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## Community Broadband Snapshot Report™

# Urban Communities Need Better Broadband Too!

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## **Introduction: The Business Case for Urban Community Broadband**

Tell 'em, "Pay for your own damn stadiums." Put taxpayers' money to work building community broadband networks.

As author Gregg Easterbrook wrote in his book, *King of Sports: Football's Impact on America*, some 70 percent of the \$1 billion costs incurred in building and maintaining sport stadiums throughout the year comes from local taxpayers, not team owners. Dallas taxpayers took a \$325 million when Cowboys' owner Jerry Jones built his new stadium. Local taxpayers handed over \$390 million to give the Seattle Seahawks a new home while owner Paul Allen is worth over \$17 billion.

The investments in sports stadiums may or may net taxpayers good ROI, but the ROI for a community-owned broadband network in urban cities can be huge. These networks are utility and community assets that facilitate business growth, local economic development, education, healthcare delivery and government efficiency. If citizens are okay with building multimillion stadiums that benefit predominately gazillionaire, why not spend \$50 or \$100 million to reap the rewards that Chattanooga, Lafayette Louisiana and other urban cities generate?

Rural and urban constituents face similar challenges in their quests for better broadband. However, some assume that urban areas have great broadband, probably because there's AT&T or Verizon stores seemingly in every neighborhood. Often, there isn't. Giant ISPs charge too much to deliver too little, customer service often sucks and their copper infrastructure is so not ready for the 21th century.

The following pages 1) explain how inadequate competition cripples urban broadband, 2) outline the needs for gigabit speed and capacity in urban settings; 3) highlight why digital inclusion is an imperative; and 4) offer recommendations to maximize urban broadband.

Chattanooga is a poster child for successful community broadband (and successful marketing), and quite a few urban cities are stars in there own rights. This report showcases some of these success stories plus shares valuable insights and tips from those working in the broadband trenches. Links to resources and additional content will help your broadband team.

## **Breaking down the need for urban broadband**

The need for broadband in urban cities can be broken into two primary categories. First, there are individuals, organizations and businesses that need/want better quality broadband than what is available, or for which constituents are charged exorbitant rates. Second, there are those who don't have broadband access or have low-quality broadband, due in large part to economics shortcomings.

People often use "speed" and "capacity" interchangeably. However, speed refers to how fast your Internet connection is (1.5, 25, 100 Megabit per second). Internet capacity means how effectively can the network move the data files of your entire city's population. It doesn't matter if your ISP promised you 5 Mbps broadband service if their network capacity can't handle all of the neighborhood kids streaming gig homework files, collaborating online and reviewing classroom videos.

When broadband planners, steering committees, stakeholders and activist get together to determine the broadband needs for a city, it is important to determine what is your need for speed and what are your needs for capacity. When you determine what speed your retirement community needs, it may be different from the speeds needed by households with school-age children, doctors offices, retail stores and start ups. As you assess and quantify your need for speed, you also have to plan what kind of capacity will the entire network require.

"The 25 Megs download speed, 4 Megs upload is not satisfactory," Next Century Cities' Executive Director Deb Socia. "It's good we established higher speeds for homes in rural America. But for any urban setting it really should be a gig because of the concentration of data communication activity in these large cities such as Chattanooga and Kansas City. We found this out in Boston where it was difficult to get access into the business communities that are surrounding the neighborhood."

As the things you can do with highspeed Internet access increases, the capacity required by urban communities likewise increases.

### **When the lack of competition threatens broadband progress**

Sooner or later when you assess the need for urban broadband in the United States, the infrastructure that delivers Internet access is woefully inadequate to handle the data communication both in terms of speed and capacity. The solution? "You are dealing with a monopoly or duopoly that has no interest in upgrading because they're getting plenty of money for what they're already offering," states Socia. "We need more competitors!"

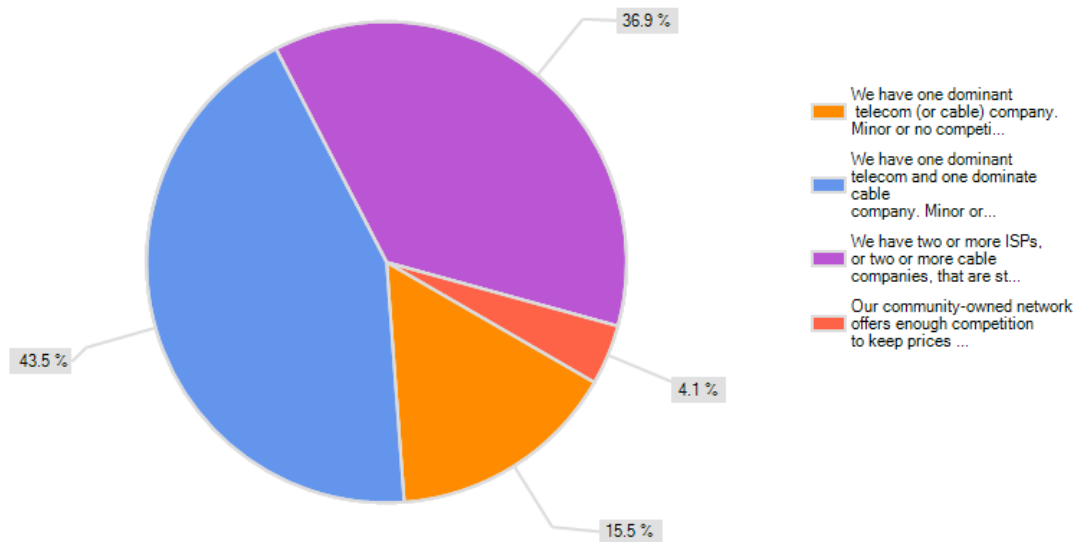
In a 2014 survey of economic development professionals via the International Economic Development Council (IEDC), they were asked if there is competition

among ISPs. **Figure 1** shows a significant 43.5% of respondents reporting that their jurisdictions exist under duopoly conditions, with just one cable and one telecom company, and not enough competitors to each to impact pricing or service quality. 15.5% are in a more difficult position since they work in areas with monopoly conditions.

37% of respondents report that they have at two or more telecom providers, or two or more cable companies, that are all strong enough to provide sufficient competition. 4% feel that their community-owned networks encourage a competitive marketplace.

**Figure 1.**

**Are there enough competitors in your area to improve broadband price, speed and/or availability for constituents?**



“I think the more competition there is in an area, the better is the price of services to customers,” says Tom Spear, CEO of enfoPoint Solutions, a provider of network infrastructure services and technologies. “Case in point, as soon as Google announced they planned to provide gigabit to Nashville, that was the first time Comcast ever provided any inkling they were going to provide a gig to their business customers.”

Sometimes just the threat of competition benefits the entire community, further proof that incumbents artificially inflate prices. Over 40 Colorado communities voted in 2015 to take back their rights to build public networks, and the day after the vote Comcast lowered broadband rates for their customers in the entire state.

Spear sees the same thing happening when their customer Sonic, a regional ISP, comes into an area. In several Bay Area cities California where at Sonic operates, Comcast and AT&T all of a sudden discover flexible pricing.

Many big cities are familiar with the competition con game that's similar to Boston. Sure, they have three competitors: Verizon, Comcast and RCN. But Comcast has 90% of the market! Twice the mayor of Boston went to the FCC complaining about the lack of competition. But Comcast countered with, as they do in many of their markets, there are 3G providers, are satellite solutions. "In reality, when you talk about a solid wired competitor, there really is none against Verizon, Comcast, Time Warner and the other large telcos in their respective markets," says, Anne Schwiager, Broadband and Digital Equity Advocate for the City of Boston. "These companies rarely go into each other's territory."

Verizon has stated that they are going to bring FiOS to Boston, but so far they've only brought it to the well-to-do areas. And then there is the whole situation. In many cities, quite a few property owners of apartments and condo complexes have struck deals with single provider, which do the most part screws residents.

"The FCC understands that we have a problem with the competition, but they need to pick their battles and go for the ones that they have a decent chance of winning," says Socia. "The agency can find itself stymied by what is defined as competition. Technically, when you add in satellite and 3G, sure there's plenty of competitors, but not at the speed that matters to people and definitely not what matters to businesses." Adding to the FCC's aggravation are the rules of the game, such as the antiquated Telecom Act 1996, and the eternal threat of the incumbent litigation.

And what happens when there is true competition by a municipal network? EPB in June this year was ranked as the best utility in America for consumer satisfaction with its TV and Internet service, according to [surveys of Consumer Reports Magazine readers](#). According to them, "EPB scored a 92 from the magazine's readers for its internet service. EPB boasted a 'better' ranking — the highest available — for value, reliability and speed. By comparison, Charter/Spectrum fiber scored 65, AT&T U-verse fiber scored 63 and Comcast/Xfinity cable scored a 54."

### **The Philadelphia story**

Among broadband champions and supporters, one of the stated benefits of cities building their own broadband networks is that the money earned by the network stays in town to be reinvested in the network and the services it provides. So it seems a little ironic that Philadelphia, where Comcast is headquartered, has the third worst broadband access in the United States according to a survey conducted a year ago and [reported in the Philadelphia Inquirer](#).

When making the case for meeting the needs of urban cities, it's important to do fact checking and back up those facts with stories from those people who are living the pain. A coalition of activists, politicians and business people successfully negotiated a new franchise agreement between Comcast and Philadelphia compiled hundreds of videos, letters, web comments and in person interviews documenting need.

Hanna Sassman, Policy Director at Media Mobilizing Project in Philly, states that, "A big contributing factor for the city having such low ranking is poverty, people can't afford to pay for broadband at home. But it's not only low-income people who can't get access. We interviewed a Photoshop designer in downtown, in one of the most economically successful area of the city, and they were forced to have expensive T3 lines for Internet access. I think that's true all across the country, that in the urban core there is little competition so we have fewer choices rather than more."

What about the claim that there is plenty of competition in Philadelphia? "That's a fine thing to say, but my co-worker who's a freelance filmmaker went on the Verizon Web site after the provider claimed that they were delivering FiOS in most of the city," recalls Sassman. "Yet their home couldn't get it. I suppose they could get satellite dish, but those Internet speeds are incredibly slow. DSL is an option, but it's pretty slow plus it doesn't appear that Comcast is putting new cabling in the ground." Perhaps incumbents use the "rules" that allow them to provide service to one home in a zip code and then claim they have coverage in the entire zip code.

