



The Impact of Anchor Institutions on a Community's Broadband Connections

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Executive Summary

Anchor institutions, including K-12 schools, colleges and universities libraries, museums, healthcare organizations, and other not-for-profit community organizations providing support and services to citizens, increasingly are recognized as critical indicators and influencers of a community's socio-economic wellbeing. Over the past 10 years, community anchor institutions also have evolved as vital organizations to promote and support the diffusion and adoption of broadband and related applications. Providing high-capacity bandwidth to community anchor institutions, namely educational institutions and libraries, allows these institutions to become a catalyst for their communities' digital literacy, broadband deployment, and adoption. Further, given the central role a community anchor has and the number of citizens it impacts through one broadband connection, its broadband access has a social, educational, and economic multiplier effect. Providing robust broadband connectivity to one community anchor institution can have "network effects" in terms of broadband deployment, availability, adoption, and use. One fiber drop to a university, a high school, or a library can impact hundreds, if not thousands of citizens versus a single fiber drop to a residential home.

Discussion

Anchor institutions, including schools from kindergarten through university, libraries, museums, healthcare organizations, and other not-for-profit community organizations providing support and services to citizens, increasingly are recognized as critical indicators and influencers of a community's socio-economic wellbeing. Michael Porter, the acclaimed Harvard Business School economist, first coined and recognized the economic power of "anchors" in a 2002 joint study by Initiative for a Competitive Inner City and CEOs for Cities. In the study, Porter contends that communities should better leverage college and university assets as they are key "purchasers, employers, real estate developers, incubators, advisor/network builders, and workforce developers" to enhance economic vitality.¹

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The United States Federal Communications Commission's 2010 *National Broadband Plan (Plan)* outlined and qualified the importance of broadband to the nation's economic wellbeing, aligning many of its recommendations to anchor institution priorities, namely education, information access/libraries, health, and public safety. The Plan further elaborated that the nation's research and education (R&E) networks, not-for-profit advanced broadband networks born out of the nation's higher education sector, are uniquely

FCC's National Broadband Plan Goal #4:
Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals, and government buildings.

positioned to support and promote the adoption and use of advanced broadband. The Plan introduced the concept of a “Unified Community Anchor Network (UCAN)” as a mechanism to “help anchor institutions obtain broadband connectivity, training, applications, and services.”² Internet2’s U.S. UCAN program has stepped into this role, in coordination with its partner state and regional R&E networks to promote this recommendation.

NTIA BTOP Impact:

- Constructed or substantially upgraded more than 114,000 network miles;
- Connected more than 25,000 anchors;
- Created or improved 3,100+ public computing centers, and
- Provided more than 9 million computer, broadband, job search, etc. training hours to the public.

Source: NTIA Quarterly Reports to Congress and BTOP Evaluation Study Report

In concert with the Plan, the National Telecommunications and Information Administration’s (NTIA) Broadband Technology Opportunities Program (BTOP) grant funding guidelines, as a part of the broadband-focused provisions of the American Reinvestment and Recovery Act of 2009 (ARRA), placed emphasis on investing in broadband for community anchor institutions. The second, and largest, round of funding prioritized grant applications that built broadband connections to anchors through a “comprehensive community” approach and those projects that promote broadband access and adoption to the general public at public computer centers (often public libraries).³ NTIA recognized the alignment of ARRA’s broadband provision goals with its own “comprehensive communities” approach by funding more than a quarter of all infrastructure grants either directly to a member of the R&E community or with an R&E network as a partner or subrecipient. Funding to the R&E community amounted to more than \$1.5 billion in Federal awards (of the \$3.9 billion available). This included a \$68 million grant to Internet2 to substantially upgrade its national backbone to 100 Gbps and to help achieve the Plan’s vision of a “Unified Community Anchor Network.”

Providing robust broadband connectivity to one community anchor institution can have “network effects” in terms of broadband deployment, availability, adoption, and use. One fiber drop to a university, a high school, or a library can impact hundreds, if not thousands of citizens versus a single fiber drop to a residential home. Examples of how one connection to an anchor can influence a community’s broadband deployment, availability, adoption, and use can be found in the Appendix.

Deploying robust broadband connections is analogous to building roads: you need to first build the highways to connect the towns and their core institutions (anchor institutions) to the broader world and then invest in the diffusion of the connections within the community. Focusing broadband deployment on these core, public-serving, anchor institutions can positively effect the broader public in multiple ways, including deployment, availability, adoption, and use.

Appendix

	Universities and Colleges	K-12 Schools	Libraries
Impact	✓ Deployment  ✓ Availability ✓ Adoption and Use	✓ Deployment  ✓ Availability ✓ Adoption and Use	✓ Deployment  ✓ Availability ✓ Adoption and Use
	<p>Higher education institutions have high-capacity broadband links to support their bandwidth-intensive research and education activities as well as to support student / campus life.</p> <p>University/college attraction and deployment of high-capacity broadband on its campus can be leveraged for additional broadband deployment and investment to its surrounding community.</p>	<p>Approximately 99% of all U.S. public schools have broadband, largely through the FCC’s Universal Service E-Rate program.</p> <p>K-12 schools leverage broadband for school operations as well as for digital education resources. This improves learning opportunities and helps to infuse digital literacy into its students, stimulating demand for broadband at home.</p>	<p>Libraries have evolved as community technology centers, providing digital skills training: 98% of libraries offer technology training and 95.6% offer online employment resources.⁴</p> <p>Provide public computing centers for patrons that do not have computers/ broadband access at home, with an average of 18 public access centers per library.⁵</p> <p>Nearly all libraries (98%) provide public WiFi to patrons.⁶</p>
Example	<p>University R&E networks have evolved to serve as broadband providers for other community anchors and often allow network interconnection or wholesaling of assets to support other activities, e.g., residential, broadband deployment.</p> <p>R&E networks, nationwide, have deployed approximately 30,000 route miles to support higher education, as well as community anchor institutions.</p>	<p>There are 98,500 public schools serving 50.1 million students.⁷ This averages to approximately 508 students per school, roughly 300 households.</p> <p>One broadband connection to this school provides broadband availability to its 500+ students and can support the adoption and use of broadband in approximately 300 households.</p>	<p>There are 16,536 public libraries serving 321.4M people in the U.S.⁸ This averages to roughly 19,400 citizens per library. Approximately 75% of all households have broadband at home.⁹</p> <p>One broadband connection to the library could provide public computing and WiFi access to 25% of households without broadband at home, nearly 5,000 of patrons in their communities.</p>
Related Initiatives	<p>Gig.U and MetroLab Network are initiatives to promote university –community/city relationships to advance broadband.</p> <ul style="list-style-type: none"> Gig.U is a consortium of 30 research universities working to promote advanced broadband in their communities. MetroLab Network is a new city-university initiative focused on “smart city” research and deployment. 	<p>“After Hours Connections” is a new concept that would allow the public access to a school or library’s WiFi when not physically in the building, in class, or when the library is closed.</p> <ul style="list-style-type: none"> Forward-thinking school districts are equipping school busses with WiFi connectivity to support access during transportation to and from school. When not in use by the school, these busses are parked in low-income areas for students to access the WiFi connection at home. Libraries often allow off-hours WiFi access to their community and some even allow the borrowing of portable wireless WiFi hotspots to their patrons. The Gigabit Libraries Network Library Whitespace project is piloting the use of available spectrum “whitespaces” (unlicensed radio spectrum in the UHF TV bands) to expand the reach of a school or library’s WiFi connection, from beyond just the building and nearby. 	

References

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