

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Connect America Fund	)	WC Docket No. 10-90
	)	
A National Broadband Plan for Our Future	)	GN Docket No. 09-51
	)	
Establishing Just and Reasonable Rates for Local Exchange Carriers	)	WC Docket No. 07-135
	)	
High-Cost Universal Service Support	)	WC Docket No. 05-337
	)	
Developing an Unified Intercarrier Compensation Regime	)	CC Docket No. 01-92
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	
Lifeline and Link-Up	)	WC Docket No. 03-109

**Comments of the  
Schools, Health and Libraries Broadband (SHLB) Coalition**

**In response to the  
“FURTHER INQUIRY INTO CERTAIN ISSUES IN THE UNIVERSAL SERVICE-  
INTERCARRIER COMPENSATION TRANSFORMATION PROCEEDING”**

**August 24, 2011**

## Executive Summary

While this proceeding has primarily focused on the broadband needs of residential consumers in rural areas, the broadband needs of community anchor institutions in these areas are just as important. Community anchor institutions – schools, health care providers, libraries, public safety providers, public media, and others – require open, affordable, high-capacity broadband to provide all the essential educational and informational services that their communities demand, especially vulnerable and “at-risk” populations. Unfortunately, the National Broadband Map and several other studies show that community anchor institutions (CAIs) often are not able to obtain the affordable, high-capacity bandwidth that they need.

The 4 Mbps standard identified in this proceeding for residential consumers is far too low for most community anchor institutions. CAIs are “multi-user environments” that generally have 10 to 50 or more computers in use simultaneously sharing the same broadband connection. As a rule of thumb, community anchor institutions should have a minimum of 1 Mbps level of service for every computer.

The Commission should find that providing high-capacity broadband services to anchor institutions is a supported service under section 254 and should directly fund a portion of the costs of such deployment. Extending this level of broadband to anchor institutions can be accomplished relatively inexpensively because there are fewer CAIs than homes, and CAIs are often clustered together and close to the central office or cable head-end where fiber already exists. Broadband networks built with federal support should be designed to locate high-capacity network nodes at the CAI.

Furthermore, networks built with government support should be open to interconnection by other providers, just like the BTOP’s Infrastructure program. Open interconnection can spawn greater deployment of last mile infrastructure by both commercial and non-commercial providers and maximize the value of this federal investment.

Finally, it is important to recognize that the high-cost program is funded almost entirely by the *general public*. Therefore, it is entirely appropriate that at least some of the funds in the reformed high-cost program should support broadband to community anchor institutions that, by definition, are focused on serving the *general public*.

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**Comments of the  
Schools, Health and Libraries Broadband (SHLB) Coalition**

The Schools, Health and Libraries Broadband Coalition (“SHLB Coalition”)<sup>1</sup> respectfully submits these comments in response to the Federal Communications Commission’s (Commission’s) recent Public Notice announcing its Further Inquiry into Certain Issues in the Universal Service-Intercarrier Compensation Transformation Proceeding, released August 3, 2011. (“Further Inquiry Public Notice”)<sup>2</sup>

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,

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<sup>1</sup> “SHLB Coalition” is pronounced “Shell-Bee Coalition.”

<sup>2</sup> Public Notice DA-11-1348

municipalities, philanthropic foundations, consumer organizations and others.<sup>3</sup> 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.

We urge the Commission to build into its framework for reform of the high-cost program a commitment to provide community anchor institutions with affordable, high-capacity broadband. Community anchor institutions have broadband needs that are very different from the needs of residential consumers and must be distinctly addressed. Extending broadband to anchor institutions can be accomplished relatively inexpensively, as anchor institutions are often clustered together and serve millions of people every day (high “bang for the buck”). Including anchor institutions in this high-cost reform program can also bring significant political support for the Commission’s reform efforts.

Further, we encourage the Commission to adopt a “comprehensive community” approach to ensure that public investments meet local needs and interests. By encouraging and enabling community anchor institutions to share high-capacity broadband network assets, the Commission can leverage local community investments to benefit more than one public purpose. In short, the Internet has become a fundamental cornerstone of modern education, learning, health care delivery, economic growth, social interaction, job training, government services, and the dissemination of information and free speech, and much of that “purposeful use” is hubbed at community anchor institutions. The Commission’s reform of the high-cost program should recognize the critical role that broadband connections play in allowing community anchor institutions to promote economic growth and provide these essential services in rural America.

The SHLB Coalition supports the transition to broadband but takes no position on who should be eligible to receive funds from the High-Cost Fund, the creation of the Connect America Fund, or other proposals to alter the distribution of support in high-cost areas. Similarly, we do not express any view as to what geographic areas should receive support, or how the amount of funding should be determined.

