time Frame**
Goal S.O.9.1: Engage with providers that receive CAF funds.	1. Review existing CAF applications. 2. Engage incumbent provider to support CAF implementation and State priorities.	Initial Review Year 1 Ongoing Engagement Year 2 - Year 5
Goal S.O.9.2: Monitor CAF funding program and support provider participation.	1. Monitor CAF funding announcements and future funding rounds. 2. Provide comment as necessary to FCC. 3. Share CAF funding information with stakeholders.	Year 1 – Year 5

Strategic Objective S.O.10: Incorporate Broadband Planning into Existing Land Use Planning Legislation.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.10.1: Develop proposed amendment(s) to existing legislation.	1. Conduct due diligence to determine most appropriate and effective amendment(s) that could be made to existing legislation. 2. Engage legal counsel to develop specific language for proposed amendments.	Year 1
Goal S.O.10.2: Secure sponsorship and support for proposed amendments.	1. Develop briefing materials. 2. Engage legislators to sponsor amendments. 3. Meet with local elected officials and planning and economic development agencies/organizations to secure buy-in. 4. Coordinate briefings with state legislators to secure individual support of amendment passage.	Year 1 – Year 2
Strategic Objective S.O.11: Incorporate "Dig Once" Considerations Into New Statewide Policies and Legislation.		
Goals:	**Action Item**	**Time Frame**
Goal S.O.11.1 – Explore “dig once” requirements for all state highway projects.	1. Meet with appropriate WVDOT leadership to a. Secure commitment to broadband enhancement. b. Encourage due diligence process to explore alternative approaches, groups impacted, and determine the most effective approach.	Year 1
Goal S.O.11.2 – Explore “dig once” requirements for infrastructure project funded through state agencies.	1. Conduct due diligence to identify state agencies that fund infrastructure. 2. Coordinate meetings with agency leaders to a. Secure commitment to broadband enhancement. b. Encourage due diligence process to explore alternative approaches, groups impacted, and determine the most effective approach.	Year 1 - Year 2

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APPENDICES

Appendix A – Regional Broadband Strategic Plans

Appendix B – Broadband Speed Test Data by County

Appendix C – Complete List of Other Broadband Providers

Appendix D – Recently Funded Broadband Projects in West Virginia

Appendix E – Recommended Language for Open Access Policies

Appendix F – Other State Funding Programs

Appendix G – Other States' Broadband Adoption and Demand Promotion Efforts

Appendix H – Discount Equipment Programs

Appendix I – Case Studies and Examples of "Dig Once" Legislation from FHWA Work Plan

APPENDIX A – REGIONAL BROADBAND STRATEGIC PLANS

The 11 Regional Broadband Strategic Plans can be viewed at:

- http://www.broadband.wv.gov/Strategic_Planning/Pages/Regional-Broadband-Plans.aspx

Additional Broadband Resources can be viewed at:

- http://www.broadband.wv.gov/Strategic_Planning/Pages/default.aspx

APPENDIX B – BROADBAND SPEED TEST DATA BY COUNTY

County	Number of Tests	Number of Tests at or above 4Mbps/1Mbps	Percentage of Tests at or above 4Mbps/1Mbps
2014 (January – June)	**201,488**	**126,812**	**63%**
Barbour	507	164	32%
Berkeley	13,898	8,957	64%
Boone	1,514	133	9%
Braxton	376	45	12%
Brooke	632	435	69%
Cabell	14,989	11,158	74%
Calhoun	249	33	13%
Clay	295	61	21%
Doddridge	52	29	56%
Fayette	3,488	2,548	73%
Gilmer	134	70	52%
Grant	901	155	17%
Greenbrier	2,299	1,423	62%
Hampshire	2,441	207	8%
Hancock	2,032	1,731	85%
Hardy	1,244	286	23%
Harrison	11,221	5,111	46%
Jackson	1,179	740	63%
Jefferson	8,151	5,429	67%
Kanawha	42,463	27,300	64%
Lewis	1,416	901	64%
Lincoln	1,424	701	49%
Logan	2,953	1,958	66%
Marion	6,753	3,152	47%
Marshall	882	252	29%
Mason	1,975	1,458	74%
McDowell	1,715	589	34%
Mercer	8,983	5,635	63%
Mineral	795	548	69%
Mingo	3,521	2,568	73%

