

NATIONAL LEAGUE of CITIES | WHY BROADBAND MATTERS: A Look at its Impact and Application for Cities

By Julia Pulidindi

May 2013

Communications services and technological innovations should be accessible and affordable to all because of the implications they have for sustained economic development. The three elements supporting the success of technology in cities are broadband¹ (commonly understood as high-speed Internet) access, broadband adoption (understanding how it can be used) and the effective application of it. Access to broadband makes a significant contribution to the economy. In 2009, two Harvard Business School researchers estimated that American jobs related to the internet contributed approximately \$300 billion of economic activity to the United States' Gross Domestic Product.² In addition to its national impact, broadband also helps promote local economic development, improves environmental sustainability, provides efficiencies in a variety of local government services, enhances quality of life factors through improvements to public health and public safety and increases educational opportunities for millions of Americans. But having access to broadband without the tools to efficiently use it can limit a local government's ability to successfully govern, provide services and engage with constituents.

BROADBAND ACCESS

According to the Organization for Economic Co-operation and Development (OECD), in 2011 the United States ranked 15th among 30 developed and developing nations in deploying broadband services.³ This is a huge departure from where this country stood in the 1990s, when it was one of the leaders in providing broadband access.

One of the biggest challenges with broadband access in the United States is that it is not universally available in all parts of the country. Providing service to less populated areas can prove to be unprofitable for the private sector, making access uneven and spotty. "The big carriers have stopped investing in next-generation networks,⁴ leaving communities with few options but to consider their own investments," says Christopher Mitchell, Director of Telecommunications as Commons Initiative at the Institute for Local Self-Reliance.

Where private telecommunications providers are not able to address demands for access, the role of community or municipal broadband networks can meet middle- and last-mile needs to provide broadband to pockets of the population that do not have it. Ultimately, the goal of broadband access is to allow people to take advantage of its potential to improve the user's experience, whether it's for business development, improved healthcare, education or recreation.

1 Broadband 101 Fact Sheet, Institute for Local Self-Reliance, 2013, <http://www.ilsr.org/wp-content/uploads/2013/03/fact-sheet-bb-1011.pdf>

2 Digital Nation, Expanding Internet Usage, NTIA Research Preview, February 2011

3 OECD Broadband Portal - Press Release, December 2011

4 Broadband 101 Fact Sheet, Institute for Local Self-Reliance, 2013, <http://www.ilsr.org/wp-content/uploads/2013/03/fact-sheet-bb-1011.pdf>



Widespread broadband access is a trend the nation is rapidly moving towards, and successfully implementing municipal networks can provide a solution to some of the challenges associated with providing high speed internet access. While cities have their own set of obstacles on the local broadband network front, ranging from state preemption to the lack of effective planning and business models to sustain municipal broadband services, municipal networks are still a viable consideration cities can explore.

Danville, Va. and Chattanooga, Tenn. have both built fiber optic networks⁵ and ensured that they had staying power. Much thought, planning and stakeholder input went into the creation of a solid business plan, which was the first step in determining if municipal networks were truly a viable option.

Community involvement is a key component in marketing the need for access and educating the community about its benefits. When Bristol, Va. created their municipal network with the Bristol Virginia Utilities Authority, the city made it a point to speak to community groups about the need for broadband access and how it would impact community development. Chattanooga followed a similar process of engagement by educating the community on what a fiber network could do for them, and charging community leaders to help raise awareness about the network.



Danville, Chattanooga, and Bristol all own and operate their utilities, which made their entrance into the broadband market logistically easier than if they did not. As Vince Jordan, Broadband Services Manager for Longmont Power & Communications in Longmont, Colo. noted:

Cities that already have their own utilities in place are much better positioned to deploy and operate a municipal broadband network than those that do not. They have leverageable assets, easements, right-of-ways, operations and workforce. This leaves them with the hurdle of just finding additional staff who understand networking and networking equipment. Broadband services are quickly becoming, if they are not already, another utility. A municipality that already owns and operates their own utility(s) is in perfect position to add this additional one.