**Our key request is that recipients of High-Cost Fund/Connect America Fund subsidies should be required to provide anchor institutions with the high-capacity broadband that they need to serve their communities.** Community anchor institutions have unique needs for very high-capacity bandwidth that are very different from those of residential consumers. One measure of these needs is raw broadband capacity – community anchor institutions need very

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<sup>3</sup> See [www.shlbc.org](http://www.shlbc.org) for a current list of the members of the SHLB Coalition.

high-capacity bandwidth, from 10 Mbps to 10 Gbps. But bandwidth is only one of several qualities that describe the type of broadband connectivity needed by anchor institutions. Providing “big pipes” to an end user does not necessarily guarantee the delivery of high-end applications. For example, an improperly configured router or a firewall can affect performance and act as a network bottleneck. Providing adequate connectivity requires a certain degree of network openness, the availability of performance data to monitor the network, and remote troubleshooting. Unlike residential users, community anchor networks often require additional network design and engineering, network monitoring, and training to obtain the level of broadband connectivity needed to run education, e-government, health and job-training applications.

We understand that the Commission is inclined to require recipients of funding to serve all locations in its service area. While this is positive, we are greatly concerned that the quality of broadband service provided to CAIs will be insufficient, as set forth below.

#### **I. Community Anchor Institutions Do Not Have the Broadband That They Need.**

A number of recent studies document the shortage of broadband capabilities at community anchor institutions:

- a. A recent survey of E-rate participants conducted by the Commission found that “[n]early 80% of all [schools and libraries in the E-rate program] say their broadband connections do not fully meet their current needs.” (In fact, 20% of E-rate participants state that broadband services meet their needs sometimes, rarely, or not at all).<sup>4</sup>
- b. The National Broadband Map developed jointly by the Commission and the National Telecommunications and Information Administration (NTIA) showed that anchor institutions are “largely underserved.” According to NTIA: “The data show that two-thirds of surveyed schools subscribe to speeds lower than 25 Mbps, however. In addition, only four percent of libraries reported subscribing to speeds greater than 25 Mbps.”<sup>5</sup>

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<sup>4</sup> 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](http://www.fcc.gov).

<sup>5</sup> “COMMERCE’S NTIA UNVEILS NATIONAL BROADBAND MAP AND NEW BROADBAND ADOPTION SURVEY RESULTS,” NTIA Press Release, Feb. 17, 2011 (available at [http://www.ntia.doc.gov/press/2011/NationalBroadbandMap\\_02172011.html](http://www.ntia.doc.gov/press/2011/NationalBroadbandMap_02172011.html)).

- c. The State Educational Technology Directors Association (SETDA) found that most schools have less broadband than the average home. According to a 2008 SETDA study:

Broadband connection speeds in schools are already behind average households, and in the next few years as bandwidth needs expand, schools will need to *significantly* upgrade their high-speed broadband capabilities to try to keep pace with what children are accustomed to at home. Even in schools that are sufficiently connected with broadband, bandwidth demand is quickly exceeding capacity as they utilize advanced technology tools. Simply having connectivity is not enough: without measurable upgrades in bandwidths to allow for greater speeds – or even to maintain current speeds as demand grows, teachers and students will be severely limited in the technology applications they can utilize.<sup>6</sup>

- d. The National Broadband Plan found that 29% of the 3700 rural health care clinics were located in areas where mass-market broadband was not available. The Plan then noted that most health clinics need much greater capacity than 4 Mbps capacity typically available to households, so the number of rural health clinics who do not have access to high-capacity broadband is much higher than 29%.<sup>7</sup>
- e. A study performed by Lieberman Research Worldwide on behalf of the Bill & Melinda Gates Foundation found that 62% of public libraries had a broadband connection at 3 Mbps or less. Rural libraries had much lower connection speeds than urban or suburban libraries – 77% of rural libraries had connections less than 5 Mbps, compared to 46% of urban and 59% of suburban libraries.<sup>8</sup>
- f. A recent study finds that anchor institutions in non-urban areas have less broadband capability than urban institutions. Using data recently compiled by the NTIA as part of the efforts to construct the National Broadband Map, Chris Forman et. al. conclude that “[s]chools, libraries, and medical/healthcare organizations in MSAs have broadband bandwidth that are between 14.6 Mbps and 40.9 Mbps higher than those in other areas.”<sup>9</sup>

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<sup>6</sup> “High-Speed Broadband Access for All Kids; Breaking Through the Barriers,” Report by the State Educational Technology Directors Association (SETDA), June 2008, p. 6

<sup>7</sup> National Broadband Plan, Chapter 10

<sup>8</sup> Broadband Assessment Project, National Summary Findings, September 17, 2009.

<sup>9</sup> Chris Forman, Avi Goldfarb, and Shane Greenstein, “Local Capabilities and Broadband Bandwidth at Community Anchor Institutions,” Jan. 31, 2011, available at <http://mgt.gatech.edu/directory/faculty/forman/pubs/BroadbandBandwidth--FormanGoldfarbGreenstein.pdf>. (“In this study we have examined the relevance of urban leadership to

## II. The 4 Mbps Standard, Designed for Residential Users, is Much Too Low for Anchor Institutions to Serve their Communities.