County	Number of Tests	Number of Tests at or above 4Mbps/1Mbps	Percentage of Tests at or above 4Mbps/1Mbps
Monongalia	14,499	11,561	80%
Monroe	521	220	42%
Morgan	1,390	868	62%
Nicholas	1,640	904	55%
Ohio	4,060	3,336	82%
Pendleton	198	103	52%
Pleasants	347	20	6%
Pocahontas	992	37	4%
Preston	1,200	655	55%
Putnam	8,896	5,974	67%
Raleigh	7,490	5,812	78%
Randolph	2,773	1,879	68%
Ritchie	245	48	20%
Roane	197	91	46%
Summers	47	20	43%
Taylor	945	528	56%
Tucker	2,453	216	9%
Tyler	61	34	56%
Upshur	2,794	1,788	64%
Wayne	399	288	72%
Webster	248	97	39%
Wetzel	722	58	8%
Wirt	16	8	50%
Wood	9,350	7,556	81%
Wyoming	1,523	934	61%
2013	**556,896**	**330,398**	**59%**
Barbour	2,542	357	14%
Berkeley	36,628	22,642	62%
Boone	4,083	743	18%
Braxton	718	303	42%
Brooke	1,808	1,185	66%
Cabell	35,370	25,301	72%
Calhoun	1,282	79	6%

County	Number of Tests	Number of Tests at or above 4Mbps/1Mbps	Percentage of Tests at or above 4Mbps/1Mbps
Clay	459	81	18%
Doddridge	139	86	62%
Fayette	10,772	7,099	66%
Gilmer	577	356	62%
Grant	1,828	521	29%
Greenbrier	5,649	3,486	62%
Hampshire	5,642	349	6%
Hancock	5,672	4,709	83%
Hardy	2,717	698	26%
Harrison	32,078	11,840	37%
Jackson	3,379	2,284	68%
Jefferson	21,744	14,830	68%
Kanawha	117,865	69,966	59%
Lewis	3,142	1,805	57%
Lincoln	3,826	1,885	49%
Logan	10,665	6,363	60%
Marion	21,288	9,088	43%
Marshall	3,055	961	31%
Mason	5,039	3,793	75%
McDowell	5,269	1,120	21%
Mercer	23,739	12,728	54%
Mineral	2,761	2,107	76%
Mingo	9,389	6,335	67%
Monongalia	41,538	30,700	74%
Monroe	1,669	639	38%
Morgan	3,528	1,954	55%
Nicholas	3,599	1,933	54%
Ohio	14,724	10,956	74%
Pendleton	502	218	43%
Pleasants	1,495	137	9%
Pocahontas	2,791	56	2%
Preston	3,090	1,634	53%
Putnam	26,086	16,628	64%

County	Number of Tests	Number of Tests at or above 4Mbps/1Mbps	Percentage of Tests at or above 4Mbps/1Mbps
Raleigh	19,444	13,973	72%
Randolph	8,715	6,001	69%
Ritchie	854	175	20%
Roane	508	279	55%
Summers	113	31	27%
Taylor	2,488	1,519	61%
Tucker	2,281	320	14%
Tyler	136	55	40%
Upshur	7,303	4,622	63%
Wayne	3,109	2,119	68%
Webster	634	306	48%
Wetzel	1,752	167	10%
Wirt	64	16	25%
Wood	26,747	20,377	76%
Wyoming	4,601	2,483	54%
2012	**576,549**	**278,500**	**48%**
Barbour	2,527	262	10%
Berkeley	34,329	17,498	51%
Boone	6,067	518	9%
Braxton	1,735	116	7%
Brooke	1,098	533	49%
Cabell	40,552	26,277	65%
Calhoun	1,676	59	4%
Clay	498	106	21%
Doddridge	231	146	63%
Fayette	12,580	7,537	60%
Gilmer	567	307	54%
Grant	1,960	470	24%
Greenbrier	9,721	4,920	51%
Hampshire	8,179	585	7%
Hancock	5,627	4,610	82%
Hardy	1,897	234	12%
Harrison	37,616	8,340	22%