What about the claim that many of the people who don't have broadband but don't feel that they need it for various reasons? Sassman continues, "I believe many people say the Internet is not relevant for them as a way to hide the fact that they can't afford the Internet. It's really hard when you have to work two or three jobs while caring for elderly parents and worrying about the threat of eviction. Sure, the Internet is important for searching for job, but it might have a lower priority than fixing your car so you can make it to the job you already have."

The FCC and others agree that a significant number of businesses are getting the dirty in the access stick. Indy Hall, a co-working space with lots of entrepreneurs and remote workers from important companies, is in a very chic area of Philly called Old City that has lots of clubs and start-ups. They could not get enough business-level broadband to keep their operations going so they had to relocate. A lot of those companies testified during the hearings for the franchise agreement. A community business association called LA 21 surveyed businesses along Lancaster Avenue (LA) and other commercial corridors such as grocery stores, beauty salons, furniture stores, bodegas and other businesses and most are not online.

Along with the assertion that people aren't online because they have no interest, community broadband critics argue that there's no problem finding broadband infrastructure in poor neighborhoods. "However, we hear in New York Verizon claim they've built out FiOS, but what they really did was put their backhaul in the streets yet didn't attach that to the buildings except for a couple" says Sassman.

“We’ve been analyzing Verizon because their franchise agreement with Philly runs out this year. We don’t believe they want to invest for fiber in the home, they’d rather run wireless because they can make more profit and they don’t have to deal with right-of-way issues.”

### **The local response to the lack of competition**

We need to tackle the lack of competitors at the national, state and local policy levels. Large cities, though, have several tactics they can employ to tackle the problem, one of which is building a city-owned open-access broadband network and then entice smaller ISPs to deliver services over that infrastructure.

Columbus, Ohio Huntsville, Alabama and Santa Monica, California are some of the urban cities employ this tactic. Some key questions for this tactic are 1) do you have patience to line up the necessary ducks, 2) will you treat the infrastructure as a vital utility, and 3) are community stakeholders good at raising money for civic projects? As you tackle these questions, research local and regional ISPs that can provide needed competition to incumbents.

Ron Deus, CEO of regional wireless ISP (WISP) [NetX](#), located in Cleveland, Ohio (population 400,000), has been providing homes and businesses with a gig wireless connections, and is preparing to extend services to New York City. Deus says, “Do some research and you see lot of consolidation has happened in the telecom industry that produced monopolistic situations in big cities. They are very slow to upgrade, and they raise prices that are not in line with actual expenses. WISPs tend to design more efficient ways to communicate data so we are more profitable.

Some state and federal government agencies (as well as the media) are not paying attention to the severity of the need in urban areas. Deus feels, “What happens in the suburban and urban areas amounts to redlining as incumbents’ buildouts, upgrades and broadband adoption efforts happen in the most profitable areas first. Areas just a mile or two away become broadband deserts. A lot of incumbents are shareholder driven, so their first concerns are their profits and cherry-picking.”

Incumbents justify this “cherry picking” as the only way to make a profit. Hence, you have an aging broadband infrastructure that incumbents do not want to improve, and an urban core that is frustrated by the impasse. In Cleveland and many other urban centers there are economic considerations that point to wireless infrastructure as a practical and fiscally responsible way to improve broadband. However, that being said, cellular service may not be a wise wireless choice.

WISPs have been a fixture in the competitive landscape of rural America for quite sometime. They have solid reputations for building out affordable infrastructure in hard to reach places. Some local governments have encouraged entrepreneurs to create WISPs. The same tactic could work in urban areas.



## **Creating the 21<sup>st</sup> Century utility for urban American**

US Court of Appeals for the District of Columbia Circuit turned down big telecom companies' efforts to derail the FCC "net-neutrality" rules. Harold Feld, Senior Vice President at [Public Knowledge](#), feels that the importance of this decision was that it established broadband communications as a vital utility in our country.

In our history certain services were so important to everyone that they did not be left to market forces. "In the 18<sup>th</sup> Century, that was the mail," Feld say. "Yes, we had private carriers, but we also a US Postal Service that go everywhere and serve everyone. We determined electric power was a vital service, and later on the telephone. This century, we are totally dependent on broadband. It is too important to our economy, too important to individuals, too important for our participation in society to let a few large companies dictate its use."

The Internet was viewed as a "nice to have" service, and for some such as businesses, an "important to have." But now it has expanded and insinuated itself into the fabric of our society. Cities need to understand they have an obligation to make broadband available directly or indirectly and affordable to its constituencies.

What may be difficult for some leaders of larger cities to understand is that their first question about community broadband should not be, "how can we afford it?" Instead the discussion needs to start with, "what do we want or need broadband to do? What are the benefits we expect broadband to deliver?" By answering these questions first, it is easier to find the money to build these networks.

### **Determining communities' broadband benefits**

Determine who wants or needs community broadband benefits so badly they're willing to pay to have them. Buyers pay for benefits a particular technology product or service delivers, not the technology. People may not know a gigabit from of giraffe, but they will pay for a broadband utility that enables an elderly parent to stay safely in her home, or videoconference her best friends in another state.

It is deceptively easy to create a fundraising game plan for broadband IF you do an effective needs analysis first. The hard (creative) work comes once you inventory the community's needs, determine how much constituents will pay to meet those needs and research which entities might fund your network to meet those needs.

Mary Beth Henry, recently retired Director Office for Community Technology, City of Portland, OR, has for many years been a proponent of community broadband. "In our cities, broadband needs to be the same as electricity, you just turn the switch and it's on. You should be able to take it for granted that it will be ubiquitous and affordable. Broadband is a platform for everything – economic development,

education, healthcare, commerce and shopping. It's going to take a little bit to get there but this is where cities should be heading."

Portland did a feasibility study at the time when municipal Wi-Fi was getting hot (around 2007), but because of the recession the city couldn't find a partner. In 2009, the city and its stakeholders unsuccessfully sought a BTOP grant, but in the process they built up social capital with hospitals, schools and other organizations. In their attempt to win the initial Google Fiber network, Portland went on to develop the Broadband Strategic Plan that they have been implementing ever since.

Two factors drive officials' pursuit of broadband for Seattle, Washington. First, a consortium of over 20 organizations including the City of Seattle, the public library and the school district deployed 500 miles of dark fiber in the ground and on utility poles. They built the infrastructure over the past 15 years on an "on demand" basis.

"If a member besides they want to have fiber built from point A to point B, the city costs out the project out, the consortium votes on the project, the City builds and all the members fund the project," says Jim Loter, Director of Digital Engagement for the City Department of Information Technology. "This has proven to be successful for us."

Recently passed legislation enables Seattle to provide fiber to third parties who in turn provide services to various constituents. Loter states, "We discovered some administrative challenges implementing the initiative, but at least the framework is in place. The legislation and the infrastructure makes it logical to explore possibilities of extending fiber throughout the city to benefit various constituents."

Also driving interest in broadband is that city owns and operates two successful utility departments: Seattle City Lights (electric) and a water, sewage and refuse utility. Looking public utilities rolling out successful broadband in Chattanooga, Lafayette, Louisiana and other cities, plus Seattle's long history with running utilities, why not create a third utility for broadband?

"In 2005 and again in 2014, the city explored the cost and other factors associated with running a broadband network," says Loter. "Results from both studies indicated that running a network would require more time and money than was expected, and the risks would be greater than the City felt comfortable undertaking." The recommendation was to seek out public private partnerships while the city does what it can to reduce regulatory barriers that might prevent commercial entities from providing broadband. In the meantime, Seattle is heavily focused on providing more broadband to the 90,000 residences that currently have no access.

## **Four categories of benefits that drive urban broadband**

Along with Portland and Seattle, there has been a parade of midsize and large cities taking definitive steps to facilitate better broadband, including Baltimore, Maryland and Boston. Communities have four ways they derive value from their network investment.

It's a good bet that abundant broadband will change the ways local government departments conduct business, everything from expediting emergency services and processing building permits to delivering inspection service visits via video conferences. Voice and video can lighten the cost of providing social services while increasing programs' reach. Broadband networks that touch residences and business owners can increase their participatory involvement with city affairs.

A second measure of success is using the network for economic development. Economic development is the golden child of cost justification of these networks. Media stories, conferences and webinars devoted to the topic abound. Are we going to entice new businesses to come to town, or are we making current businesses more effective – or both? Have we even scratched the surface improving personal economic sufficiency?

The third major objective many cities have for creating a broadband network is to improve how healthcare is delivered in those communities. I believe this is the “sleeper benefit” of broadband. Several issues are holding back advances in broadband-based healthcare and telemedicine, including government regulations and insufficient broadband.

The fourth category of urban broadband benefits is digital inclusion – bridging the divide between the technology haves and have-nots. This is a moral imperative and an economic necessity. Elected officials, government staff, community leaders and everyday citizens who are appalled that anywhere between 15% and 30%, maybe more, of their fellow citizens are shut out of the digital economy. There are urban visionaries who see broadband as an agent of change that can transform low-income constituents into an entrepreneurial force.

### **Improving government operations**

Since 2005, I have advised local governments that the process of broadband-enabling various departments within the government structure can produce benefits that pay for a lot of the costs for building network infrastructure. Broadband benefits for a midsize or large city can make finance managers sit up and take notice.

In 2003, the City of Santa Monica (population 90,000) calculated they could save \$750,000 per year by replacing incumbents' data and voice communication services city-owned fiber. In 2004, Philadelphia estimated they could have saved \$2 million a year by replacing incumbents' cellular services for its 2000 mobile city government workers and 300 remote offices. The city would have instead paid \$20 per month to lease wireless services from Wireless Philadelphia (now defunct), a nonprofit created by the City, as well as eliminated T1 lines to the city's remote facilities.

Bring all of your city departments together and ask them what will happen if you start thinking like a business in terms of broadband? Can you remove pressure from the city's operating budget and maybe even increase revenues by taking a long-term view of your wired and wireless broadband options?