However, local governments who do not own and operate utility services can still explore the use of municipal broadband services, often with help from stakeholders. Martin County, Fla. leased fiber connections from the local cable provider to provide access to the school district and other public facilities. When the cable provider talked about the possibility of raising prices, the county looked for other options to affordably continue providing access. Through a partnership with the school district, other public entities, local businesses, and leadership from local elected officials, the county now provides access to the school district and a local hospital. Florida law makes it difficult for local governments to directly provide services to residents and businesses, but Martin County is taking advantage of the infrastructure they have in place to partner with local service providers to provide internet access. This savvy business move has created an opportunity to enhance and improve their residents' access to broadband while reducing overall costs and increasing revenue for the county.⁶

⁵ Broadband 101 Fact Sheet, Institute for Local Self-Reliance, 2013, <http://www.ilsr.org/wp-content/uploads/2013/03/fact-sheet-bb-1011.pdf>

⁶ Florida Fiber: How Martin County Saves Big with Gigabit Network, Institute for Local Self-Reliance, June 2012.

Other opportunities for locally built networks can be realized through public-private partnerships. San Leandro, Calif., for example, received a federal grant and worked with one of the city's largest employers to build a 10-mile fiber network that provides robust access to businesses that will help drive economic development in the community. Called "Lit San Leandro," this public-private partnership initiative allows a variety of local internet service providers to take advantage of this state-of-the-art network to deliver high-speed broadband access, which can then create a strong platform for a technology-based future for the city.⁷

Community development groups are also driving the expansion of broadband access. Community leaders from the Red Hook neighborhood in Brooklyn, N.Y. took communications access into their own hands with the Red Hook Initiative WiFi,⁸ a collaboratively designed mesh network.⁹ Started in 2011, this non-profit worked collaboratively with a graduate student to create a wireless network as a way to engage with neighborhood youth. Initially, this network provided residents of the community with local information that was not being communicated to them. For example, information on bus schedules and other relevant local information was posted on a community news page. The network has proven to be a valuable resource for the community, particularly in the aftermath of Hurricane Sandy, where it helped support communications systems that were damaged in the storm.¹⁰ Since the storm, the Red Hook Initiative is partnering with a local service provider to expand from just a community news page to providing full internet access for the neighborhood.



BROADBAND ADOPTION

Access to broadband doesn't always imply the use of it. About 35 percent of Americans still do not use broadband in their homes, a statistic that hasn't changed much since 2009 despite the fact that levels of broadband access have increased.¹¹

Some of the obstacles to broadband adoption are digital illiteracy, expensive broadband subscription services and the lack of hardware, such as computers, tablets, etc., to sustain the use of it. At a broadband summit at the FCC in February 2013, national experts, academics and community program leaders discussed the country's progress on where people are when it comes to taking advantage of broadband access. Presenters at the summit discussed their research and how they have discovered subtle nuances to these challenges based on a variety of social and economic factors, and how to strategically address them.

Dr. Jon Gant from the University of Illinois, School of Library and Information Sciences talked about the importance of public and private stakeholders coming together to jointly create strategies that are specific to community needs. Broadband adoption solutions cannot be developed in a vacuum; success of adoption programs rely very much on what community needs are and then drilling even further down, the needs of individuals. He discussed how day-to-day priorities for



⁷ <http://litsanleandro.com/wp-content/uploads/2012/06/LSL-Overview-RealEstate.pdf>

⁸ http://oti.newamerica.net/blogposts/2013/case_study_red_hook_initiative_wifi_tidepools-78575

⁹ "A mesh wireless network offers the ability of users to connect directly to each other and facilitate a distributed network infrastructure that provides multiple paths for communication to the network and does not require centrally-located towers.", Introduction to Mesh Networking, Open Technology Institute, New America Foundation, February, 14, 2011