County	Number of Tests	Number of Tests at or above 4Mbps/1Mbps	Percentage of Tests at or above 4Mbps/1Mbps
Jackson	3,508	1,594	45%
Jefferson	17,542	9,498	54%
Kanawha	117,360	57,101	49%
Lewis	3,020	1,534	51%
Lincoln	3,109	1,590	51%
Logan	11,262	4,868	43%
Marion	24,916	6,117	25%
Marshall	2,060	655	32%
Mason	5,925	3,858	65%
McDowell	5,242	92	2%
Mercer	24,191	11,590	48%
Mineral	2,584	1,776	69%
Mingo	8,581	4,970	58%
Monongalia	40,251	27,899	69%
Monroe	1,429	273	19%
Morgan	3,708	1,359	37%
Nicholas	3,577	1,805	50%
Ohio	12,842	9,212	72%
Pendleton	489	186	38%
Pleasants	1,050	48	5%
Pocahontas	4,169	19	0%
Preston	4,454	1,916	43%
Putnam	24,448	13,602	56%
Raleigh	20,665	12,252	59%
Randolph	7,948	4,224	53%
Ritchie	960	106	11%
Roane	1,132	298	26%
Summers	163	10	6%
Taylor	2,816	1,412	50%
Tucker	3,126	84	3%
Tyler	240	96	40%
Upshur	9,387	4,688	50%
Wayne	3,941	2,652	67%

County	Number of Tests	Number of Tests at or above 4Mbps/1Mbps	Percentage of Tests at or above 4Mbps/1Mbps
Webster	699	361	52%
Wetzel	2,160	109	5%
Wirt	151	53	35%
Wood	25,800	16,799	65%
Wyoming	4,784	1,276	27%

APPENDIX C – COMPLETE LIST OF OTHER BROADBAND PROVIDERS

ABOVENET COMMUNICATIONS
Ad-Base Systems Inc. (DBA GlobalPOPS)
ADP
AEPSC
airBand Communications
Allegheny Energy Service Corporation
Allied Telecom Group, LLC.
Alpha Technologies
ANS Communications
Arch Coal
AT&T GLOBAL NETWORK SERVICES
AT&T INTERNET SERVICES
AT&T Mobility LLC
AT&T Services
AT&T U-verse
AT&T Wi-Fi Services
AT&T Wireless
ATLANTIC BROADBAND
BellSouth.net
blueone.net
BRISTOL VIRGINIA UTILITIES
BroadAspect
BroadbandONE
Broadview Networks
California University of Pennsylvania
CAMC Health System
Carpathia Hosting
Cavalier Telephone
CEBRIDGE CONNECTIONS
Cellco Partnership DBA Verizon Wireless
CenturyLink
CERFnet
CHARTER COMMUNICATIONS
Chesapeake Appalachia LLC
Circle Computer Resources
Clear Wireless
Cogent Communications
Comcast Business Communications
COMMUNITY ANTENNA SERVICE
Compunet
CONTINENTAL BROADBAND PENNSYLVANIA
Corinthian College
Covad Communications
Cyber Development Group International, LLC
DataShack, LC
Department of Housing and Urban Development
Department of Veterans Affairs
Deutsche Telekom AG
Distributed Management Information Systems, Inc. (
DoD Network Information Center
EarthLink
East Kentucky Network, LLC.
Embarq Corporation
Equinix
Fairmont State University
FiberNet of West Virginia
Fidelity Integrated Financial Solutions
Financial Management Service (FMS)
General Services Administration
Global Crossing
GlobalPOPs
Hardy Telecommunications
Headquarters, USAISC
Horizon Telcom
HOST.NET
Hughes Network Systems
Insight Communications Company
Intelsat Global Sales & Marketing LTD.
Labyrinth Solutions
LBiSat, LLC
Level 3 Communications
Linode
MARCO ISLAND CABLE
Marshall University
MCI (Systems Engineering)
MCJUNKIN CORPORATION