Commercial entities use broadband to cut costs, improve efficiencies and add value that exceeds the investments in the technology. It doesn't make economic sense for local governments to pay for recurring incumbent services when the government can own the infrastructure to produce these benefits. If a child services worker accesses data from the city's broadband network or completes paperwork digitally from a client's home, that saves time and money. Wireless-enabled parking meters using Internet of Things (IoT) apps has revenue-increasing potential.

Don't forget about e-government. Over the last decade, every agency at every level of government is expanding their e-government apps. Even if you have a connection it can be daunting to navigate these public services but what about the less fortunate. "It is one thing for Amazon to create services that are only available to people that are connected," says Don Means, director of the library advocacy group Gigabit Libraries Network (GLN). "It's quite a different matter for a local government to create services without assuring access to those services. So the only answer these agencies have is to go to the libraries, which exist as departments of city and county governments."

Libraries as not just an access points, but are places where there is a human being, a person that can help constituents navigate this very daunting array of online government services. Libraries are the human face of e-government for the disconnected.

Means adds, "An emerging role for the library is in disaster response. They are places people think of the lights go out because they are the likely public places that have generator power. It's a place to go to find out what's happening, or maybe to get a connection to charge their phone if the cell system isn't working, which happened after Katrina in New Orleans.

An [earlier Snapshot Report](#) has additional valuable information about the role of libraries and broadband.

## **Santa Monica – a pioneer in city-owned infrastructure**

When the city of Santa Monica decided in 2003 to build its own fiber infrastructure, its goals were fairly simple: centralize or integrate city services through core data systems and lower costs of Internet access for city and schools. They went on to establish free WiFi in 35 public hot zones as well as distribute 375 computers in kiosks and libraries around town to enable free wireless access.

The \$750,000 that the city saved stayed within the City's IS department as per an arrangement the department made with City Council. This amount represented a 35% savings of the city's communication costs. Laterals from the initial fiber deployment were run to businesses willing to pay for access speeds that Verizon was unwilling to provide.

CityNet was the name given to what was a direct retail sales business run and marketed by the City IS staff to sell fiber services to local companies. As the network accumulated business customers, this funded more fiber buildout to accommodate customers, which in turn generated money to expand and upgrade city network infrastructure. CityNet also used transportation grant funding for some of the buildout.

CityNet pursued their leapfrog strategy for several years, but over time shifted to the wholesale model as they attracted Verizon FiOS, AT&T and five fiber providers to offer services over the network. CityNet sets the bar for ISPs' subscriber prices. It continues to increase the number of companies providing services and Time Warner is building a new fiber plant. CityNet staff handles marketing and service sales. When they work with ISPs to broker a deal, CityNet takes 10%.

The number of customers is over 126 businesses with an average of five added every month. CityNet is launching a marketing campaign to increase the take rate. CityNet is considered a cash cow because the ongoing cost savings to the city and school costs justifies infrastructure buildouts. At one point, the savings plus revenues from business subscribers netted a \$2.5 million capital budget surplus.

When Santa Monica began CityNet in 2003, there were just the city's CIO Jory Wolf and one network engineer part time working on the project. CityNet has four people dedicated to operating the network, plus 10% of a manager's time, and a network engineer part time. There also are two staff people working on Help Desk during regular hours. They have contractors for the network operations centers, 24/7 tech support and customer support, construction and splicing.

## **The Chattanooga broadband backstory**

Chattanooga is probably the first city that comes to people's minds when you say "gigabit" and "community broadband." However, broadband got its start in the city

as a pathway to modernizing the public utility's (EPB) smart grid infrastructure. EPB wanted to back up their electrical system to ensure that more people and businesses would have access to the utility as soon as possible following any man-made or natural disaster.

Certainly the way that the utility transmits data over ultra highspeed broadband and the type of innovative changes the infrastructure can deliver is a plus, but the most important part for EPB was to ensure maximum reliability for its customers. Almost immediately after the upgrade, it became apparent that there also were economic benefits for both EPB and its customers.

In 2005, EPB planned to build out a new fiber optic infrastructure in the community to modernize the electric system and to provide telephone, Internet and TV services via fiber-to-the-home (FTTH) and fiber-to-the-business (FTTB). In September 2007, Chattanooga's City Council approved EPB's plan. The buildout was completed roughly 6 years ahead of schedule and the first customers were connected in the Fall of 2009.

EPB made a bond offering to fund the construction of a Smart Grid, one of the first and largest in the United States. In November 2009, in the wake of the deep recession, EPB received a federal stimulus via a matching for \$111.6 million from the Department of Energy to expedite the build-out and implementation of the fiber infrastructure and the smart grid. A fiber optic unit was set up within EPB as an asset of the Electric Division, which and leases infrastructure gear to the unit.

In September 2010, EPB made available residential symmetrical internet connection speeds of up to one gigabit per second - the fastest Internet in the western hemisphere. By 2010, the utility saw a 150 percent increase in customers.

As of March 2015, the utility serves 43 percent of the Chattanooga residential market, which is over 66,000 customers. Moreover, the fiber optic division of EPB became profitable in 2012 and has contributed to lowering EPB's overall operating costs and electric rates ever since. By 2016, the division is expected to be debt-free. Fiber optic system access fees and rents paid to the electric system in 2014 amounted to \$10 million and are estimated to be over \$12 million in fiscal 2015.

### **In Columbus, they STOP! in the name of broadband**

The U.S. Department of Transportation (DOT) is not in the business of funding broadband networks. It is, however, in the business of helping cities build, manage, use and maintain better streets and freeways. Bring them plans to better use streets and freeways, and DOT will listen.

The 15th largest U.S. city, Columbus, Ohio, got a grant from DOT for almost \$8 million to replace its aging, proprietary traffic signal systems with a more flexible

system built on the backbone of fiber optic cable and wireless communications technologies. The city contributed \$750,000. Subsequently, the city's IT department now has fiber running to every traffic light in the city – fiber it couldn't otherwise have afforded. Besides having the Cadillac of traffic management systems, the city can now invite competitive providers to use the city's fiber to offer broadband to homes and businesses.

City of Columbus CIO Gary Cavin explains that this grant might not have been able to advance the fiber network if had not started a particular process years ago with all of the City department managers. "Soon after Philadelphia made its splash trying to create citywide wireless, I convinced my mayor they needed to aggressively pursue broadband," says Cavin. "I met the managers on a regular basis to explore broadband needs, and continually prodded them to take every opportunity to cultivate broadband infrastructure in their projects. When the traffic department informed me about the DOT grant, I directed them to add fiber to the upgrades."

The city has built over 300 miles of fiber throughout the city, and the DOT grant will enable them to add hundred more miles. GIS mapping informs the City where all of the fiber assets are throughout the city. The City pursued several broadband stimulus grants that unfortunately they did not win, but the process lead to a number of partnerships that enable the city to advance its broadband goals.

The City pursues wired and wireless technology in equal measure. The city's mobile workforce accesses Wi-Fi that rides on the fiber. Police and public safety workers access top-grade video transmissions that save time and money while increasing efficiency. There are several public Wi-Fi zones, and all of the city's rec centers have Wi-Fi access that enables after-school programs, application development training and job-hunting support for older youth.

Columbus does not want to be in the broadband services business, but they are not shy when it comes to prodding incumbents. One of the country's biggest makerspaces is in Columbus but they weren't able to get broadband. The City was building out fiber to a public facility near, so they looped fiber into the makerspace and encouraged the incumbents to provide service. There are several small ISPs in Columbus and the City is encouraging them to use the cities fiber to provide services in areas where the incumbents are not willing to serve.

As you assess department by department the priority broadband needs, you should have a number of goals, tactics and some possible funding options based on meeting those needs.

## **Addressing your business communities' needs**

How is the lack of adequate or affordable broadband impacting your city's large, medium and small businesses? Incumbents' copper infrastructure designed for businesses, schools and other organizations are heavily T-1 and T-3 lines, DOCSIS 3 and who big companies that can pay, fiber. For brief time at the turn-of-the-century, fiber was hot as a number of start-up fiber optics companies jumped into this market, but many went belly up.

The promise of fiber only seems viable in the largest of telco customers, but not mid-range and smaller companies. Large ISPs are reluctant to upgrade their copper to fiber because even when business customers can afford it, it takes a while to get a return on incumbents' investments. That what is the case with Verizon and its FiOS – they saw a business opportunity in the residential market, but key stockholders pulled the plug because there was little quick shareholder profit.

Incumbents heavily focus on residential subscribers. For example, market progress is measured by “homes passed,” and offering video (TV) services is considered essential for selling data services. Graeme Gibson, CEO of Computers & Tele-Comm, Inc. of Kansas City however found KC businesses' use of super highspeed broadband has enabled customers to prosper more and contribute to the local economy. He subsequently believes communities that want broadband to impact economic development should focus heavily on meeting businesses' increasing need for speed.

Sometimes, the need of the business community for highspeed Internet access can be expressed simply as “coverage.”

### **Google sits down in Huntsville, now everybody wants in**

The news is still settling in (it was only February 2016 when Huntsville announced the deal with Google), but it seems that everybody is talking about it. The business community led the charge for getting better broadband to town. They needed affordability, especially among tech companies. But truth be told, their primary need was for any type of Internet coverage. Huntsville seems to be one of those places where there's no rhyme or reason to where broadband coverage is. Or is not.

“When Google had their contest in 2011 to select a city to give broadband network to, Huntsville applied though I don't think people were ready then,” recalls Harrison Diamond, Business Relations Officer for the City of Huntsville, Alabama. “I don't think people knew what a gigabit really was. At one point someone announced a flash mob because all the cities were doing crazy stuff to get Google's attention, and only five people showed up.” Ouch.



Luckily things have changed. About two years ago, Mayor Tommy Battle convened several advisory councils and a lot of the tech businesses, start-ups and other companies pushed heavily for gigabit, with a key emphasis on affordability. There are places where you can find gig services, but Diamond says you have to pay through the nose. Shortly after that Mayor Battle declared the city's intention to become gig city. The city doesn't want to get into the broadband services business, but they did explore various options for how to move goal forward.

The city government, along with the public Huntsville Utility, decided that the best course to take is to have Huntsville Utility build the fiber infrastructure that encompasses the city limit. Google is establishing a deal that will allow it to run its broadband services across Huntsville's fiber. The utility is expecting to spend \$55 to \$60 million for this phase of the network, but customers will not see their electric rates increase. The utility is selling excess dark fiber, and similar to Chattanooga, it will use a significant portion of the fiber to upgrade its smart grid.

