February 26, 2013

Chairman Greg Walden
Subcommittee on Communications and Technology
U.S. House Committee on Energy and Commerce

Ranking Member Anna Eshoo
Subcommittee on Communications and Technology
U.S. House Committee on Energy and Commerce

Dear Chairman Walden, Ranking Member Eshoo, Members of the Subcommittee on Communications and Technology:

The Schools, Health and Libraries Broadband Coalition (SHLB Coalition or "Shell-bee" Coalition) respectfully submits the following views in support of the Broadband Technology Opportunities Program (BTOP) and asks this statement to be entered into the record of the Subcommittee hearing entitled "Is the Broadband Stimulus Working?" scheduled for Wednesday, February 27, 2013.[1]

The SHLB Coalition is extremely pleased with the progress made by the BTOP program in bringing affordable, open, high-capacity broadband services to community anchor institutions across the country. Community anchor institutions are the "third leg of the stool" of an economically vibrant community (along with business and residential users).[2] Unfortunately,

[1] The SHLB Coalition is a broad-based coalition consisting of representatives of schools, health care providers, libraries, private sector companies, for-profit and not-for-profit broadband providers, state and national research and education (R&E) networks, municipalities, philanthropic foundations, consumer organizations and others. All members of the SHLB Coalition share the common goal of bringing affordable, open, high-capacity broadband to community anchor institutions (CAIs) across the United States. For more information, visit www.shlb.org.

[2] NTIA defines anchor institutions as "schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities." http://www.ntia.doc.gov/legacy/broadbandgrants/guidance/Glossary_01-29-10_v6.pdf.

the needs of community anchor institutions for high-capacity bandwidth are often overlooked or misunderstood. The BTOP program[3] is wisely designed to address the shortage of high-quality broadband services for community anchor institutions. Our members report that the BTOP program is extending Middle Mile broadband infrastructure where it is needed, helping consumers subscribe to broadband services, improving educational access to technology, reducing the cost and increasing the quality of medical care, and providing millions of people with high-speed Internet access who otherwise would not have it.[4]

1. **The Vast Majority of BTOP Projects Are Successfully Bringing High-Speed Internet Services to Underserved Communities.**

The SHLB Coalition appreciates that the Subcommittee is exercising its responsibility to oversee this federal program to ensure that it is meeting its objectives. Despite occasionally critical press accounts, the real "story" about the BTOP program has been its great success. Almost all the BTOP grants are successfully meeting the urgent broadband needs of anchor institutions and their communities. Of the 233 grants that were initially awarded, 221 projects are successfully nearing completion and bringing enormous benefits to 7,200 communities across the country.[5] The BTOP program is in the process of connecting 20,000 community anchor institutions with "future-proof" broadband capacity that will allow them to meet their demands for high-speed, high-quality Internet connections for decades. Members of Congress should be proud of the role they played in investing to improve America's broadband infrastructure and for enhancing America's economic growth through broadband technologies and services.

2. **The BTOP Infrastructure Grant Program Is An Essential Component of a Comprehensive National Strategy to Improve the Nation's Broadband Capabilities.**

The BTOP Infrastructure grant program is one piece of a comprehensive broadband strategy enacted by Congress in 2009 to address the nation's broadband deficiencies. This comprehensive approach provided funding for broadband adoption, for public computer centers, for state broadband mapping and planning, as well as for infrastructure deployment.

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[3] This statement focuses on the BTOP infrastructure grants, which are the focus of this hearing. It should be noted, however, that the BTOP program also provided funding for Sustainable Broadband Adoption projects, Public Computer Center projects, and broadband mapping and planning. By providing funding for such a wide variety of broadband projects, the BTOP program reflects a balanced and comprehensive approach to improving the nation's broadband needs.

[4] Separate from the BTOP program, the Rural Utility Service (RUS) has funded $3.5 billion in BIP projects that will bring broadband service to an additional 2.8 million households, reaching nearly 7 million people, 360,000 businesses, and 30,000 anchor institutions across more than 300,000 square miles.

[5] "NTIA Administrator Strickling Delivers Remarks at the Brookings Institution on Broadband Technology Opportunities Program," Jan. 16, 2013, available at http://www.ntia.doc.gov/press-release/2013/ntia-administrator-strickling-delivers-remarks-brookings-institution.