Megapath
Mikrotec Internet Services
NEW FRONTIERS INTERNET SERVICES
NISOURCE
NRTC
nTelos Commuications
NTT America - Mid-Atlantic
NuVox Communications
o1.net
o12.bboi.net
OARnet
Ohio Mid Eastern Regional Education Service Agency
One Communications Corporation
OPEN WORLD
PAETEC COMMUNICATIONS
Pavlov Media
Pony Express.Net
QCOL
Qwest Communications
Road Runner
SAVVIS Communications Corporation
SBC Internet Services
Schlumberger Limited
Shepherd University WV
SITA-Societe Internationale de Telecommunications
SPACENET
Spirit Telecom
Sprint
Starband Communications
StratusWave Communications
Syniverse Technologies
Tachyon Networks
TNCI
tw telecom holdings
United Hospital Center
United States Antarctic Program
University of Maryland
University of Virginia
Unknown
US Department of Defense Network
US Office of Surface Mining
USDA Office of Operations
Verizon Business
Verizon Data Services LLC
Verizon Internet Services
VERIZON WIRELESS
Viasat Communications
VISUAL LINK
Wayport
West Virginia Network for Educational Telecomputing
West Virginia University
West Virginia Wesleyan College
Wheeling Hospital
Wheeling Jesuit University
WholeSale Internet
Wildblue Communications
Windstream Communications
Wireless Data Service Provider Corporation
WV FIBER
WVVA.net
Xecunet, LLC.
XO Communications
Zayo Bandwidth NorthEast LLC
Zito Media, L.P.

APPENDIX D – RECENTLY FUNDED BROADBAND PROJECTS IN WEST VIRGINIA

BROADBAND INFRASTRUCTURE PROJECTS

BTOP & BIP:

- Hardy OneNet Fiber to the Home ("Hardy OneNet" or "OneNet") - Hardy Telecommunications, Inc.
- Hardy Anchor Ring BTOP - Hardy Telecommunications, Inc. ("Hardy")
- One-Stop Public Computer Center Modernization - WorkForce West Virginia ("WFWV")
- Pocahontas High Speed Broadband Fiber Project ("the BIP project") - Spruce Knob Seneca Rocks Telephone, Inc. ("SKSRT")
- West Virginia Network ("WVNET") – WVNET
- West Virginia Sponsored Education Group Participant ("SEGP") Project - West Virginia Internet2 Consortium ("the WV i2 Consortium" or "the Consortium")

Non-BTOP/BIP:

- *Federal Communications Commission Rural Health Care Pilot Program WV ("RHCPP")* – West Virginia Telehealth Alliance ("the WVTA" or "the alliance")
- Connect America Fund: Phase 1 / Round 1 – West Virginia received funding to support projects in 5,927 locations (25 counties and 1,671 census blocks served)

BROADBAND ADOPTION / DIGITAL LITERACY PROJECTS

BTOP:

- Equipping West Virginia's Fire and Rescue Squads with Technology and Training to Serve Communities ("Future WV BTOP Project") - Future Generations Graduate School of Research and Applied Studies in Community Change, Inc. ("Future Generations Graduate School")

Non-BTOP:

- Appalachian Regional Commission ("ARC") e-Commerce - ARC Information Age Appalachia ("IAA") Program
- Broadband Service Provider Pricing Models - West Virginia Broadband Service Providers ("provider" or "providers")
- Connect 2 Compete West Virginia – One Economy Corporation ("One Economy")
- E-Impact Program - Mission West Virginia
- INNOVA Commercialization Group ("INNOVA") – West Virginia High Technology Consortium Foundation ("WVHTC" or "the Foundation")
- StartUp West Virginia - Manufacturing; Innovate WV - Robert C. Byrd Institute for Advanced Flexible Manufacturing ("RCBI")

- WV Connectivity Initiative ("the Initiative") - West Virginia Chamber of Commerce & West Virginia High Technology Consortium ("WVHTC") Foundation

Broadband Mapping and Planning Program (Funded by NTIA State Broadband Initiative Program) Projects:

- State Broadband Initiative Program ("SBI") WV - West Virginia Geological and Economic Survey: Office of GIS Coordination("the WVGES")
- West Virginia Broadband Deployment Council ("the Council") - West Virginia Department of Commerce

WVBMP Broadband Technical Assistance Grant Program:

- In 2012 the first round received 64 grant applications requesting $1,442,403 in funding. The program was able to fund 33 grants for $677,625.
- In 2014 the second round received 129 grant applications requesting $3,210,185 in funding. The program was able to fund 39 grants for $842,213.