Diamond talks about a stunning revelation during the RFI process. "One of the main incumbents told us that we weren't even being considered for receiving services. Considering that Huntsville is one of the fastest growing cities in the country and we weren't even on these companies' radar screen, we were shocked. I really feel bad for those small rural towns because they don't have a chance of getting broadband. Now that we have the Google announcement, companies like AT&T and Comcast call us about services. It was very frustrating before because we have all of these tech companies here and no one could get service."

Google is definitely good news for Huntsville. However, they limit their services mostly to residential and small or home offices. That leaves the door open for other ISPs to come in and serve midsize and large businesses, colleges and other organizations. With the Google excitement and just by their very presence in the area, the competitive environment should be the great thing for the city's overall economy. "There's plenty of pie to go around," says Diamond.

Tom Spear feels there are other important broadband needs that concern businesses: one is the quality of service and second is the reliability of network redundancy. He says, "businesses of all sizes are switching their e-mail servers and application such as QuickBooks to the cloud. This is a big convenience but it means that when the ISP's network is down, businesses can't function. If it takes a week to resolve an issue, this is very costly for businesses. When there is only one main provider, there's no incentive for them to offer better service. In Chattanooga, there is serious competition. EBP differentiate itself with new, innovative business services, detailed analytics, etc. that Comcast can't replicate easily."

Community networks with strong customer service operations and infrastructure reliability should find they have a distinct marketing advantage winning new customers and retaining them longer. Business customers, particularly those such

as tech companies in Huntsville, are reluctant to switch broadband service providers because doing so takes a heavy toll on their operations.

### The need for speed

Schwieger says, “When people describe broadband we tend to be imprecise. Any service that gives us highspeed Internet access we call ‘broadband.’ However, when you have 10 megabits per second, that’s a whole different user experience then you have with 25 megs. When you’re able to do all that the Internet offers to you – rich video content, access to cloud resources, professional development – that’s broadband.” What constitutes adequate broadband is the speed that you need to maximize the Internet’s potential.

In 2014, I conducted a survey of economic development professionals to take get their take on how does or will broadband affect communities. A lot has happened since then, but these results give you a snapshot into the thinking of those who work in the trenches affecting local economies.

**Figure 2. Minimum broadband speeds needed**

	<b>2-4 Mbps</b>	<b>10-12 Mbps</b>	<b>25-50 Mbps</b>	<b>100-120 Mbps</b>	<b>500 Mbps</b>	<b>1 Gigabit</b>
<b>Lure businesses</b>	3.6%	6.8%	13.6%	32.1%	16.3%	27.6%
<b>Local companies grow</b>	4.1%	11.8%	23.5%	32.1%	13.1%	15.4%
<b>Revive business districts</b>	7.4%	14.4%	21.4%	29.3%	11.2%	16.3%
<b>Revive communities</b>	8.4%	16.3%	24.2%	25.6%	10.2%	15.3%
<b>Boost worker training</b>	6.4%	16.0%	26.5%	26.5%	12.3%	12.3%
<b>Home businesses</b>	8.3%	15.6%	28.4%	27.1%	11.5%	9.2%
<b>Improve individuals</b>	4.2%	15.3%	25.0%	31.8%	15.3%	8.5%

Survey participants were asked what are the minimum speeds required by businesses to achieve the various economic outcomes listed (**Figure 2**). Between 26% and 32% respondents feel the minimum communities need is 100-120 Mbps.

Generally, 20-25 Mbps is the second most popular speed considered necessary for reaching these outcomes, with 22% - 28% of respondents who indicate this is the minimum communities need.

Surprisingly, 1 gigabit per second of speed polls lower than some might expect given all the publicity Chattanooga and Kansas City receive for their gig networks. Among economic development pros, a gig seems moderately important. For example, only about 16% felt it is the minimum needed if the goal is to revive depressed communities and businesses, and even less (9%) felt you need a gig to increase home-based businesses. I'm willing to bet that if you were to ask those same people this question today, a higher percentage would feel that a gig is needed

For the goal of attracting new businesses to town, 27% feel a gig minimum is a must-have and another 16% say communities need 500 Mbps to incentivize companies. It seems formal data is finally being collected (though no studies have been released) to learn how much broadband influences where businesses decide to move or expand facilities.

The question of speed is important because this is the crux of so many critical broadband issues. Federal government agencies have defined broadband as networks that move data at 25 Mbps download and 3 Mbps up (it wasn't long ago that the minimum was a lot less). Entities requesting money from these agencies can qualify for billions of dollars by meeting these standards. Broadband maps from federal and state agencies can determine that communities are served by broadband – and thus are ineligible for government assistance – if those communities meet this threshold.

When state and federal agencies are developing broadband policies, establishing funding programs, committing resources and measuring the success of policies and programs, the federal definition of broadband guides those actions.

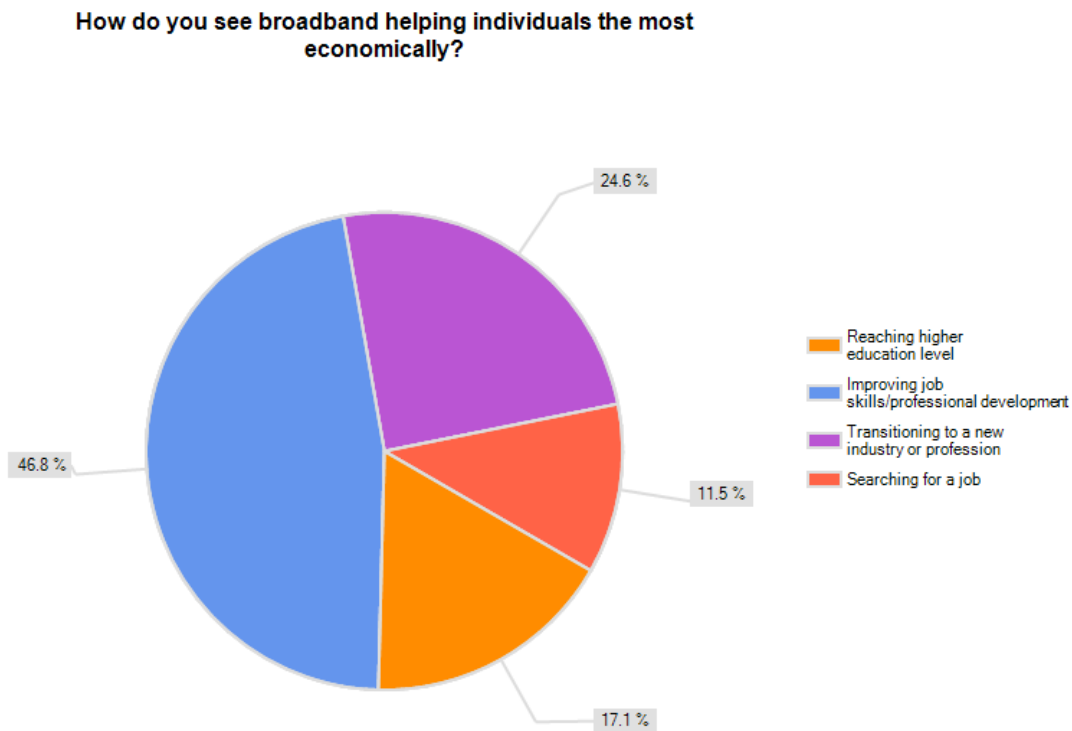
## **Broadband and personal economic development**

One of the most common economic outcomes attributed to broadband is that it will help individuals find jobs. Many broadband efforts aimed at reaching low-income individuals reflects this thinking: build new computing centers, discounts for Internet access subscriptions, funding broadband adoption programs that encourage people to use the Internet.

As shown in **Figure 3**, only 11.5% of economic developers see facilitating job hunting as the best broadband can do to help individuals. A much greater percent (46.8%) indicated improving job skills and professional development was the best target outcome, while 24.6% believe that helping individuals to transition into a new industry is where broadband shines. Reaching a higher education level is how 17% of respondents see broadband having the biggest impact.

Survey results here reflect a possible disconnect between policymakers and economic developers. The popular talking point that broadband is good for job hunting can be used to justify programs specifically to tackle this goal but as a result shortchanges broadband's greater potential value. The community may not get the best return on its investment. Individuals may be finding job listings yet are they really any more prepared to compete in getting those job, or getting ahead once they get the job? Employers are shortchanged if broadband is not used to facilitate better job training or they lose opportunities to get more skilled workers entering.

Figure 3.

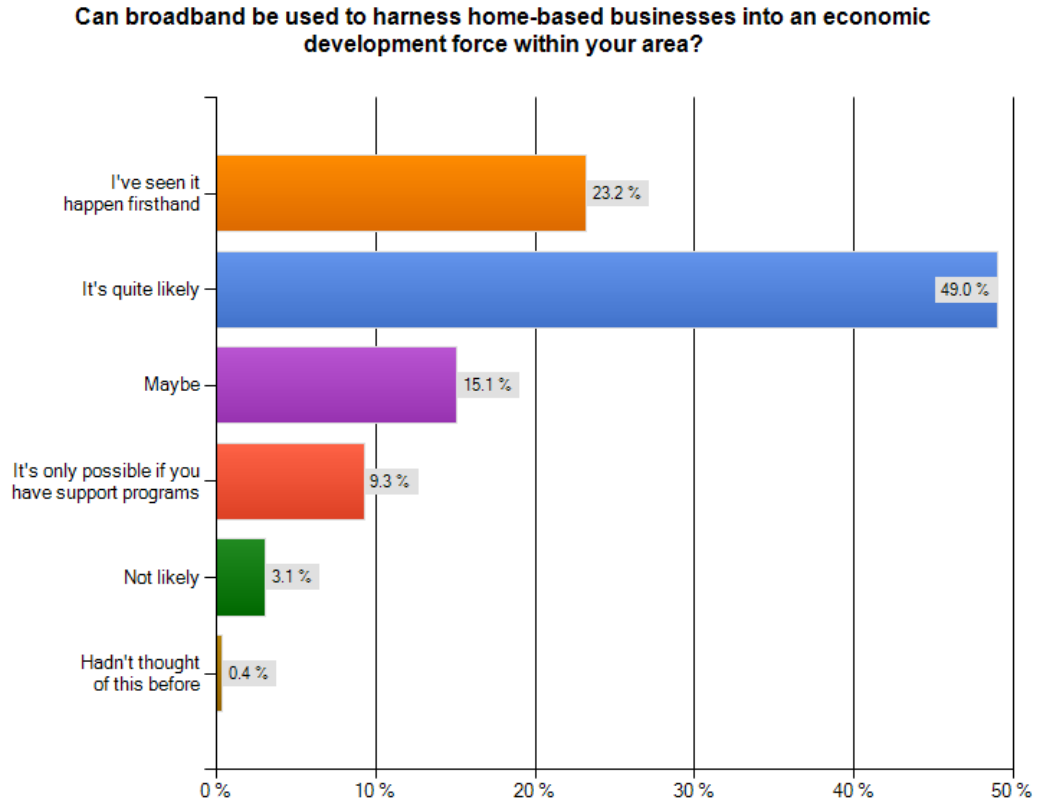


To broaden the question to cover the greater community, not just underserved individuals, survey participants were asked if they see broadband as a way to turn home based businesses into an economic force within the community (**Figure 4**). Informally, I hear economic developers discussing the value that home-based businesses bring to the economy, particularly as a way for unemployed individuals of all types to become income earners again.