¹⁰ http://brooklyn.ny1.com/content/top_stories/179131/red-hook-group-bridges-digital-gap-left-by-storm

¹¹ Broadband Adoption in 2012: Little Movement Since '09 & Stakeholders Can Do More To Spur Adoption, John Horrigan, PhD, Vice President, Policy and Research, TechNet, March 2012

potential users, such as ensuring daily childcare or rigid job schedules - can impact how a person utilizes broadband and many times, these daily obstacles can prohibit its sustained use if it does not fit within their day-to-day needs. As with any kind of learning and education processes, sustained practice and use is vital for increasing knowledge and development.

Dr. John Horrigan, Vice President and Director of the Media and Technology Institute at the Joint Center for Political and Economic Studies, reviewed the state of play in 2009, when the FCC's Broadband Task Force provided an interim report to the FCC on the National Broadband Plan, and compared it to how far we have come since. Some of the key lessons learned in the past four years echo Dr. Jon Gant's findings that challenges are specific to communities. While access, digital literacy and relevance still remain barriers to adoption, there are other reasons as well. In 2008-2009, the understanding was that non-adopters tended to be older populations who did not see the need for it. Since then, research has shown that most non-adopters, regardless of age, can become adopters as long as strategies to increase adoption cater to their needs. This shows that the non-adoption problem is much more complex and requires specific, case-by-case attention.

Community leaders understand this and are taking it into consideration as they work to bridge the digital divide in their communities. The Massachusetts Broadband Institute has developed an online portal for veterans, which is essentially a one-stop shop for information on veteran's benefits. The need to access this type of information quickly and efficiently is what is driving broadband adoption in the veteran community in Massachusetts. The Hmong American Partnership is an organization based in St. Paul, Minnesota that provides support and resources to the Hmong and other refugee communities in America. Employment and training is their biggest department and they are working to ensure that digital literacy is built into the programs they provide to their users. The College of Menominee Nation in Wisconsin has deployed broadband throughout the reservation to provide access not only to students for higher education, but also to the community to create an interest in what they could do with broadband, which will then drive adoption and usage.



EFFECTIVE TECHNOLOGY APPLICATIONS FOR CITIES

Cities can be drivers of broadband adoption in their communities by creating a demand for it through the services they provide. As the demographics of cities continue to change in ways that require faster information and quicker solutions to problems, cities can meet these needs by creating more user- and mobile- friendly websites, adopting social media tools to better engage with their constituents and upgrading their internal policies and infrastructure to put vital information at residents' fingertips. Technology solutions, supported by a robust telecommunications network, are the way forward in meeting constituent needs while improving government performance.

Some of the hallmarks of successful government (which technological solutions can enhance) include:

- An open and transparent process – decisions are made in the open and adequate information is supplied to constituents to inform and educate them.
- An engaged constituency – as consumers of government services and programs, an active and vocal constituency base can have a strong impact on how cities can work to improve and enhance community and economic development.

- Innovation and enhancement – a commitment to constant improvement for the enhancement of services and innovative service delivery is vital to both quality of life and economic growth.

Technology brings together two worlds: government, made up of information from various departments; and citizens, the users of that information. Government data (i.e. information on transit schedules or health code information for restaurants) can be repurposed to make it more useful for consumers. Making this information accessible to the public in easy-to-understand ways can be a game changer for how people view and interact with their local government. Rather than being an image of bureaucracy, city governments are now a source of information by simply making their data available in useable ways through online resources, or alternatively letting private industry and developers take advantage of it through the development of mobile applications that can be used to access this data.

“We find that engaged residents are interested in being part of the chain of value of information.” says Nigel Jacob, Co-Chair of the Mayor’s Office of New Urban Mechanics in Boston. Mobile technologies are a way to engage people and are becoming an increasingly efficient medium for it. Boston’s app “Street Bump” requires only minimum user engagement. The app, created in partnership by the City of Boston, researchers and private firms, uses mobile technology to send data on road conditions back to a central server that provides real-time data to the city. This information gives the city a better sense of road conditions and the types of problems that exist which, in turn, helps them plan ahead and develop better operation and maintenance plans.