West Virginia Broadband Deployment Council Grants:

Round 1 Broadband Grants:

- Gateway Telecom, LLC d/b/a StratusWave Communications – Region 11 Broadband Infrastructure – 6 Applications Awarded for Broadband Infrastructure Projects
- 3wlogic, LLC in conjunction with Gilmer Braxton Research Zone and Region VII PDC – 1 Application Awarded for Broadband Infrastructure Projects

Round 2 Broadband Grants:

- Region 5 Broadband Infrastructure – 2 Applications Awarded for Broadband Infrastructure Projects

Round 3 Broadband Grants:

- CityNet was awarded funding for the infrastructure project for the Snowshoe Mountain Project
- Gateway Telecom, LLC (dba Stratuswave) was awarded funding for infrastructure projects

APPENDIX E – RECOMMENDED LANGUAGE FOR OPEN ACCESS POLICIES

(1) Interconnection Requirements: Recipients shall provide access to subsidized facilities at any technically feasible point along the network (without exceeding current or reasonably anticipated capacity limitations). This duty includes, at a minimum, the physical interconnection of the recipient's facilities to a requesting party's facilities for the exchange of traffic. In addition, recipients shall connect to the public Internet directly or indirectly and provide requesting parties with an ability to connect to the Internet.[7] Rates and terms for interconnection shall be[8]

- **(i)** based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection;
- **(ii)** nondiscriminatory
- **(iii)** may include a reasonable profit

(2) Negotiate in Good Faith: Recipients shall negotiate in good faith with all requesting parties (i.e., public, private, non-profit, or other parties) making a bona fide request for interconnection or wholesale services. [4]

(3) Access to Information: Recipients should maintain a standardized, easily accessible method for parties to make inquiries and request service. Recipients should establish a standard policy for responding to requests should provide up-to-date information to all parties making bona fide requests for

- **(i) Routes:** Location of grant-funded network routes, including routes containing dark fiber.
- **(ii) Points of Interconnection (POIs):** Location of the POIs associated with the grant-funded facilities and whether capacity exists to permit interconnection. Regarding location, the information should identify the census block within which the POI resides and the related community, town, or city and Stats of the POI.

(4) Sub-recipient Compliance: Recipients must require all sub-recipients to comply with the provisions7

(5) Exceptions for Existing Network Arrangements: The interconnection requirements do not apply to the recipient's existing network arrangements. Note, however, that if a recipient contributes existing facilities to a project to satisfy the matching requirement (when applicable), such facilities specifically identified as an in-kind contribution will be subject to the nondiscrimination and interconnection obligations because they become part of the recipient's budget and project. Further, recipients have an affirmative responsibility to connect to the public Internet even if doing so involves traversing portions of their existing networks.[3]

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[7] FACT SHEET Broadband Technology Opportunities Program Nondiscrimination and Interconnection Obligations

[8] Telecommunications Act of 1996 - Pricing of interconnection or unbundled network elements [252(d)(1)]

(6) Minimum Speed Requirements: Projects must meet the minimum standards for speed set forth in the statute at §31-15C-2

(i) The project must deliver the same downstream data rate and upstream data rate as is specified by the Federal Communications Commission and that does not require the end-user to dial up a connection that has the capacity to always be on, and for which the transmission speeds are based on regular available bandwidth rates, not sporadic or burstable rates, with latency suitable for real-time applications and services such as Voice over Internet Protocol (VoIP) and video conferencing, and with monthly usage capacity reasonably comparable to that of residential terrestrial fixed broadband offerings in urban areas.

APPENDIX F – OTHER STATE FUNDING PROGRAMS

New York Broadband Program

New York State's Connect NY Broadband Grants program provided grants for projects to improve broadband service in unserved or underserved areas, which are defined as an area where more than 50% of households that do not have broadband service available with advertised speeds equal or higher than 6 Mbps download and 1.5 Mbps upload. Applicants were encouraged to utilize existing infrastructure and provide educational and outreach services as part of the project. Applicants were not required to have an open access policy.

The program provided $25 million in state funding to 18 recipients. Recipient were required to provide a 20% matching requirement, including minimum 10% in cash, and up to 10% as in-kind contributions.

Reference: http://nysbroadband.ny.gov/ConnectNY2012

California Advanced Services Fund

California created the California Advanced Services Fund (CASF) to increase availability of broadband in areas that are unserved or underserved. Underserved areas are defined as a Census Block Group where no provider offers advertised speeds of at least 6mbps download and 1.5 mbps upload. The CASF encourages fair and non-discriminatory business practices by requiring applicants to submit a pricing proposal and commit to the pricing for at least two years for both "last mile" and "middle mile" broadband infrastructure projects.