A sizeable percentage of those who feel support programs are a must (9.3%) is less than those for the previous question, this may be because respondents feel underserved people have more hurdles to overcome to be successful. However,

since home-based businesses often operate below the radar screens of agencies and organizations such as chambers of commerce, it may require more support programs than people imagine to identify and reach these entrepreneurs.

**Figure 4.**



## **Healthcare, medical services delivery - the “sleeper” killer app**

Sure, economic development is sort of the Belle of the Ball for broadband these days as it seems everyone has gotten on board with the idea that broadband is great for communities economic development, which it is. But broadband-driven medical and healthcare applications of the technology will surpass economic development in its popularity and impact. Because everyone gets sick, has to deal with someone who is, or we go out of our way to avoid sickness.

There are many efforts being made harness the power of the Internet to facilitate treatments, cures, rehabilitation and preventions. People are collaborating online on the creation of new devices, and of course, multi-gig speed we will turn medical research up quite a few notches. Hold on to your hats.

Currently there are frequent news reports about broadband making it easier to care for older relatives by enabling them to live and be productive in their own home rather than an assistant living facility. Broadband access connects a person by video to family and friends. Medical professionals can monitor and administer a person’s health or dispatch emergency personnel during a crisis. But what if we expand broadband use in all aspects of healthcare?

Some routine and preventative healthcare could be possible through doctor visits via video. Patient, from newborn to elderly, could have initial examinations by high definition video to determine what should be the next course of action. Family and friends not living in the area, or who can come by only after work, can visit online with a patient who in the hospitals. Patients can improve rehab and recovery using Internet-based software to access medical personnel, online content and patient-to-patient collaboration.

Once you paint a picture of broadband-facilitated healthcare, what are the kinds of entities that will make grants and other financial assistance available for building the infrastructure? The town’s biggest employers are possible funders. Hospitals themselves might see the value, either as a marketing tool to get loyal repeat customers or as a way to managing operations cost. You can develop a proposal for any number of state and local agencies, foundations, or associations.

Elected officials who understand the appeal of improved healthcare may persuade commercial developers and real estate companies to build infrastructure throughout residential and maybe even commercial facilities. Some visionaries may see broadband-driven healthcare as the first step toward creating a “smart city.” Although smart cities are a concept not fully fleshed out yet, a town full of smart homes that are able to detect a heart attack and administer some level of medical care should grab some civic-minded investors’ attention.

## **Shifting into 100-gig overdrive in Chicago**

The Illinois Medical District plans to take broadband and telemedicine to new levels with a new 100-gigabit network. As a model for the country, the 560-acre District includes four major hospitals, medical research facilities, labs, a biotech business incubator, two medical universities and over 40 healthcare related facilities, all connected by fiber. Former District Executive Director Warren Ribley feels this diversity of resources “really will set us apart, and also be a significant economic development driver to attract additional researchers and private-sector businesses.”

The District typifies the equal need for faster, better broadband within urban communities as much as rural areas. Many federal grants for broadband such as the FCC’s Connect America Fund (CAF) target rural communities. But in big-city Chicago where one would expect to find an abundance of Internet capacity, “The District is in a broadband desert,” states Ribley.

Sometimes hospitals now have to put research onto a CD and deliver it to another hospital, or buy access to more bandwidth to swap files. Hospitals have complained about slow speeds that hamper transferring large images, like X-rays or MRI scans, as well as video conferencing among physicians. One hospital has access to a 250-megabit circuit, but that is quickly becoming inadequate.

In 2012, there was a crying need for broadband. Sometimes hospitals had to put research onto a CD and deliver it to another hospital, or buy access to more bandwidth to swap files. Hospitals complained about slow speeds that hampered transferring large images, like X-rays or MRI scans, as well as video conferencing among physicians. One hospital had access to a 250-megabit circuit, but that is quickly becoming inadequate.

A new board of directors was recruited, Ribley was hired and the governor’s office took an active interest in the District. A fiber ring was built to integrate all of the facilities and the overall broadband infrastructure expanded.

“There are currently numerous initiatives happening throughout the District, which we believe will act as a catalyst for continued growth and economic development,” say Ryan Gage, Director of Marketing and Communications. “Cook County recently announced a major campus redevelopment project. The Chicago Center for Arts and Technology and Vertiport Chicago have been added. Rush University Medical Center and the Chicago Lighthouse for the Blind are also planning expansion projects in the near future.”

The District hopes to create links and relationships with other medical facilities and universities both locally and nationally. They seek to engage new business partners that will do the same in their lines of work, thus drastically expanding the scope and breadth of the District’s reach. A phased project with a minimum of 100-gig service is in the works for the District, and more is to be announced soon. Highspeed

broadband is key in attracting leading health science researchers and job creators to the District.

### **We've only just begun**

As it becomes more apparent to economic developers and broadband project teams that telemedicine has great potential to directly or indirectly improve local economies in both urban as well as rural areas, expect more projects of this type. 44% of IEDC members surveyed say they plan to have representatives from their medical communities directly involved with the broadband planning efforts.

“Telemedicine advances will improve services such as critical care for patients in our smaller hospitals, says Terry Huval, Director of LUS Fiber (Lafayette, Louisiana community network). “Instead of going to every patient’s room, doctors can talk to patients over screen while a nurse is in the room, allowing doctors to see more patients. We can create a video links with best heart physicians or specialized hospitals in the country. As the country tackles hospital data management reform, the network will give our medical community new capabilities to exchange data and improve service.”

For resource management in medical facilities, broadband, sensors, RFID systems and WiFi are key. News articles about these technologies increase hospitals’ ability to manage everything from beds to wheelchairs to heart pumps to prevent theft and ensure the productive use these resources, which has a direct effect on hospitals’ profitability. This helps the financial sustainability of our healthcare facilities along with providing better services.

Some of these same technologies are critical for patient management too. Jory Wolf of Santa Monica sees broadband enabling situations in which patients at the scene of an accident receive treatment as someone schedules surgery facilities in different hospitals and puts people and resources in place while waiting for the final decision on where the patient will end up. “We could use wireless to transport data from the ambulance,” he says. “People when they arrive would get through the ER faster or actually go directly to their ultimate treatment area of the hospital.”

Broadband also gives hospitals more opportunities for offering specialized services. A hospital that would take two or three days to get pathology reports or test results from outside labs could decide to do these services in-house using broadband links to specialists and exchange files or digital images. In a similar way, clinics can compete with big hospitals for business, plus run business operations more effectively.

### **Tennessee medical professionals up their game**



For patients, getting in to see doctor is a factor when you have to take time from work, and in winter it can be even harder. The ability to wire your medical community together your constituents will increase access to preventative medical care and care for chronic illness. There's a whole industry devoted to telemedicine and telehealth that community broadband can facilitate.

Another value proposition up broadband is its ability to make individuals more independent. There is an increasing part of the population wanting to feel that they are in better control of their health care. As broadband and technology such as video and audio tools become available, people will want to take advantage of them for medical research, health tips, doctor visits and so forth.

One of the biggest areas where we will see this happen is in eldercare. A lot of seniors are wedded to their homes despite their kids moving on and moving away. Those of us who worry about the physical and mental health of elderly relatives, the Internet can provide a good amount of comfort. Video doctor visits, medicine reminders, instructions for rehab procedures and family visits are all part of a regimen that broadband makes easier.

Michael Johnston, VP of IT and Broadband for Jackson [TN] Energy Authority (JEA), warns that there are challenges as well. "Broadband can do amazing things to change how people receive healthcare. Unfortunately, innovation is having a hard time meeting reality. Some of my largest customers are hospitals because they need more bandwidth. Yet some older doctors or their business managers aren't ready, with data security concerns being top on their list of concerns. It seems not enough people have presented doctors with convincing appeals for telemedicine."

Somehow the insurance companies need to set up automated procedures that influence doctors to adopt new technology, and have medical boards endorse the technology. However, more than the insurance companies, the federal and state governments collectively present a serious roadblock to telemedicine. It's all about the rules. Specifically, it's about the money inhibiting rule changes.