The comprehensive package of programs accommodated the needs of many stakeholders in the broadband ecosystem, including incumbent private sector companies primarily focused on broadband adoption. In crafting this balanced approach, Congress also recognized that anchor institutions deserve improved broadband connections whether they are located in urban, suburban or rural areas of the country. Congress wisely decided that, if a hospital needs a fiber connection for life-saving telemedicine services, or if a school or library needs fiber to provide distance learning or job-training, it should not be denied such a connection because the surrounding residential consumers have DSL service.[6]

3. The BTOP Program Wisely Recognizes that Community Anchor Institutions Require Much More Bandwidth Than the 3-4 Mbps Standard That Was Set for Residential Consumers.

Schools, libraries, community colleges, health clinics, museums, public media, and other CAIs are "multi-user environments" that may have 10 or 50 or 200 or more computers accessing the Internet simultaneously and sharing the same broadband connection. A single individual computer user at one of these institutions may need a 1.5 Mbps bandwidth simply to run a distance learning class or a job-training video – if dozens of users are engaged in online learning, testing, researching, creating content and engaging in on-line collaboration at the same time, the CAI may need 100 Mbps or even more.

For this reason, the FCC's National Broadband Plan Goal #4 said that community anchor institutions in every community in the country should have 1 Gigabit per second (Gbps) broadband service by the year 2020. This reflects the fact that anchor institutions' demands for enhanced Internet access are growing by leaps and bounds. For instance, a recent report prepared by the Columbia Telecommunications Corp. of the broadband needs of community anchor institutions in Kansas found that "the need for bandwidth by schools, libraries, and hospitals is growing dramatically."[7] K-12 schools in particular, are implementing "ubiquitous computing" solutions that encourage students and teachers to have laptops, smartphones, tablets and other mobile devices that they can use for on-line learning at all times of the day.

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[6] The statutory language in Section 6001 of the American Recovery and Reinvestment Act (ARRA) does not apply the terms "unserved" or "underserved" to the anchor institutions. These terms are used to describe service to "consumers residing" in unserved or underserved areas in Section 6001(b)(1) and (b)(2), but are not used in the provisions that govern the deployment of broadband to anchor institutions in sections (b)(3), (b)(4) or (b)(5). In other words, the statutory language allows anchor institutions in any geographic location of the country to receive funding for broadband connections, whether or not the surrounding residential customers have broadband service.

[7] Building the Broadband Future: The Communications Needs of Kansas Schools, Libraries, and Hospitals, January 31, 2013, available at http://www.ctcnet.us/KansasCAINeeds.pdf.

To give another example, the State Educational Technology Directors Association (SETDA) issued a report last year comparing the broadband available to schools with the broadband that they need for the future.[8] SETDA recommends that schools have external Internet connections to an Internet service provider of 100 Mbps for every 1,000 students and staff. These recommendations increase in the 2017–18 school year to 1 Gbps for every 1,000 students and teachers for external connections, and 10 Gbps for internal network connections, "in anticipation of future technologies not yet conceived." Indeed, online assessments entail large numbers of students working online simultaneously—a function that simply cannot be accommodated, even in a small school, over copper-based Internet access.

A growing number of states are beginning to administer tests to their students online. Beginning in 2014, the 46 states and the District of Columbia that have adopted the Common Core State Standards will administer 'next generation' assessments almost exclusively online.[7] These tests will require the transmission of high-definition videos and sound files simultaneously, generating enormous demands for increased bandwidth.[9]

Several factors make community anchor institutions very different from residential users:

- First, the applications are increasingly bandwidth-intensive. Videoconferencing does not just involve a single low-resolution video; next generation videoconferencing involves simultaneous graphics and presentations, involving multiple locations at once.
- Second, K-12 schools and libraries are increasingly using "cloud computing," which means that workstations need a strong enough broadband connection to access material in the cloud. Coupled with cloud computing is a growing trend of adopting a "thin client" approach which reduces the cost of the computer because information is stored on the network rather than in the computer itself.
- Third, public access computers used by students and library patrons often share the same broadband connection with teachers and staff of schools and libraries.
- Fourth, schools, libraries and public media centers typically offer free Wi-Fi, which is used by students, patrons and other consumers when they bring their own devices (smartphones, tablets, laptop computers, etc.). These devices place additional demands on the community anchor institutions' broadband connection.
- Fifth, additional bandwidth must be provided for support and maintenance. All computers now have a regular cycle of software patches, virus scanner updates, and new feature additions. Because many community anchor institutions lack the human

[8] Fox, *et al.,* 2012, "The Broadband Imperative: Recommendations to Address K–12 Education Infrastructure Needs," Washington D.C.: State Educational Technology Directors Association (SETDA). http://www.setda.org/c/document_library/get_file?folderId=353&name=DLFE-1515.pdf.