The state provided the initial funding of $100 million for grants and an additional $15 million for a revolving loan fund as well as additional funding until 2020 through a surcharge tax on intrastate telecommunications customers. Applicants can request up to 70% of project funding in grants for unserved areas or 60% for underserved areas. An additional 20%, up to $500,000, of the project funding can be requested as a loan.

Reference: http://www.cpuc.ca.gov/PUC/Telco/Information+for+providing+service/CASF/index.htm

ConnectME Grants

Maine's ConnectME Grants program is an on-going program funded by a state surcharge on instate communications services. Grants are provided for "last mile" infrastructure projects to provide service to households in unserved areas.

Anyone may apply, however ConnectME requires applicants to partner with an ISP to complete the application process. There are no specific open access, fund matching, or broadband speed requirements. However, ConnectME does prioritizes projects that will provide 3mbps to 6mbps download speeds or higher and recommends using the funding as gap-financing and limiting the funding to $100,000 per project. As of 2012, $9 million in grants has been awarded 114 projects, with the total investment of projects in the program reaching over $17 million.

Reference: http://www.maine.gov/connectme/grants/index.shtml

South Dakota

South Dakota's Technology Planning and Computer Ownership Program provides grants to Community Anchor Institutions (CAI) to purchase technology that improves broadband service. Awarded grants have been used for a variety of projects such as increasing network security with firewall equipment, network switches and routers to improve performance and reliability of multiple-facility networks, improving public wireless networks, and upgrading local computers workstations. The program is facilitated by the South Dakota Bureau of Information and Telecommunications and funding is provided by the National Telecommunications and Information Administration.

Before a CAI is eligible to apply for grants, the South Dakota Broadband Initiative Technology Planning Team must perform an on-site technical assessment to evaluate the current environment and ensure that proposed projects meet the technical needs of the CAI and fit the goals of the program. Additionally, Applicants must provide a 20% cash or in-kind matching contribution and grant awards are limited to $10,000 per project.

Reference: http://broadband.sd.gov/TPCO.aspx

APPENDIX G – OTHER STATES' BROADBAND ADOPTION AND DEMAND PROMOTION EFFORTS

OHIO

ConnectOhio's campaign was marketed throughout Ohio, however the organization discovered it was best to localize efforts. They found these methods had the greatest impact, were the most effective, and kept costs low. They worked through non-profits and churches to gain better access to the public and to minimize costs. For example, they offered to pay for the printing of the Sunday church programs in exchange for inserting an advertisement promoting Broadband training programs.

ConnectOhio's leadership created a collaborate effort between Frontier Communications and the libraries. Frontier was investing in upgrading the network and expanding broadband services in Tuscarora, and the libraries wanted to hold public training classes. The libraries and Frontier hosted a community fair where they were able to meet and greet people in the community, and promote their services and training. As an added incentive, they held drawings to give away free laptops. Frontier published and distributed flyers to customers and residents of newer community developments to attend the fair. Frontier bore the burden of most of the costs for advertising. Free t-shirts that said *"I Survived Internet Training"* were given to people that completed their training.

Reference: http://connectohio.org/

MISSISSIPPI

In 2009, Governor Haley Barbour created the Mississippi Broadband Task Force (MBTF) to coordinate statewide efforts on broadband Internet policy. The MBTF is made up of representatives from the Department of Information Technology Services, the Public Utilities Staff, the Mississippi Development Authority and the Office of the Governor.

In September 2010, the State received additional stimulus funds to develop the Mississippi Broadband Connect Coalition, a non-profit public-private partnership focused on producing a comprehensive statewide strategic plan for improving digital literacy, increasing access to broadband, and enabling greater adoption of broadband in the state.

Through a partnership with Mississippi State University Extension Service that began in 2011, this statewide strategic plan translated into activity in all parts of the state. Extension Service personnel held planning meetings at the regional and local level designed to identify barriers to adoption of broadband internet and local solutions. These individuals also provide technical assistance to local communities to help them take advantage of all the services that broadband Internet provides.

Over the life of this multi-year grant program, Mississippi goal is to improve broadband access and use for its citizens and maximize its benefits for the state.