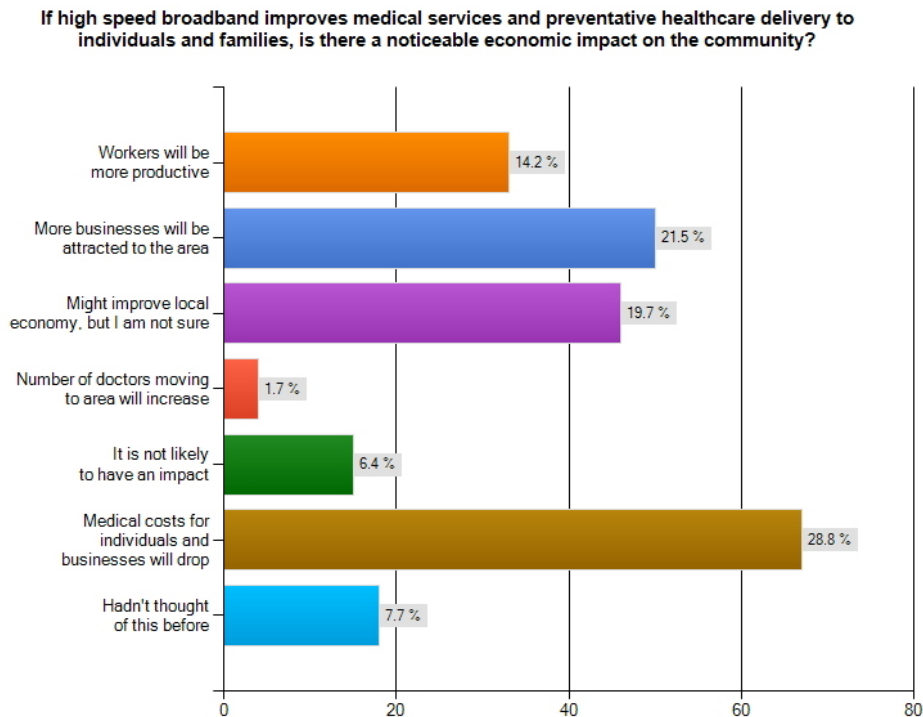
Radiologist Dr. Jim Busch is one of Chattanooga's [premier medical business stories](#). He brought the city's radiologists under one organization, Radiology Associates, and gig-linked their respective homes to each other and to the city's hospitals. Dr. Busch wrote software to enable the group to deliver new services. The radiologists serve more hospitals and patients, grow and expand the business, and create another hook that draws individuals and businesses to town.

As long as Dr. Busch keeps his radiologists' services local, things are good. The trouble comes, though, if he were to deliver services to patients in other states. Rules governing Medicaid and other Federal programs, as well as certain state laws, are not designed to allow inter-state reimbursements when the patient is in one state and healthcare provider is in another. Private insurance companies operating in may have trouble when the allowable rate for a particular service such as

psychotherapy in one state may have a different rate in another state. Fortunately, states finally getting the message and pilot programs are being conducted to resolve some of the issues holding back telemedicine.

### Does telemedicine warrant a closer look?

Figure 5.



Highspeed Internet access is not the sole or even primary criteria a young graduating doctor uses to select where they will settle down, though the lack of it can remove a town from consideration. However, a city that has a gigabit network and a reputation for innovative medical and healthcare services brought on with the use of that technology, likely will be destination spots for the next generation of physicians.

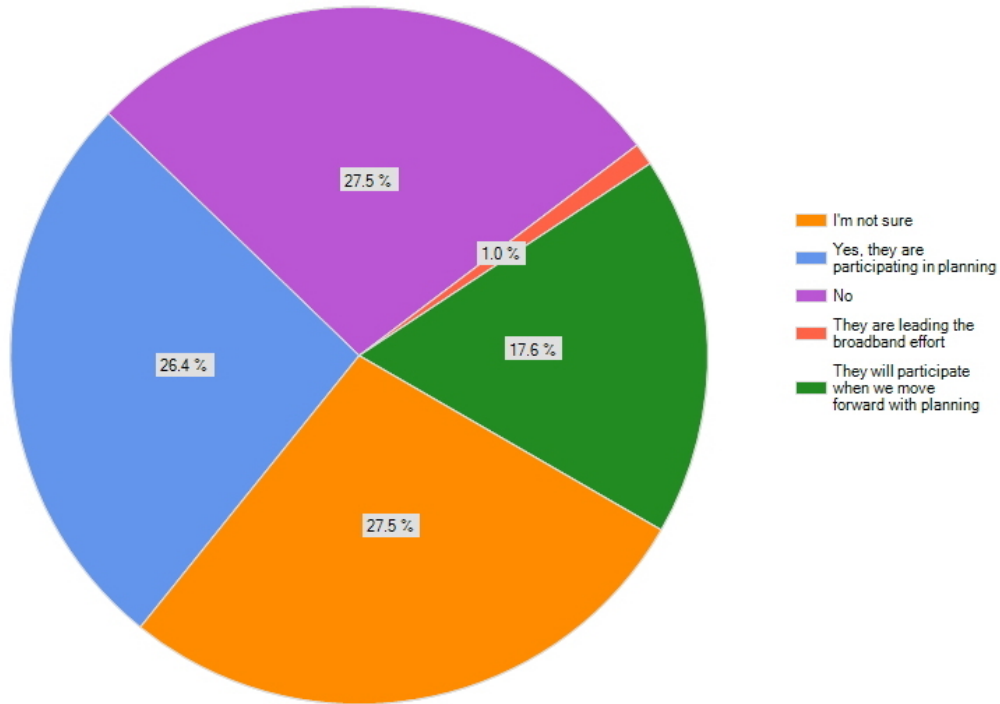
In big cities, the impact on economic development might not be as dramatic as rural areas, but nevertheless it still will be noticeable (**Figure 5**). Additionally, as the baby boomers continue to swell the ranks of the aged by living longer and perhaps working longer as well, current healthcare professionals will feel stressed trying to keep up with the workload. The ability to use broadband to facilitate preventative medical care, home health monitoring and collaborative healthy living will lead to quality-of-life improvements and healthier workforces.

A sizable percentage of those who believe broadband-driven healthcare delivery is important for economic development appear to feel strongly enough to invite their

local medical community to get involved with broadband planning (Figure 6). On the other hand, the fact 28% are not including these representatives in planning indicates a need to educate economic developers more extensively in this topic.

Figure 6.

Are members of the local medical community actively involved with your broadband planning?



## **Digital inclusion – converting low-income into economic force**

Broadband is a resource that for years incumbents have sold to residential customers mostly as a commodity. Only in the last couple years have others besides community broadband activists started talking about broadband as a vital utility, thus a resource. The Haves usually are able to afford broadband whether as a resource or a commodity. Often the Have-nots are unable to afford broadband as a resource, though through public libraries do the best they can to fill the gap.

Digital inclusion is that process of creating infrastructure and broadband services as a strategic resource to benefit the poor, the working poor and a bottom portion of the middle class. Technically, the lower middle class is not considered Have-nots, but considering how many of these citizens are one paycheck or one major medical bill away from the Have-nots, I include them in the digital inclusion discussion.

A significant challenge that digital inclusion supporters face is the automatic flack of those condemning programs that offer low-income people broadband. How many times do articles about these programs are met whining “why do my tax dollars have to go to help poor people? All they do this surf YouTube videos and porn.”

Critics don't seem to understand many low-income people working two and three jobs are still need assistance just to pay for the basic necessities. They are hardly people who sit at home and watch YouTube all day. There are old people and the disabled. We see individuals without jobs because employers have left town, and re-training programs are not doing the job.

Libraries don't have enough money and computers to deal with the number of people needing access for schoolwork or regular work. Schools are mandating online courses and assignments, yet poor urban kids can't get access because there is no broadband access or no money.

Luckily there are city officials, community stakeholders, nonprofits and private-sector broadband providers who understand the realities of poor and low-income people. But what are the best ways to fill the breach?

### **Understand the main infrastructure issues**

Affordability is a problem, as is also the physical infrastructure itself. In the most of the urban areas such as Boston, Philadelphia and Oakland, large incumbents provide most of that infrastructure currently, and the state of that infrastructure is lacking in poor neighborhoods. The shortcoming is often tied to the lack of competition. There is no pressure to improve price, customer service, creative thinking or innovation. Incumbents' reliance on combining data, voice and video services in a “triple play” package is particularly unaffordable for huge segments of low-income communities.

“I am Vice-Chairman of the Partnership for Connected Illinois, a vestige of the BTOP broadband funding, which is active but only existing on the fumes,” says Bruce Montgomery. “We’ve received no funding going forward from the governor’s office, the mayor’s office or anybody else. Our report that was funded by our BTOP efforts indicates that in metropolitan Chicago there’s no positive movement of broadband availability or affordability for a large number of residents of this city.”

To Montgomery, it feels like particularly Black residents and Spanish residents have been marginalized by the lack of choice of services, and the high price of those services offered. Some can get DSL but nothing that matches speeds in the suburbs.

“I had a senior executive of Comcast in my office about a month ago and I shared with him my feeling about broadband - that when you give me a certain download speed, but a fractional upload speed, then you’re really saying to customers just consume,” Montgomery states. “The reply was, he called me arrogant and in essence said, ‘you stated a good case but you should not expect symmetrical service. That was too much to ask for.’”

By their policy and pricing, incumbents are happy to have legions of people consuming content. That seems to be their business model and their corporate thinking. However, customers want to use the Internet to create as well as consume. This goes for low-income neighborhoods as well as the rest for metropolitan areas.

Despite PR-Speak phrases to the contrary, incumbent actions such as their legendary customer support, speak louder than words. “Digital inclusion” programs that results in 10 or 12 Mbps and a meg or two upload is as inadequate for low-income people as it is for residence and small businesses in the larger population. “Speeds of up to...” is a hope, not a guarantee. Not every household has kids in lunch programs. The execution of these programs can be uneven. And don’t forget the story about New York, where Verizon claimed they installed FiOS infrastructure in the street but they didn’t plug it in the homes.

More importantly, there is an inherent “aura of inequity.” Whether a person is low-income, poor, unemployed, elderly or one paycheck shy of disaster, these aid programs leave people stigmatized, trapped always two steps behind the rest of the city. Private companies are unwilling to upgrade their copper infrastructure because they can’t make their margins from poor people, and likewise are unwilling to provide quality customer support.

Compounding these issues, many low-income individuals have the mistaken notion that their smartphone make them a part of the broadband generation. Technically true, but on the lower rung. A low-income person who only has a smartphone has 10% - 20% of functionality, lesser speeds and lesser potential for creativity than a

upper-middle person in the suburbs with three laptops and five smartphones and a screaming 100 megs.