The SHLB Coalition has previously noted its concern that the 4 Mbps standard is too low a standard for community anchor institutions.<sup>10</sup> After conducting additional research of our members' needs, we now wish to reiterate our concern that **it would be inadequate to apply a 4 Mbps standard that was designed for households to schools, libraries, health care providers, and other anchor institutions that serve hundreds or thousands of people every day.** Even in rural areas, CAIs are “multi-user environments” that may have ten, fifty or more public access computers simultaneously seeking to share the same broadband connection. Designing the Universal Service Fund to support a 4 Mbps connection for CAIs would be analogous to a federal policy to subsidize a dial-up connection to every home. A 4 Mbps connection does not prepare an anchor institution to participate in the 21<sup>st</sup> century economy and information society; instead, it would relegate CAIs to second-class status. Applying a 4 Mbps minimum standard to anchor institutions is blatantly inconsistent with the National Broadband Plan's goal of a 1 Gbps to anchor institutions in every community across America.

Consider the following:

- The FCC's own Household Broadband Guide recommends that a home with four computers should have a 6-15 Mbps connection if just one of those computers is used for a high-demand application, such as streaming High-Definition video, video conferencing, or online gaming. According to the FCC's Broadband Guide, the bandwidth needs are higher than 15 Mbps if more than one computer is used for such purpose.<sup>11</sup>
- **According to the ALA Public Library Funding and Technology Access Study (PLFTAS) (released in June 2011), there are an average of 9.6 public workstations (computers) in**

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a technology complementary to advanced internet: high bandwidth broadband. Our findings are broadly consistent with the model: Urban location is related to use of high broadband bandwidth, and more so when the location appears to have the expertise that enables institutions to adopt and use that bandwidth cheaply and effectively.”) p. 13.

<sup>10</sup> See, *ex parte* filing of the SHLB Coalition in this docket on July 29, 2011.

<sup>11</sup> Household Broadband Guide (<http://www.fcc.gov/guides/household-broadband-guide>).

**rural libraries. (the average for all libraries – urban, suburban and rural – is now up to 16).<sup>12</sup>**

- The PLFTAS also showed that:
  - 56.7% of rural libraries have connections that are less than 3 Mbps (download);
  - Only 21.8 percent of rural libraries have a fiber optic connection, compared to 65.6 percent of urban library outlets and 42.8 percent of suburban outlets;
  - Most rural (53.1 percent) libraries reported slight decreases in the adequacy of their connection speeds;<sup>13</sup> and
  - The principal reasons that rural libraries do not have adequate broadband coverage are because of the price and the lack of availability.
  
- **Developments in Maine give an important example of how the needs of schools and libraries in a rural state have grown well beyond 4 Mbps. In 2009, Maine recommended increasing all schools and libraries to 2 T1 connections (approximately 3 Mbps).<sup>14</sup> Today, just two years later, Maine schools and libraries are increasing their bandwidth to 10 and 20 Mbps. Jeff Letourneau, Executive Director of NetworkMaine, makes the following statement:**

From July 2010 to June 2011, NetworkMaine upgraded the connections to almost all K12 schools and libraries in Maine so that they have a minimum of a 10 Mbps connection to MaineREN through the Maine School and Library Network (MSLN). These connections range from 10Mbps to 1 Gbps in capacity with a number of libraries currently running at 1 Gbps. We find that even at the smallest of libraries, 5 minute average bandwidth utilization measurements often peak at 10 Mbps and are actually constrained. It is not just sustained throughput (bandwidth) that is important but also the speed (lack of latency) of a connection. In order to make sure that video conferencing sessions deliver a high quality experience we moved the participants in our Public Computer Center BTOP grant that had 10 Mbps connections to 20 Mbps. We believe this should be sufficient to get them through their

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<sup>12</sup> “Public Library Funding and Technology Access Study, 2010-2011,” American Library Association and University of Maryland, June 21, 2011, [http://www.ala.org/ala/research/initiatives/plftas/2010\\_2011/plftas11-techlandscape.pdf](http://www.ala.org/ala/research/initiatives/plftas/2010_2011/plftas11-techlandscape.pdf), page 26.

<sup>13</sup> “Public Library Funding and Technology Access Study, 2010-2011,” American Library Association and University of Maryland, June 21, 2011, [http://www.ala.org/ala/research/initiatives/plftas/2010\\_2011/plftas11-techlandscape.pdf](http://www.ala.org/ala/research/initiatives/plftas/2010_2011/plftas11-techlandscape.pdf), page 32

<sup>14</sup> See, Report of the Maine State Library and the Department of Education to the Maine Public Utilities Commission for Funding Year 2009 (July 1, 2009 through June 30, 2010), available at <http://www.maine.gov/mpuc/msln/index.html>.

start-up year, and we'll be watching them closely and will make sure we expand their bandwidth if needed in the coming years."<sup>15</sup>