Reference: http://msbb.broadmap.com/mississippi-broadband-connect-coalition.html

WISCONSIN

To help the participants in the LinkWISCONSIN project understand what broadband is and how it can make a difference, a series of awareness videos were created. These videos explained how broadband can be applied in a variety of ways to improve life for Wisconsin's residents. There are a total of eight videos. The first is an introduction, and the remaining seven are topic specific (e.g., public safety, education, healthcare, etc).

Additionally, LinkWISCONSIN developed a Communications Toolkit for promoting broadband business and residential surveys in communities around the state. The kit contained sample materials to ensure the roll-out was a success:

- Cover Letter
- Backpack Mail
- Press Release
- Newsletter Article
- Facebook Message
- LinkedIn Message
- Twitter Tweet
- Roll-out Schedule for Communications Tools

Reference: HTTP://WWW.LINK.WISCONSIN.GOV/LWI/DEFAULT.ASPX?PAGE=52&BHCP=1

APPENDIX H – DISCOUNT EQUIPMENT PROGRAMS

Fairfax County Public Schools

Fairfax County Public School district developed innovative programs and formed public/private partnerships with Cox Cable, Comcast, Microsoft, Dell, Hewlett Packard, and Apple to support Access4All. Access4all is a program that ensures every student in the school district has adequate access to the Internet and reliable technology. Access4all provided discounted, loaner, or free computer equipment, Internet services, and software through the following initiatives:

- Technology @ Home
- Computer Donations
- Cox Connect2Compete
- Comcast Internet Essentials
- Virginia Student Training and Refurbishment Program (STAR)
- Good PC

Reference: http://www.fcps.edu/is/access4all/index.shtml

Minnesota Computers for Schools

Minnesota Computers for Schools (MCFS) provides custom technology solutions to meet a school's or nonprofit's needs and budget. For one-third the price of buying new, MCFS will work with the schools to put together custom equipment – complete with educational software, a warranty, and tech support. The program offers a variety of equipment including desktop computers, laptops, and monitors.

Donors and partners help to support this program for public schools and private schools, educational non-profits, and for special children that are frequently absent from school due to health-related or chronic issues or other special needs. MCFS offers programs to help students who don't have access at home and to teachers who don't have the technology budget to equip their classrooms with necessary technology.

Reference: http://mncfs.org/

North Carolina Independent Colleges and Universities

North Carolina Independent Colleges and Universities (NCICU) has negotiated purchasing agreements directly with businesses on behalf of its colleges and universities. Under the terms of these agreements, campuses are able to purchase products and services at discounted prices. In addition, most of these agreements provide a small compensation to NCICU for the purpose of sustaining the Collaboration Initiative. Short summaries of the collaborating agencies that have directly negotiated a contract is provided on their website. For example, CDW Government (CDW-G) provides NCICU colleges and universities access to discounts on a variety of hardware, software, and peripheral products. CDW-G will create a website for each institution with information on NCICU pricing, product information, purchasing history, quotes and order status information, as well as customized access to the CDW-G account team.

Reference: http://www.ncicu.org/collaborative_dca.html

APPENDIX I – CASE STUDIES AND EXAMPLES OF "DIG ONCE" LEGISLATION

ARIZONA

On April 5, 2012, the Governor of Arizona signed the **Arizona Digital Highway Bill (SB1402)** to promote high-speed Internet access to citizens statewide for the purpose of advancing economic growth, education, public safety, healthcare and digital government in Arizona. The law allows the state to install broadband conduit in connection with rural highway construction if funds are received to cover the cost.

The installation would not be paid for with existing highway or state general funds, but through a federally-funded, state program managed by the Arizona Strategic Enterprise Technology (ASET)'s Digital Arizona Project. The Arizona Department of Transportation (ADOT) would be requested to bury multiple empty fiber-optic conduits along specified state highways using existing ROW wherever possible. The conduit would be leased to broadband providers by the Project on a cost recovery basis. The providers would be expected to agree to install fiber before the conduits were constructed.

The outcome of the work would result in significantly lower costs to providers for constructing long-distance capacity to reach rural communities. Expectations are that lower costs would encourage new investments in broadband services by providers, thus accelerating and improving the availability of high-capacity digital services in underserved areas in Arizona. It is expected to take a number of years to fully implement this program throughout the rural areas of the state.