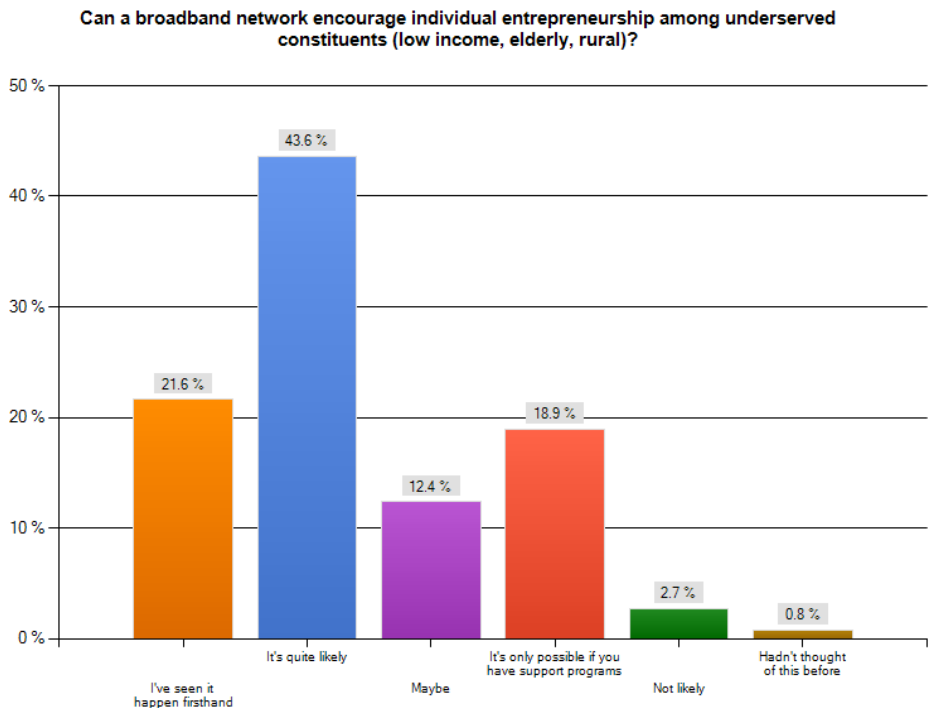
In order to be a genuine resource, the infrastructure must have credible speeds (25 – 50 Mbps symmetrical), be reliable, be ubiquitous and be affordable. By default, that means competition must be part of the equation or activist must bring some new powerful lever to the table to increase action by incumbents.

### View low-income residents as economic development resources

For all of their good intentions and successes of providing a lifeline of digital inclusion, we need aid programs that transform low-income and poor people as economic resources within the community. Rather than the old “subsidy” model, governments and companies need to pool broadband grants into infrastructure investments that low-income communities manage for the good of their individuals and entities. Let the communities own and operate their own infrastructure.

In the IEDC survey, respondents also were asked if they believe broadband can be used to encourage low-income individuals to become entrepreneurs (**Figure 7**). A significant 65% have either witnessed this type of outcome, or believe such an outcome is likely.

Figure 7.



19% believe the only way to produce this outcome is to put support programs into place. There has to be programs that teach people basic disciplines such as how to create effective Web sites, or operate a business.

Economic developers should keep local stats on how many low-income constituents leave the unemployment rolls to become entrepreneurs due in some part to sufficient broadband being available. It also would be helpful to track how many of these constituents leave jobs to become entrepreneurs.

Regardless of whether individuals join and advance in the work force, they become entrepreneurs or their community businesses maximize digital commerce, highspeed access and robust competition will make the difference. While some may say the cost of fiber is why they can't afford to invest in poor neighbors, remember Ron Deus and NetX in Cleveland. They are making broadband adoption strides in low-income neighborhoods with the power of gigabit wireless.

### **Too much hype can cloud the real digital inclusion message**

“The headlines the next day said ‘Free gigabit fiber to public housing residents,’” recalls Tom Esselman, CEO of Connecting for Good, an organization that bridges the digital divide. “And I guarantee you that half of the people in the population we are trying to educate and inform never even read the article. They just saw the headline and said, ‘there you go. I have been waiting for years to pay \$300 to get Google fiber. And you are telling me that I just have to be a poor person living in public housing to get it for free.”

The PR about “free” has done more to perpetuate the digital divide and the lack of understanding of the divide than to help people solve the challenges of digital inclusion. Initially this type of coverage is helpful. It highlights the problem, it shows that responsible leaders are helping to solve the problem, it rallies people to the cause and it gives hope to people on the wrong side of the digital divide. Unfortunately this publicity presents a few problems.

My grandmother often made the comment that sometimes when you give people things for free they don't appreciate it. From her perspective, you want to help people when they're in trouble, but at the same time you don't want to create a situation in which they don't appreciate your efforts, meaning they abuse the service or don't use it. People who are leading digital inclusion activities can be caught in the middle as they try to help solve the problem and simultaneously have to fight the backlash.

Esselman has been in the position only a few months, but one of his missions is to publicize less about the “free stuff,” and do more advocating about how you use a strategy of combining collaboration and impact. Esselman relies on this “because for one thing, it's the only way to move the needle on a problem this big, and

simultaneously we have to continually demonstrate to people that we are having an impact on digital inclusion.” In addition to rallying the community, this helps build better support among the general public.

Connecting for Good let’s people know the organization bring another strength to the table that every city should replicate if it wants to be serious about digital inclusion. They operate from within the urban core, their staff is made up of people from the urban core, this idea of meeting people where they are at is taken to heart by everyone in the organization.

Lazone Grays Jr, President/CEO of youth advocacy group IBSA, Inc. in Topeka endorses that strength. “Anyone can bring WiFi into a building and hook it up to a computer, but libraries and other stakeholders must develop programs or services that raise the participation of neighborhoods and produce measurable results. It’s key to have people from the neighborhood developing these programs. You can’t take someone who’s never lived in the neighborhood, or who hasn’t ever worked there, in charge of creating programs. All you get are very mediocre results.”

As a service organization, Connecting for Good provides all three legs of the stool necessary for effective digital inclusion: they provide connectivity, they provide hardware and they provide training. To aid in the implementation of the organization’s strategy plan, Esselman employs what “ I call the four ‘E’s, which is education, employment, economy impact and the environment. That helps us to clarify the ways which we dedicate our time, resources, energy and efforts by working in these area.”

### **Making digital inclusion real**

There is a myriad of digital inclusion programs across country, some run by nonprofits, a good number of them run by city agencies. There is always an endless supply of folks to criticize any program that aids poor people, but agencies and nonprofits blunt some of that by operating fiscally sound programs with clear-cut objectives and often with a net win for the community.

“My main focus is making sure we don’t have digital gated communities,” says Chattanooga Mayor Andy Berke. “We’ve got to open this up for everyone. For a city like Chattanooga that has publicly supported broadband, we own the network so we need to find ways to expand it out as widely as possible.”

EPB, the city public utility that owns and operates the network, announced a program at the beginning of the last school year that it’s makes 100 Mbps broadband service available for a \$26.99 monthly fee for households with students getting free or reduced-fee lunches. EPB executives structured of the program based on their analysis of the cost to provide such service for about 21,000 students.



From the city government side, their objectives are to 1) make sure families in the target area receive ample notification about the product project so kids take sign up for it, and 2) the families make best use of the service. The city works with the Benwood Foundation to launched tech-training programs to help citizens learn about computers and the Internet. Additionally, Tech Goes Homes is a nonprofit organization that offers a program for adults, school-aged children and preschoolers that provides 15 hours of training to help participants acquire the skills to be able to access information and resources online. Upon completing the course, participants also have the option to purchase a new Chromebook for only \$50. The program also offers assistance in securing low-cost home Internet service.

Community Corporation of Santa Monica is a nonprofit that restores, builds and manages the 100 low-income housing units in the city. Most of these have community centers within them that provide adult education, childhood development activities and after school programs. The City Council approved a deal with Community Corporation that enables the city-owned network to provide the units, as well as general residents qualified as low-income, a gig service for \$69 or \$48 a month if they cannot afford the higher rate. Up to this time, the network is only provided services for city government and local businesses. Also as a part of this deal, the centers get access to computing equipment and a gig for free.

The city did not get too much flack for the program in large part because the Obama administration had set a goal of getting a gig to homes in general, thus giving themselves political cover. The city also was smart with how they structured this deal. In addition to providing services to the public housing units, the city is also providing services to multi-dwelling units (MDU) that have nine or more units within them.

By proving services for regular MDUs as well as public housing residents who can afford the rates, the city doesn't have to touch the General Fund, just allow itself a longer pay back time for expanding service. The city is giving itself 10 years to recoup its investment in the program, which is a much longer time than takes to recoup the investments for government or business services.

"The bottom line is that, and are our mayor and city council have the political will to be aggressive with the city's digital inclusion efforts, and the staff is developing great creative tactics to Drive their efforts efforts," says Wolf.

### **Meaningful broadband adoption**

These examples show how cities are assisting with bridging the digital divide with Internet access while not providing free access. There are programs offered by private entities and nonprofits that offer deeply discounted access, and a recently modernized FCC Lifeline program will increase these options. But we still have the dilemma, says Esselman. "We clearly have seen there is a backlash when we talked

about free Internet. But without free Internet, we are depriving those that we know are our most underserve residents from even having the opportunity to improve their life.”

Gigabit Nation interviewed [Colin Rhinesmith](#), Ph.D. and Assistant Professor in the School of Library and Information Studies at University of Oklahoma, who presented some interesting data on broadband. He had conducted excessive research on how to get better adoption rates within low-income, seniors and youth populations.

Rhinesmith coined the term, “adoption meaningful broadband,” which means you tie the act of accessing the Internet with a significant action or outcome. Last decade, the organization Wireless Philadelphia recruited over 100 nonprofits, community activist organizations and city agencies to find ways the Internet could facilitate their social service delivery. For example, the agency that offered services to un-wed mothers set up Web tools, and as long as clients met once a week or participated in job training programs, they could keep a refurbished laptop and a broadband account. The social services could reach more clients online, clients wouldn’t have to miss work to receive their services and clients can find additional ways to use broadband in their training, education or work.

Meaningful broadband adoption, even if you are giving away free broadband services, the community, the city, various organizations, and others receive benefits. Low-income residents receive tangible benefits beyond access. The general public sees progress toward particular goals.

“We subsequently get to talk about adoption in terms of personal or community advancement and define what that is, while at the same time motivating and educating low-income residents to adopt the behaviors of productive broadband use,” states Esselman. Connecting for Good is bullish on partnerships with supports services such as Literacy KC, safety net providers like Reconciliation Services and Connections to Success that works with people transitioning out of incarceration. Is probably safe to say that’s what the organization is doing is creating an ecosystem for digital inclusion with some of the byproducts being a community workforce and a cadre entrepreneurs.