- **The State Library of Kansas developed the following Broadband Capacity Planning tool to estimate the amount of broadband capacity needed today at a library depending upon the number of workstations (This table is a “snapshot” of existing uses; it does not take into account growth in the number of bandwidth-intensive applications of the future.) :**

Broadband Allocation (Downstream+Upstream) in  
Megabytes per Second (Mbps)

Total Number of Internet Computers (staff and public)	Broadband Allocation (Downstream+Upstream) in Megabytes per Second (Mbps)		Long Range (2020)
	Minimum	Short Range Optimum	
>200	144.0	172.8	≥1,000
151-200	72.0	86.4	≥1,000
101-150	64.8	77.8	≥1,000
56-100	43.2	51.8	≥1,000
41-55	23.8	28.5	≥1,000
26-40	17.3	20.7	≥1,000
16-25	13.8	16.6	≥1,000
11-15	8.3	10.0	≥1,000
6-10	5.5	6.6	≥1,000
1-5	3.0	4.3	≥1,000

- **According to Kermith Walters, the Superintendent of Schools in rural Siskiyou County in Northern California, the K-12 schools in his region are not able to provide basic distance learning because of their limited broadband connections. He says:**

Siskiyou County has 25 rural (we are actually called frontier by the state and federal government) districts. We have small necessary high schools and elementary schools that cannot offer their students certain educational opportunities without access to more bandwidth. Even districts that are using distance learning and video conferencing find it difficult to do more than one thing at a time. As our districts continue to see declining enrollment the need for access to alternative educational resources becomes that much more important.<sup>16</sup>

<sup>15</sup> E-mail from Jeff Letourneau, August 19, 2011.

<sup>16</sup> E-mail from Kermith Walters, Siskiyou County, CA, Aug. 23, 2011.

- **In Idaho, the 32 public libraries have been provided with an upgraded broadband connection of about 11 Mbps per library in order to implement a PCC grant from the BTOP program.<sup>17</sup>**
- **Tioga County, in north Central Pennsylvania, has a variety of small towns and farmland. The Principal of one of the K-12 schools in the County wrote as follows:**

Until recently, I was the principal of Mansfield Junior Senior High School. In my 9 years at MJSHS, I watched technology explode in my school. I would have loved more than the 10 Mbps that I had at the school. Some of the neat instructional strategies that the MJSHS teachers utilized were as follows:

Video Productions (VP): MJSHS has a video studio in the school, fiber-opticed throughout our school and our sporting field (thanks to in-kind services from our local cable service). We not only had classes in video productions but also made commercials to air on our local cable service. Our students also went "live" with volleyball games, basketball games, baseball/softball games, and soccer games. In the event that during playoffs, our teams traveled, the vp kids also traveled and broadcast the games from remote areas using Skype to send back to our school's studio to then get broadcast live to the community.

Streaming Video: Our teacher use/used streaming video often. Our teachers use/used Skype to make connections in China, Ghana, Denmark, England, and various places in the USA for instruction. All great projects....actually one time when we were Skyping Ghana, we then, went "live" into the whole school to speak to the teachers in Ghana...Awesome!!!

I could go "on-and-on" with the great projects that our kids are doing. Yes, we have 10 Mbps, but, we could really use more if possible.<sup>18</sup>

- **In rural Montana, a Superintendent of Schools writes as follows:**

Our school district is located in rural Montana in the county of Broadwater, total population 4,200. We have been struggling for the past few years with our internet speed and our district needing high-capacity broadband connections. Technology is an important part of our educational system and increased use by our staff and students is required if we are to prepare them for employment and/or college. Due to the increased demand within our district, the cost of adding more bandwidth, and the availability of such band width in our rural location, has posed an issue not easily addressed or resolved.

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<sup>17</sup> See, QUARTERLY PERFORMANCE PROGRESS REPORT FOR PUBLIC COMPUTER CENTERS, July 31, 2011, available at <http://www2.ntia.doc.gov/grantee/idaho-commission-for-libraries>.

<sup>18</sup> E-mail from Denise M. Drabick, PhD, Southern Tioga School District, Tioga County, PA, August 23, 2011.

These are the educational and community programs that would benefit from increased internet capacity:

