Examining School and Library Broadband Connectivity

A Connected Nation Policy Brief

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The average school and library today has about the same connectivity as the average American home – but as digital learning technology expands both inside and outside the classroom, the need to have more robust broadband capacity at our nation's community institutions will increase. On June 6, 2013, President Barack Obama announced his Administration's ConnectED initiative, a plan to bring very high-speed broadband Internet to the nation's schools. The centerpiece of the ConnectED initiative is a fundamental reform of the Federal Communications Commission's (FCC) $2.3 billion Schools and Libraries Universal Service Fund program, commonly known as "E-Rate." Created in 1996, E-Rate provides school and libraries with discounts on telecommunications and Internet services.

Today, the FCC adopted a Notice of Proposed Rulemaking (NPRM) proposing several sweeping changes to the E-Rate program. The action proposes to establish goals for the E-Rate program, including a target that 99% of America's schools will have broadband speeds of no less than 100 Mbps by 2015, with an ultimate target of 1 Gbps by 2020. While the full text of the FCC's action has not yet been released, the FCC has released a Fact Sheet, a news release, and Commissioner's statements on the action (Chairwoman Mignon Clyburn, Commissioner Jessica Rosenworcel, and Commissioner Ajit Pai). The FCC vote today begins an official public debate about this reform that is likely to take many months and engage representatives from multiple stakeholder groups.

The ConnectED initiative's call for capacity upgrade is a significant, national effort that will require tens of millions of dollars and an understanding of the current status of broadband in our nation's learning institutions. In this Policy Brief, Connected Nation analyzes data on K-12 school and library connectivity collected across nine states and the territory of Puerto Rico. We find that **there are significant differences in high-speed broadband adoption among states, and that there are substantial gaps in low-income and rural areas.**

- **Approximately 34% of schools and only 3% of libraries surveyed** by Connected Nation currently report having 100 Mbps download broadband connections
- **Connectivity across states analyzed by Connected Nation varies greatly,** ranging from **54% of schools with 100 Mbps connections in Nevada** to **fewer than 1% of schools in Puerto Rico**
- **Community income level is a significant driver of 100 Mbps broadband across schools**

Schools in some states such as Nevada (where 54% of schools report having download speeds of 100 Mbps or faster) are much closer to meeting the President's high-speed connectivity goal than other jurisdictions, most notably Puerto Rico. These results are similar to other studies and FCC findings discussed today that indicate that the majority of schools and libraries do not have the bandwidth they need to meet current and future needs.

Importantly, very few libraries met this goal of 100 Mbps download speeds. Libraries are one of the most important locations outside of the classroom where students research and complete their schoolwork. Understanding the scope and scale of the needed broadband upgrades across the nation's libraries is essential to any national initiative to advance digital learning.

School and Library Connectivity Varies Widely Between States

High-speed broadband adoption at schools and libraries varies considerably by state. Table 1 below shows the percentage of surveyed schools and libraries that report that they subscribe to broadband at download speeds of at least 100 Mbps.

Table 1.
Estimated Percentage of Institutions with Download Speeds of 100 Mbps or Greater

	Schools	Libraries
Alaska	11%	<1%
Iowa	7%	2%
Michigan	38%	3%
Minnesota	1%	<1%
Nevada	54%	<1%
Ohio	66%	1%
Puerto Rico	<1%	<1%
South Carolina	47%	7%
Tennessee	37%	1%
Texas	23%	10%
All 10 Jurisdictions	34%	3%

Slightly more than one-third of schools and only 3% of libraries surveyed report having broadband connections of 100 Mbps or above. These data are consistent with other available studies, such as research conducted by Education SuperHighway (conducted through school speed tests).

The Rural/Urban and Income Gaps in School and Library Connectivity

There is a significant urban/rural gap in connectivity, particularly among schools.

Table 2.
Estimated Percentage of Institutions with Download Speeds of 100 Mbps or Greater

	Schools		Libraries	
	Rural	Non-Rural	Rural	Non-Rural
Alaska	5%	45%	<1%	<1%
Iowa	4%	13%	1%	2%
Michigan	37%	42%	3%	4%
Minnesota	1%	<1%	<1%	<1%
Nevada	12%	70%	<1%	<1%
Ohio	62%	71%	<1%	3%
Puerto Rico	<1%	<1%	<1%	<1%
South Carolina	46%	50%	5%	10%
Tennessee	29%	45%	<1%	1%
Texas	8%	61%	6%	12%
All 10 Jurisdictions	23%	53%	2%	4%

Community income appears to play a role explaining regional differences in school and library broadband connectivity. But even accounting for income differences, there is a significant gap in rural school and library broadband connectivity – rural schools and libraries are less likely to subscribe to broadband at speeds of at least 100 Mbps than schools and libraries in non-rural areas with similar household incomes.

Table 3.
Estimated Percentage of Institutions with Download Speeds of 100 Mbps or Greater by County-Level Median Household Incomes

County-Level Median Household Income	Schools		Libraries	
	Rural	Non-Rural	Rural	Non-Rural
Less than $15,000	<1%	<1%	<1%	<1%
$15,000 - $24,999	3%	<1%	<1%	<1%
$25,000 - $34,999	26%	16%	1%	<1%
$35,000 - $49,999	26%	62%	2%	4%
$50,000 or more	28%	57%	2%	5%
Average	23%	53%	2%	4%

Source: United States Census, 2010 Poverty and Median Income Estimates; Connected Nation

Data Collection Method

The school and library survey data reported above was collected by Connected Nation as part of the U.S. Department of Commerce, National Telecommunications and Information Administration's (NTIA) State Broadband Initiative (SBI) grant program. As part of the SBI grant program, Connected Nation collects and reviews broadband availability and community anchor institution connectivity in Alaska, Iowa, Michigan, Minnesota, Nevada, Ohio, Puerto Rico, South Carolina, Tennessee and Texas. Connected Nation utilizes this information to inform statewide broadband planning as well as the work of local and regional technology planning teams, which frequently include school districts and public libraries, as well as other community institutions.

As part of this effort, from 2009 through the present, Connected Nation has mapped and collected broadband availability and adoption information from thousands of K-12 schools and libraries in these jurisdictions. This information is collected in collaboration with state government agencies and through surveys of these institutions. Data updates of the community anchor institution's actual connectivity is reported to the NTIA twice a year and presented on the National Broadband Map, www.broadbandmap.gov. This data set includes survey responses from 3,620 of the 6,960 identified libraries (or 52%) and 12,323 of the 36,908 K-12 schools (or 33%) identified within these jurisdictions, and it represents one of the most extensive databases of community anchor institution connectivity across the nation. It is important to note that the broadband speeds analyzed are based on self-reported information regarding school and library broadband subscription speeds – actual throughput data may differ. As a result, this analysis should be considered as a complement to and not a substitute for other evaluation tools such as speed tests, on-going surveys or data collected and reported through the E-Rate program.

Conclusion

As the FCC embarks on the modernization of the E-Rate program, it will be important to study and understand these significant state, rural, and income gaps in broadband connectivity in our nation's schools and libraries. These variations indicate that state and local decisions have had a significant impact on the adoption and use of broadband technology at schools and libraries. The success of the national initiative to expand digital learning – both inside and outside the classroom – will require the closing of the significant connectivity gaps that this Connected Nation analysis reveals.

For more information about Connected Nation's education initiatives and broadband expansion efforts, please contact Connected Nation at policy@connectednation.org.