UTAH

The Utah DOT (UDOT) has been instrumental in facilitating the expansion of broadband infrastructure in remote areas of the State through their efforts in installing and trading access to fiber conduit. For the past five years, UDOT has been facilitating cooperative fiber and conduit trades with broadband service providers and has established best practices for laying conduit for fiber during road construction projects. These practices have greatly expanded the State's communications infrastructure without major capital investment, resulting in real cost-savings for Utah taxpayers. The UDOT model has given the State a competitive advantage by enabling the development of next-generation broadband services available in both urban and rural areas.

VIRGINIA

The Virginia DOT (VDOT) is engaged in a fiber optic resource sharing agreements with private companies to install conduit and/or fiber in its interstate right-of-way in exchange for the use of company-owned conduit and/or fiber in areas where the state does not have broadband infrastructure. Under the terms of the agreement, the private sector is granted access to Interstate and primary road ROW to deploy a commercial fiber optic network. In exchange, VDOT receives fiber optic telecommunications infrastructure and services necessary to support Intelligent Transportation Systems (ITS) on a statewide basis.

Although Virginia does not have a DIG ONCE policy, long-term plans for the state include a recommendation for VDOT to integrate the installation of underground fiber conduit into the construction and reconstruction of transportation infrastructure by requiring the installation of broadband conduit.

In addition, there have been many efforts locally in communities across the state to promote broadband deployments which have been supported by an IT program based at Virginia Tech, called ECORRIDORS, http://www.ecorridors.vt.edu/.

MINNESOTA

The Minnesota DOT has an extensive policy on the accommodation of fiber optic facilities on Interstate ROW that includes an open and competitive process which allows providers to install their infrastructure at the time the ROW is open for other utility work.

In November 2011, Minnesota Governor, Mark Dayton, created the Task Force on Broadband. The task force was created to develop policies to promote the expansion of broadband access in Minnesota. In 2012, a sub group of the task force (Coordination Across all Levels of Government Subgroup), focused on DIG ONCE policy and how it might be applied in Minnesota to advance broadband services in underserved areas. The sub group examined ROW and permitting issues in the state with input from experts at the county and state level governments.

The Task Force's next action on Dig Once will be to convene conversations with the state ROW managers to determine where there may be opportunities to encourage broadband construction in underserved areas of the state. The Task Force is currently working with the state broadband office and with Connect Minnesota to identify and map where state ROW coincide with areas that have the greatest need for broadband.

CITY of BALTIMORE

Baltimore has made conduit installation an integral part of road construction and repair. The City owns and maintains a system of underground conduits to encase electric, fiber optics, and telecommunication cables and is now in the process of completing a comprehensive survey of the system using state-of-the-art GIS mapping technology. Mayor Rawlings-Blake personally inspected survey work conducted by the Department of Transportation and City contractors at one of the City's 14,000 manhole structures. "Baltimore is the best city in America to invest in with a new blazing fast internet infrastructure," Mayor Rawlings-Blake said. "There is no doubt that our commitment to maintaining and enhancing our City's conduit system makes Baltimore a very attractive choice for Google and other potential providers of broadband infrastructure."

OTHER CITIES

Further examples of policies and/or practices related to DIG ONCE have been identified by the FCC in the National Broadband Plan. For example, the city of **San Francisco** was recognized for having a "trench once" policy, whereby a 5-year moratorium is placed on opening up a road bed once the trench along that road bed has been closed. San Francisco's notification process ensures that all interested parties have the opportunity to install conduits and cabling in the open trench.

The city of **Boston** was also recognized for implementing a "Shadow Conduit Policy," which establishes a coordination process that requires the first company that requests a trench to invite other companies to add additional empty (or "shadow") conduits for future use by either the city of Boston or a later entrant.

As a part of **Chicago's Broadband Strategy**, the city promotes a process that includes the following elements: 1) deploying excess conduit when streets are opened for other infrastructure and public works projects, 2) incorporating specifications for conduit in the design phase 3) obtaining advance notice of private utility projects, and 4) making conduit available for use by government agencies and Internet service providers.


WEST VIRGINIA
BROADBAND
DEPLOYMENT
COUNCIL

Copies of this report may be obtained from:
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website: www.wvgs.wvnet.edu