- School Radio Station (KDGZ, K-Dogs, 98.3 FM). Currently the station has “hiccups” when there is large demand on the network. The station is used for emergency public broadcasts, Public Service Announcements (PSA’s) recorded by students (including Indian Education and Noxious Weed educational spots), school information for parents, and various other community notifications.
- Live Event Broadcasts – We have the capability, but not always the internet capacity, to “stream” live events from the radio to the internet. This allows family members who are outside the community to stay connected to their children (including family members who have been stationed overseas in the military).
- Our district uses *INFINITE CAMPUS as our student information system*. It is linked to the Office of Public Instruction AIM system (Achievement in Montana). This information system is accessed by staff, parents, and students for grades, assignments, progress reports, and reporting. When large numbers of users log onto the system the internet slows way down (causing huge loses of time for staff, students and parents.) Sometimes the overload causes the program to also stall and/or crash.
- DISCOVERY EDUCATION is an excellent FREE program that offers teachers educational tools, including videos for classroom purposes. Many of our teachers are using this service but are having difficulty with the time it takes to download videos and other information.
- Through agreements with Montana colleges our high school is offering on-line dual credit classes for our students. With the decreased internet speed, due to the high demand/use, students struggle with staying connected and retrieving data and assignments.
- In an effort to save travel dollars, the district utilizes webinars and on-line conferencing. However, streaming anything on our system is definitely a challenge. We would like to do more but our system is not able to handle it.
- As superintendent I plan on encouraging teachers to begin using an instructional approach called “flipping the classroom” where support lectures to students are recorded and available on-line. Montana Teacher of the Year Paul Anderson is successfully using this teaching approach at Bozeman High School. It is engaging for the students, helps differentiate instruction, and provides remediation within the curriculum. It helps us to reach the students of this generation and utilize technology in

ways that boost student achievement. It also helps to free teachers up for more hands-on activities during class time.

- We definitely want our district want to increase the use technology but we desperately need higher speed internet. We have been trying to secure increased bandwidth but it has been proving difficult. We would be open, and appreciative, of any work that you do in this direction.<sup>19</sup>

**The Minnesota Center for Rural Policy and Development issued a significant report in June 2010<sup>20</sup> which assessed the broadband speeds in Minnesota’s school districts. The report surveyed the technology coordinators in many of the state’s school districts and reached some fascinating conclusions, such as:**

- When asked specifically, however, what overall takes the most capacity and/or time online, 35% of respondents answered “testing” or “state testing,” followed by classroom use and media-rich content (see Table 1). It was noted from the survey responses that a growing amount of the content being accessed online in classrooms is interactive: SMART Boards, reading and math programs, interactive learning games, interactive TV (ITV), online classes, and distance learning. Such things as video- and web conferencing were also included in these activities. Streaming video takes more bandwidth than reading a web site, while interactive activities require even more bandwidth than passively watching videos.
- The average speed for these districts is 28.0 mbps, but the median speed (the speed at the midpoint of the list) is only 10 mbps.
- [C]ost was still reported most frequently by the coordinators as the roadblock to getting more bandwidth. Interestingly, the answers varied somewhat based on the districts’ locations. Clusters with more remote and/or rural districts reported infrastructure issues: last-mile and end-of-the-road costs made service prohibitive. The southwest, northwest and east central clusters reported a lack of fiber network that prevented getting higher speeds regardless of cost.
- A fundamental issue appears, however, when school districts’ broadband bills are looked at on a per-student basis: the smaller the district, the higher the cost of broadband per student. As Figure 1 shows, among the independent districts, the cost per student decreases as the enrollment increases.

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<sup>19</sup> E-mail from Andrea Johnson, Townsend Superintendent, Townsend School District #1, 201 N. Spruce Townsend, MT.

<sup>20</sup> “Broadband Speeds in Minnesota’s School Districts,” Minnesota Center for Rural Policy and Development, June 2010, Available at <http://www.mnsu.edu/ruralmn/>.

- [A]ll [coordinators] stated they would need more bandwidth in the next one and two years. As one telecom access cluster coordinator put it, whatever bandwidth is given them, students, faculty and staff will find ways to fill it up.
- The clear message from the survey respondents was that the trend is only toward more intensive use of online resources, and need for capacity will only continue to go up as classrooms go increasingly online with video content, interactive online classes, and more means for students and parents to access the school and school work online. At the same time, administrative work continues to be largely managed online.

**From these examples one can draw the following conclusions:**

- Rural schools and libraries have a great need for high-capacity broadband connections because, just like their urban and suburban counterparts, they serve multiple computers simultaneously;
- Those jurisdictions that have the resources to do so are installing 10 to 20 Mbps connections for public schools and libraries today; (they are likely to need even greater bandwidth in the future);
- Rural schools and libraries do not have as much broadband capability today as their urban and suburban colleagues, and prices/cost are higher in rural areas than in urban/suburban areas

If the 4 Mbps level of broadband for download is an insufficient standard for anchor institutions, one may ask what level would be appropriate. It is extremely difficult to suggest a specific level of bandwidth, because the broadband needs of schools and libraries vary significantly depending on their size, the number of students/patrons, the number of computers, the number of bandwidth-intensive applications, and several other factors.

Nevertheless, the SHLB Coalition respectfully suggests **that a useful “rule of thumb” for estimating the amount of broadband that an anchor institution will need in the near term is that CAIs need 1 Mbps per computer workstation at the institution.** This guideline for approximating the amount of bandwidth needed may give the FCC and recipient of USF/CAF funding a general benchmark to be used in estimating the type of network facilities that they should deploy to anchor institutions.