[9] Ian Quillen, "Bandwidth Demands Rise as Schools Move to Common Core," Education Week: Digital Directions, October 17, 2012, Vol. 6. at 19-20. http://www.edweek.org/dd/articles/2012/10/17/01bandwidth.h06.html.

and financial resources to run caching servers and schedule updates to run during low demand, these support and maintenance needs must often be incorporated during normal business hours.

4. Concerns About "Overbuilding" to Anchor Institutions Are Misplaced.

There are several reasons why the concerns expressed about alleged "overbuilding" are misplaced:

i. Community Anchor Institutions Need High-Quality Bandwidth.

Some observers allege that the BTOP program has improperly sponsored "overbuilding" because the private sector networks already provide 3 or 4 Mbps service to anchor institutions. This is like saying students do not need computers because they already have calculators. The burgeoning use of broadband services by students, teachers and administrative staff at schools and libraries is simply overwhelming existing broadband capacity. Community anchor institutions must have very high-capacity and high-quality bandwidth to serve the educational, medical and information needs of their communities.

Smartphones, tablets, laptop computers and desktop computers are increasingly being integrated into classroom teaching and learning. Medical clinics need to transmit medical images and patient records to specialists simultaneously. Libraries provide digital literacy training to dozens of consumers to help promote broadband adoption. Some schools are seeing their bandwidth demands increasing by 200% in a single year. In all these cases, the community anchor institution will need substantially greater higher quality bandwidth than a residential user because they often serve dozens, or even hundreds, of Internet-connected devices simultaneously.

ii. Community Anchor Institutions Need Affordable Rates.

Even where fiber may be available in the community, it may not be accessible if the provider is charging rates that are beyond the community anchor institutions' budget. Schools, libraries, medical clinics have suffered extreme budget reductions over the past few years, and they often cannot afford to pay the rates offered by the incumbent provider. BTOP grant recipients are often able to provide fiber-based services to community anchor institutions at rates that are substantially less than those of the incumbent provider.

iii. Community Anchor Institutions Need the Fiber Connection at their Specific Location.

Even if an incumbent provider may have a fiber optic cable deployed somewhere in the community, it may not serve the needs of the anchor institution unless there is a way to connect directly to that fiber. If, for instance, the existing fiber cable is located in the city business district, across town, or is inaccessible, providing funding to a new fiber deployment project may be the only way to serve that community anchor institution.

iv. Community Anchor Institutions Sometimes Need Route Diversity.

Some community anchor institutions, particularly those involved with public safety, need multiple fiber connections from a diversity of suppliers to ensure that they have adequate Internet connectivity in times of natural disaster, terrorist attacks or other emergency situations.

v. Community Anchor institutions Need Higher-Quality Internet Connections than Residential.

Because of their role in providing essential services to their communities, anchor institutions require higher-quality bandwidth than typically demanded by residential users. The BTOP program wisely funds networks that have extremely low latency and low packet-loss.

vi. The 3 Mbps/4 Mbps Standard was Designed for Residential Consumers, not Community Anchor Institutions.

Arguing that a community anchor institution is already "served" if it has 3 or 4 Mbps service not only misunderstands the typical broadband needs of anchor institutions, it also misunderstands the origins of the FCC's standard of measurement. The FCC established the 3 Mbps (download) and 768 kbps (upload) as the minimum standard for residential consumers, not for CAIs. In 2011, the FCC stated:

> Since the 3 Mbps/768 kbps benchmark was calculated with household usage in mind, it is likely that such a level of connectivity is insufficient for an entire school, which may have dozens, hundreds, or even thousands of students seeking to use the school's broadband connection simultaneously.[10]

[10] *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8036–37, para. 56.

vii. Community Anchor Institutions Often Have Difficulty Obtaining the Bandwidth They Need.