Technology in cities spans the front-end through services that interface with residents or users of the system, and also in back-end operations that improve services and meet overall environmental goals for a city. Santa Monica, Calif. has developed a city-wide vision that integrates land use and mobility to encourage walking, transit use and biking as a way to reduce greenhouse gases. The use of technology is a huge component in helping encourage the use of these alternative modes and enhance their usability. The city’s transit management system will allow for signal priority for buses, real-time travel information sent straight to mobile devices and a farebox system at bus stops supporting multiple pass types and payment options including cash, credit and even smart phones. Santa Monica is also using an “Advanced Traffic Management System” (ATMS) to help the overall traffic flow and reduce congestion by upgrading traffic signals, traffic signal controllers, traffic signal cameras and wireless devices. Additional system upgrades are being undertaken for pedestrian and bicycle facilities.

Technology solutions are also being used in the realm of public utility services, through both basic and advanced efforts in Tallahassee, Fla. Their Neighborhood REACH program serves approximately 2,250 homes in underserved neighborhoods by auditing homes and then providing a variety of basic energy efficiency measures including weather-stripping, caulking, HVAC air filters and showerheads. Not only do citizens learn about ways to save on energy costs, they “love you for it,” says Tallahassee Mayor John Marks, whose remarks underscore the value to local governments and residents alike of municipalities being perceived as a resource and an advocate for citizens’ needs.

Tallahassee also features the first electric, water and natural gas Smart Grid in the country that offers customers more choice, flexibility and control in managing their energy usage. These interactive tools enable customers to adjust set-



tings remotely via the web for their thermostats, and home energy monitors help customers track and manage their energy usage with real-time data. The tools not only assist with overall household savings and meeting environmental goals of reducing energy consumption but also create a new environment of allowing consumers to modify behavior, an innovative approach to service delivery.

Not all technology solutions may be fiscally feasible for cities, but it is important for cities to know what their options are. Services and technology go hand-in-hand, and all signs point to the fact that residents are only going to want more of this. Sophistication of the technology can still vary, but it is important for cities to understand that this is the way forward and, if used correctly, it can have a lasting impact on their economic, environmental and social development. As Carl Nylan, State and Local Government Manager of Esri notes, “This isn’t a passing fancy, this is here to stay.”

ABOUT THIS PUBLICATION

Julia Pulidindi is senior associate in the infrastructure program in the Center for Research and Innovation at the National League of Cities. She has worked on a variety of policy issues, including public finance, transportation and telecommunications. Currently, her work focuses on transportation and telecommunications infrastructure. Her NLC publications include *Investing in Your City’s IT Infrastructure*, *Using Technology to Promote Transparency in City Government* and *Closing the Digital Divide: Promoting Broadband Adoption Among Underserved Populations*. In addition, she regularly contributes to NLC’s weekly newsletter, the *Weekly*, and NLC’s blog, *CitiesSpeak*, on a variety of telecommunications and technology issues.

The author of this guide would like to thank Emily Pickren, senior associate for outreach in the Center for Research and Innovation, for her input and editorial assistance with this publication. She would also like to thank Alexander Clarke, manager of creative design and production, for his work on this guide.

The National League of Cities is the nation’s oldest and largest organization devoted to strengthening and promoting cities as centers of opportunity, leadership and governance. NLC is a resource and advocate for more 1,600 member cities and the 49 state municipal leagues, representing 19,000 cities and towns and more than 218 million Americans. Through its Center for Research and Innovation, NLC provides research and analysis on key topics and trends important to cities, creative solutions to improve the quality of life in communities, inspiration and ideas for local officials to use in tackling tough issues, and opportunities for city leaders to connect with peers, share experiences and learn about innovative approaches in cities.