The reason for recommending *at least* 1 Mbps per computer for CAIs is that several factors make anchor institutions very different from residential users, such as the following:

- First, 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. Since many anchor institutions lack the human 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.
- Second, 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.
- Third, 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.
- Schools are increasingly adopting digital on-line testing of students, which will require more bandwidth in addition to the bandwidth already required for existing teaching and administrative operations.<sup>21</sup>

Furthermore, the trends point to CAIs needing need much more broadband capacity in the near future than they do today. A recent report of the American Library Association contains some valuable anecdotes demonstrating the growing bandwidth needs of public libraries:

*“Their expectations for bandwidth are just unbelievable, and they get very hot about it,”* said the director of a suburban library with 3 Mbps bandwidth. *“You could add a T1 every year, and you’d be at 95 percent (usage), no matter what.”* The library plans to upgrade to 15 Mbps in summer 2009.

*“At one time, we would have said a T1 was just the world, but it just changes too fast. We went from a T1 to two T1s to three T1s to now 15 Mbps of fiber,”* said another Indiana library director (2009).<sup>22</sup>

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<sup>21</sup> See, Technology Requirements for Large-Scale Computer-Based and Online Assessment: Current Status and Issues, Discussion Draft,” SETDA, June 22, 2011, available at <http://assess4ed.net/content/documents>.

<sup>22</sup> American Library Association. Libraries Connect Communities: Public Library Funding & Technology Access Study 2008-2009, September 2009.

### **III. Building High-Capacity Broadband to Community Anchor Institutions Can Be Required With No Appreciable Effect on the Total Amount of Federal Support.**

Providing high-capacity bandwidth to community anchor institutions is not likely to have an appreciable effect on the size of the Universal Service Fund, for several reasons:

- There are far fewer anchor institutions than homes. According to some estimates there are 200,000 to 350,000 community anchor institutions<sup>23</sup> nationwide compared with roughly 115 million households, which calculates to roughly 325 to 575 homes for every anchor institution. Clearly, providing service to anchor institutions will not “move the cost needle” significantly when compared to the cost of serving the great number of homes.
- Furthermore, many anchor institutions are clustered together, often near the existing telephone company central office and cable head-ends (which often have fiber already). For instance, in the course of preparing its BTOP application, the Wisconsin state government found that, of the 467 schools and libraries in the State, 91% were within 5,000 feet (less than one mile) of fiber already in the ground.<sup>24</sup>
- The broadband network in these rural areas can be designed to integrate the needs of anchor institutions at the beginning of the process, so that the broadband needs of anchor institutions can be addressed efficiently. For instance, most broadband network builds into a community must deploy a high-capacity (e.g., fiber) broadband pipe (sometimes called the “feeder” link) into each community anyway. Rather than build the feeder link to a node in an empty field, the node can be placed at the anchor institution. Thus, the feeder link can provide the high-capacity bandwidth to the anchor institution and can also serve as the “jumping off” point from which to serve the surrounding residential community without causing any increase in cost.
- Some anchor institutions in rural areas may already have adequate broadband capacity.
- The Universal Service Fund support does not subsidize the entire cost of the network; it subsidizes some fraction of the cost (which the Commission will determine in this proceeding). Thus, even if it were to cost “X” dollar amount more to serve the anchor institutions in rural areas, the actual increase in USF subsidies would be calculated as a percentage of “X” dollars, not the entire amount of “X” dollars.

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<sup>23</sup> 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>.

<sup>24</sup> See, Comments of the Wisconsin Department of Public Instruction, in Response to Public Notice #12, GN Docket #09-51, Oct. 28, 2009, p. 2

#### **IV. The Commission Should Adopt Rules and Reporting Requirements to Ensure that Recipients of Funding Deploy High-Capacity Bandwidth to Anchor Institutions.**

There are a variety of ways to enforce a requirement that recipients of High-Cost Fund/Connect America Fund funding should provide anchor institutions with sufficient open, affordable, high-capacity bandwidth, such as,

- \* an annual ascertainment, certification, and/or reporting requirement by the recipient of funding that it is providing high-capacity broadband capacity of, at a minimum, 1 Mbps per workstation at all anchor institutions in its region;
- \* allow anchor institutions in the rural area to file information with the FCC about their broadband needs that the recipient of funding must accommodate;
- \* impose a 3-year time deadline for recipients of funding to build 100 Mbps to all the anchors in its service territory (perhaps with a waiver process to allow less capacity for smaller anchors and a stronger, 1 Gbps mandate for larger anchor institutions).