Despite their needs for high-capacity, high-quality bandwidth, community anchor institutions often have difficulty obtaining it. For instance, the FCC's 2011 survey of E-Rate institutions revealed as many as 80 percent of E-Rate recipients said that their broadband connections do not fully meet their needs, and 78 percent of recipients say that they need additional bandwidth.[11] The survey results suggest that E-Rate recipients face challenges when trying to provide students higher-bandwidth applications. Furthermore, when NTIA released the National Broadband Map, it found that community anchor institutions were "largely unserved" and that two-thirds of surveyed schools and 96% of libraries subscribe to speeds slower than 25 Mbps.[12]

Ever since the demand for broadband services began about a decade ago, the private sector has had an opportunity to fulfill the demands of community anchor institutions for higher quality bandwidth. Many private sector companies have done so, providing fiber and coaxial cable services to thousands of anchor institutions across the country. Unfortunately, in many other cases, the private sector decided that there was no business case to deploy high-capacity bandwidth. To its credit, the BTOP program has filled the gaps in broadband facilities to thousands of anchor institutions that were not otherwise able to obtain them.

5. The BTOP Program is a Cost-Effective Investment in America's Future.

The BTOP program is a cost-effective investment in improving America's broadband capabilities and economic growth. Rather than funding the build-out of Last Mile facilities to connect homes and businesses, the BTOP program focuses on providing Middle Mile capacity to anchor institutions and the community. This maximizes the number of communities that will benefit from having a high-capacity broadband "pipe" available. The fiber optic networks being deployed under the program are "scalable" (additional capacity can be provided simply by changing the electronics at either end of the fiber "pipe" or "lighting up" dark fiber strands), which means they will be able to accommodate growing Internet traffic needs for decades into the future.

Furthermore, the BTOP program also wisely includes an interconnection requirement that is designed to stimulate greater broadband deployment by the private sector and other providers. This open interconnection obligation is consistent with the "comprehensive community" approach to ensure that these public investments in broadband networks meet local needs and

[11] 2010 E-Rate Program and Broadband Usage Survey: Report, Federal Communications Commission, Wireline Competition Bureau, DA 10-2414, released Jan. 6, 2011, available at www.fcc.gov.
[12] http://www.ntia.doc.gov/press-releases/2011/commerce%C3%A2%E2%82%AC%E2%84%A2s-ntia-unveils-national-broadband-map-and-new-broadband-adoption-survey

interests. By encouraging and enabling community anchor institutions to share high-capacity broadband network assets, the program leverages local community investments to benefit more than one public purpose.

6. The BTOP Program Addresses only a Fraction of the Need for More Bandwidth.

According to some estimates there are 200,000 to 350,000 community anchor institutions[13] nationwide. It is estimated that the broadband networks built with BTOP funding will eventually connect 20,000 or more community anchor institutions.[14] While this is significant, this will address only about 10% of all the anchor institutions across the country. NTIA has already acknowledged that the program will only connect 10% of all K-12 schools in the country.[15] Thus, even after the current BTOP program completes its network build-out, the majority of communities across the country will still be in need of a high-capacity Middle Mile network serving the needs of community anchor institutions.

Respectfully Submitted,

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[13] The National Broadband Plan web site estimates 328,000 Community Anchor Institutions, although the number of libraries cited (22,165) is higher than the ALA estimates of slightly less than 17,000. See, http://www.broadbandmap.gov/summarize/nationwide. Internet2 estimates the number of anchor institutions at approximately 200,000. See, http://fjallfoss.fcc.gov/ecfs/document/view?id=7021700239.

[14] http://www.ntia.doc.gov/press-release/2013/ntia-administrator-strickling-delivers-remarks-brookings-institution. ("Our grantees are in the process of connecting more than 20,000 community anchor institutions in 5,100 communities.")

[15] Id. ("For schools, our program will bring 100 megabits per second service to less than 10 percent of the nation's K-12 schools. Another 30 percent, it is estimated, already receive broadband service at the speeds recommended by the school technology directors association. That leaves around 60 percent of our schools still needing upgrades in order to deliver the quality of education that our students need in the 21st century.")