#### **V. Providing High-Capacity Broadband to Community Anchor Institutions is Supported by Several Parties in this Proceeding.**

Several other parties have filed in support of the SHLB Coalition's comments in this proceeding, including the Instructional Technology Council,<sup>25</sup> the American Library Association,<sup>26</sup> the Benton Foundation,<sup>27</sup> the Chief Officers of State Library Agencies (COSLA),<sup>28</sup> the Consortium for School Networking (CoSN) and the International Society for Technology in Education (ISTE),<sup>29</sup> NATOA,<sup>30</sup> and Merit Network.<sup>31</sup>

The Instructional Technology Council, an affiliated Council of the American Association of Community Colleges, made a particularly important point in its July filing:

ITC members report that their distance learning enrollments have increased 20 to 30 percent this past year. . . . Online courses play a pivotal role in helping meeting this increased student demand. Our colleges and universities, particularly those located in rural areas, appreciate any help the FCC can bring to enhance their high-speed

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<sup>25</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021691951>.

<sup>26</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021239757>.

<sup>27</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021690962>.

<sup>28</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021692603>.

<sup>29</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021692463>.

<sup>30</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021692483>.

<sup>31</sup> <http://fjallfoss.fcc.gov/ecfs/document/view?id=7021692379>.

broadband connections to help them offer their students these essential educational opportunities.

## **VI. Incorporating the Broadband Needs of Anchor Institutions into this Proceeding is Consistent with and Encouraged by the Statutory Language.**

The statutory language authorizing the FCC to develop the national broadband plan recognized the importance of services to anchor institutions. It directed the FCC to adopt a plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety, and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.<sup>32</sup>

Furthermore, section 254(h)(2)(B) requires the Commission to ensure that schools, libraries and health care providers can obtain adequate broadband service. That provision states the Commission shall adopt “competitively neutral rules . . . to define the circumstances under which a telecommunications carrier may be required to connect its network to such public institutional telecommunications users.”<sup>33</sup> In enacting this statute, Congress clearly established providing anchor institutions with adequate communications capability as a national priority.

While this specific provision is limited to schools, libraries and health care providers, other statutory language authorizes the Commission to include additional anchor institutions as well. For instance, Section 706 provides authority for the Commission to order recipients of universal service support to supply high-capacity broadband facilities to anchor institutions. That section says that the Commission “**shall** take immediate action to accelerate deployment” if it finds that advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion. In July of 2010, the Commission found that up to 80 million adults did not subscribe to broadband, and 14 to 24 million Americans did not have advanced telecommunications capability available to them.<sup>34</sup> Given this finding that broadband is not

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<sup>32</sup> American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 6001(k)(2)(D), 123 Stat. 115, 516 (2009) (Recovery Act).

<sup>33</sup> See, section 254(h)(2)(B). “Public institutional telecommunications user” is defined as “an elementary or secondary school, a library, or a health care provider. . . .” See Section 254(h)(5)(C).

<sup>34</sup> The Commission found that “roughly 80 million American adults do not subscribe to broadband at home, and approximately 14 to 24 million Americans remain without broadband access capable of meeting the requirements set forth in section 706. . . . Accordingly, we conclude that broadband deployment to *all* Americans is not reasonable and timely.” *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and*

being deployed in a reasonable and timely fashion, the Commission is not only authorized but required to take action. Including anchor institutions in whatever program the Commission implements will go a long way toward addressing this statutory imperative.

## **VII. SHLB Coalition Answers to Specific Questions Raised in the Public Notice**

The SHLB Coalition provides the following responses to the specific questions asked by the Commission in the Public Notice:

### **Question I.A. Separate Support for Mobile Broadband.**

The SHLB Coalition respectfully suggests that the Wireline fund will be more valuable to anchor institutions than the Mobile Broadband Fund. Almost all community anchor institutions are at fixed locations, and their broadband capacity needs are generally much higher than the capacity available from mobile technologies. It is common for an anchor institution to need a fiber-based connection capable of providing 20 to 100 Mbps, even in rural areas. Furthermore, investing in high-capacity wireline services that are scalable to faster capacity (such as fiber or, in some cases, coaxial cable) is likely to be a more effective use of Universal Service Fund dollars in the long run because the technology will not have to be replaced for decades. Mobile services, by contrast, are still evolving quite rapidly (e.g. the replacement of 2G with 3G and now 4G technologies within just the past few years). Thus, the SHLB Coalition respectfully suggests that significantly more funding should be allocated to the wireline “bucket” as it is more likely that this funding will provide many years of benefits, while investments in mobile technologies may have a shorter life span.

### **Question I.C. CAF Support for Price Cap Areas.**

The SHLB Coalition does not have a view on whether a cost model or a competitive bid would be the preferred method for determining the amount of support for rural areas, or whether some combination of the two should be chosen. Regardless of the method, the needs of community anchor institutions for high-capacity broadband ought to be included in the calculation of the amount of support. The cost model should include the costs of serving the schools, health care institutions, libraries and other anchors when determining the total cost of serving the area. If a competitive bid is chosen, each bidder should be obligated to provide

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*Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Amended by the Broadband Data Improvement Act, GN Docket Nos. 09-137, 09-51, Report, FCC 10-129, paras. 1 and 2 (rel. July 20, 2010) (2010 Sixth Broadband Deployment Report).*

high-capacity broadband to the anchor institutions as part of its commitment to serve that region.

While the FCC's Notice does not specifically ask about building broadband to anchor institutions, it does ask a related question: "Should the model reflect the costs of building a network capable of meeting future consumer demand for higher bandwidth that reasonably can be anticipated five years from now?" The obvious answer to this question is "YES", as broadband demand and needs for capacity are certain to increase for residences, businesses and anchor institutions alike. One of the best ways to plan for the growth of future consumer demand is to build large capacity broadband pipes to community anchor institutions today, which can lay the foundation for extending higher capacity broadband to surrounding residential consumers in the future.

### **Question 1.F. Open Interconnection Obligations**

The Further Inquiry Public Notice asks for comment on the open interconnection obligations for support recipients, as set forth below:

We also seek comment on what obligations are appropriate to impose on recipients of funding, as a condition of receiving support, to facilitate provisioning by others in areas the recipients are not obligated to serve. For example, Public Knowledge has proposed to require recipients to make interconnection points and backhaul capacity available so that unserved high-cost communities could deploy their own broadband networks.

The SHLB Coalition strongly endorses the concept of open networks. While the SHLB Coalition supports Public Knowledge's call for interconnection obligations, we also ask the Commission to go further and adopt interconnection requirements for high-cost fund recipients that mirror those required of BTOP awardees. Just as the BTOP program required Infrastructure awardees to open their networks to interconnection to last mile providers, recipients of USF/CAF funding should also be required to adopt an open interconnection policy to all commercial and non-commercial providers, and users. NTIA has found that the open interconnection policy of the BTOP program has been successful in leading to at least 90 different commercial interconnection agreements.<sup>35</sup> Open interconnection can maximize the

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<sup>35</sup> Testimony of The Honorable Lawrence E. Strickling, Assistant Secretary for Communications and Information National Telecommunications and Information Administration United States Department of Commerce, Before the Committee on Energy and Commerce, Subcommittee on Communications and Technology, United States House of Representatives, April 1, 2011, p. 5, available at <http://energycommerce.house.gov/hearings/hearingdetail.aspx?NewsID=8384>.

value of the federal investment in rural areas by encouraging the deployment of additional last mile infrastructure by entities who do not receive federal support.

## VIII. Conclusion

The National Broadband Plan recommended that community anchor institutions should have 1 Gbps connections in every community across the country (Goal #4). While this goal is critically important, it is not self-fulfilling. Achieving this goal will require specific rule changes and policy initiatives. The Commission has not, to date, opened a proceeding dedicated to accomplishing this 1 Gbps goal for anchor institutions. If it is not going to open such a proceeding, we respectfully suggest that it ought to fold the needs of anchor institutions into its most important proceedings, such as this one. Otherwise, the Goal #4 will become mere words on a page.

This comprehensive proceeding to reform the High-Cost Fund and to create a new Connect America Fund may establish the framework for the distribution of support for high-cost areas **for much of the next century**. It is thus extremely important for the Commission to incorporate the broadband needs of community anchor institutions at the front end of designing this framework. Once the framework is established, it may be much harder to add additional provisions to address anchor institutions' broadband needs later.

The SHLB Coalition respectfully requests that recipients of High-Cost Fund/Connect America Fund support should be required to deploy affordable, high-capacity broadband networks to community anchor institutions in their geographic areas. The provision of support to rural, high-cost areas should be focused on both residential customers **and** anchor institutions because of the essential services that anchor institutions offer to **all** people in rural areas, including low-income, disabled, elderly and even residential consumers.

Furthermore, we strongly urge the Commission to consider that community anchor institutions need much higher capacity than residential users because they are "multi-user environments" that serve multiple users simultaneously. **Applying the residential-based 4 Mbps standard to anchor institutions would essentially relegate anchor institutions to second-class treatment.** A standard based on a minimum of 1 Mbps per computer is much closer to the needs of anchor institutions.

Building open, high-capacity broadband networks to anchor institutions was one of the principal goals of the Broadband Technology Opportunities Program (BTOP). While this

program is proceeding forward and is likely to generate significant benefits, our analysis is that this program will only address approximately 10-15% of all anchor institutions, which means that much more work needs to be done.

We also submit that the Commission should adopt an open interconnection requirement on funding recipients parallel to the BTOP open interconnection requirement. This requirement will spur additional investment by commercial and non-commercial entities and maximize the federal investment in rural broadband networks.

Finally, it is important to recognize that the high-cost program is funded almost entirely by the *general public*. Therefore, at least some of the funds in the reformed high-cost program should support broadband to community anchor institutions that, by definition, are focused on serving the *general public*.

For all these reasons, incorporating the broadband needs of community anchor institutions into the framework for rural broadband support is a wise investment in the future. We urge the Commission to require recipients of funding to provide community anchor institutions with the high-bandwidth broadband services that they need to serve their communities.

Respectfully Submitted,

A handwritten signature in black ink that reads "John Windhausen, Jr." with a stylized, cursive script.

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