## **Analysis**

I attended a recent broadband conference, and it hit me that naming my series of writings Community Broadband Snapshot Reports was more apropos than I realize when I started these in 2006. There are advancements made in broadband technology, strategy, alliances, media coverage, etc. almost daily. It's impossible to go down one path at a time because someone or some entity presents a different finding, you can't ignore it just because you're worried about making a mistake.

Any analysis is a snapshot, the best take we have on a particular technology or strategy, at least for this month. At some point, you have to stop circling, make some decisions and move forward as best you can. Stay flexible. I tell my soccer team I coach "stay on your toes, try to anticipate, make the best move you can, if you have to recover quickly, and get it done."

The following are some of my analysis based on my interviews and observations. If you haven't already, download a copy of my latest book, [\*Building the Gigabit City\*](#). Many of the lessons outlined in the report are complemented and expanded upon in the book.

### **We have to get our heads in the game.**

Probably few things have motivated large urban cities more to explore broadband than the triumvirate of Chattanooga, Google and Kansas City. Google has its image by being an inspirational well-funded ISP that was everything the big incumbent ISPs are not, and Chattanooga and KC that are big cities showing how it's done.

A Philadelphia business owner Robert Bright who worked on that city's citywide wireless committee said, "without question, the more input you get when identifying constituents, customers, and so on, the better. You cannot ignore the political world given the lobbyists and incumbent businesses. You need to get a good understanding of what are the potential obstacles out there. But when I put my private industry hat on, I have to make decisions. I can't afford to circle on all of my decisions. Government will not move forward by continual circling.

There is a lot of circling happening right now in Tier 1 and 2 cities, as well as in smaller communities. Circling around questions such as "can we be the next major metro with our own broadband network" and "how can we afford it?" Circling around funding options and business models. Doing the Circle Dance with prospective partners. But at some point soon, cities have stop dancing and take action, create a pilot project, sign Memoranda of Understanding, create and empower an action committee. If they wait for competition to create the market effect we need, cities will continue to be frustrated.

When you ask “does this address everyone’s needs,” “Is it good for ‘x’ or ‘y’ organization,” “What if Verizon wants to do this or that,” you spend a lot of time. But it’s time that can be well spent. However, do this too long and there’s a point when you run out of gas. Robert states, “We could still be doing the business plan today if I look at everything that’s happened in the business world with broadband technology from last summer to this summer.”

It’s time to take action!

## **We have to be about the business of broadband**

The “business of broadband” is that process by which communities use the technology to improve economic development, transform education and expedite healthcare delivery. Owning the business of broadband, whether or not you own the physical infrastructure and services, is how communities build an infrastructure asset that produces short- and long-term returns on the communities’ investment.

This is a group-ownership arrangement. There might be a group of technology firms, a local government agency or the public library leading the broadband charge, but there should be many constituencies participating in the ownership.

Cast your net wide in terms of constituencies that participate in the business and marketing strategy development. Each constituency represents an owner as potential customer. The more each constituency generates ideas for the network’s use, the stronger is their feeling of ownership. Every broadband need or desire you identify from each group, the more opportunities to sell network services. Ultimately, this is how you maximize the return on the network’s investment, and the network becomes a community asset.

Mary Beth Henry states, “you have to collect data locally so you can best understand what the problems and opportunities are that you’re trying to address, you can’t rely on ‘canned’ stats. In Portland, 15% of our constituents overall don’t have access to Internet, but 30% constituents over 65 years old and a similar number of constituents who make under \$30,000 annually don’t have access.”

Henry’s team ran five focus groups for people without Internet access, one each from the city’s Spanish, Chinese, Vietnamese and African American neighborhoods as well as people with disabilities. Her team provided the participants with childcare, meals and a \$25 stipend. “Cities have to realize that a lot of the people who do not have Internet also don’t have a lot of time to participate in surveys,” states Henry. “People really appreciated that 1) the city cared enough to ask them what they thought and produced a written report of their answers, and 2) the city value there time enough to compensate participants.

From the beginning, all of your constituencies, including low-income and others currently not on the network, should be part of the community network planning. Chattanooga, Kansas City, Longmont, Colorado and the growing list of urban centers have created sturdy foundation of community ownership of the broadband asset.

### **Stop circling - drive!**

“We hate sessions that are just interesting conversations,” Barrett Sydnor, Strategic Contributor at Brainzooming, the management consulting firm the created the Kansas City constituent brainstorming session. “We want sessions that actually end up with thoughts, ideas, tasks, tactics and strategies that someone – maybe us, maybe somebody else – can actually move forward, show progress.”

At some point, you have to draw the line in the sand and move your broadband forward. Even if you haven’t completed the feasibility study or designed a pilot project, write an action plan, recruit planners from various constituencies and establish a vision, deadlines, goals and milestones.

The Brainzooming followed a script used with other clients. “Both facilitators and group members represented at least one of three types of individuals. Some have strategic expertise with a broad overview of things. Others have frontline expertise, meaning they have a close-in view or experience with customers or products. The third group has creative expertise, so they are able to think outside the box.

Overlying these characteristics, Brainzooming added another element. They searched out people who would speak with an expert voice, and counterbalanced them with the voices that would challenge the status quo, maybe challenge the experts, though they didn’t let the latter voices derail the conversation. And then there were the typically unheard voices, the people who normally wouldn’t get a seat at the table, who wouldn’t be asked for their opinion.

Prior to the brainstorming session, Brainzooming conducted an online survey of session attendees plus people who couldn’t attend. In the survey respondents could address issues presented in the sessions as well as voice additional concerns. Snyder states that, “The Brainzooming wrote a 100-page report with literally thousands of ideas that the participants collectively generated, and presented this to the community about a month later.”

### **Wireless has a big role in gig cities**

In the past 12 or so years we have been plagued with a particular affliction, which is a weird combination of technology near-sightedness and farsightedness. In 2006, municipal Wi-Fi was going to be the salvation of our cities. At the end of the decade, fiber was the future. Or wireless. It depended on which broadband religion you

believed. Last year, it was fiber or nothing. In the past two or three months, gig wireless is making hearts go “pitter pat.” It seems that some in our industry forget that, by and large, individuals, businesses and organizations don’t care very much if Internet access arrives wirelessly or by wired connection as long as it is fast, reliable, secure, and affordable.

In the “historic” urban core, there were neighborhood blocks of residential homes, then a half-mile or a mile stretches of streets with offices, restaurants and retail stores, with cross streets alternating between apartments, single-dwelling homes and more retail outlets. Eventually there were streets of low-income homes and likely public housing units – essentially multi dwelling units (MDU) or apartments – consisting of people who have the biggest need for digital literacy.

With this hybrid of low-income residences, possibly public housing here and there, middle-class residents, long-time commercial corridors and an influx of small businesses, it’s no easy feat to map broadband strategies to serve those in need. Budget conscious city governments and incumbents feel that proposals to build fiber everywhere to be a tough sell to local constituents and stockholders. But the current copper infrastructure isn’t going to cut it.

There is a growing number of U.S. industry folks who see a role for wireless today and not just for the Internet of Things. There are two factors converging to help fuel a resurgence of interest: costs and technology advancements

Wireless infrastructure is cheaper than fiber and more flexibility. Deus feels that, “Because of this flexibility we are experimenting with different business models, different pricing, maybe even different service levels, to figure out which variables works. We can look at online funding options, public partnerships, potentially free access for some, pay-as-you-go type of service for others.”

Advancements with wireless technology, including the ability to coax gig speed out of wireless infrastructure, enables it to meet the need for speed, reliability, security and affordability. In reality, there has been WISPs such as NetX, Computers & Tele-Comm, Inc. and others that have been provided very highspeed wireless services to individuals and companies in urban areas for several years.

### **Wireless/wired hybrid infrastructure reduces deployment costs**

As cities learn about these the [deployment strategy of leap-frogging wireless with wired](#) being used by RS Fiber and other rural co-ops, expect many urban areas to replicate the strategy. The RS Fiber co-op was formed to represent the communications interests of 10 Minnesota cities in Renville and Sibley Counties. A fiber backbone will tie together the 10 towns with fiber going to the premises. It will take three years to complete the fiber filled out indeed more densely populated towns, plus another two to three years to buildout to the sparsely populated areas

and farms. But until then, the co-op will provide 25-megabit symmetrical wireless and telephone services from the backbone.

So, rather than have constituents continue to suffer with bad – or no – broadband for years, the wireless infrastructure has been lit for several months and everyone is reaping the benefits. All RS Fiber had to do was requisition space on the water towers and grain legs, integrate the fiber into the point-to-multipoint hubs and distribute CPE to customers. The wireless services enabled quick cash flow. RS Fiber has a loyal customer base for the fiber before the buildout is complete. When the fiber network is complete, the wireless infrastructure becomes a backup network.

Think about it. How many low-income and middle-class homes and small businesses would salivate at 25 megs symmetrical broadband, regardless if it came from wireless or fiber? How many political or incumbent battles could be avoided if a community co-op or community foundation took the reins of a wireless infrastructure?

Though there will always be complaints about giving discounted services to low-income people, elected officials and community stakeholders should endure a less contentious environment with the less expensive price tag of wireless. And like RS fiber, urban broadband teams can still pursue fiber for the long-term strategy.

In the end, cost will likely rule the day. Jaime Fink, CPO and cofounder of Mimosa, champions a hybrid wired/wireless infrastructure. “Even with dig-once policies, there is still significant cost with laying fiber from the curb to individual residences or businesses,” Fink says. “Wi-Fi has its place with outdoor data communications, but even with 5G, trying to spread the unlicensed spectrum around indoors to individuals using multiple computing devices and smart applications will be problematic. Our approach to spectrum sharing eliminates this problem, while simultaneously allowing us to deliver a gigabit to the home.”

Imagine how many broadband projects couldn't get off the ground sooner if you can reduce your buildout costs by 80% - 85%. Fink estimates in costs \$200 to \$300 per premise to deliver several hundred megabits or a gig of point-to-multipoint wireless, whereas it may cost \$1000 to \$3000 per household to deliver fiber.

The savings are more than dollars; wireless saves time also, as was evidenced by Google recently purchasing Webpass, an ISP specializing in point-to-point deployments. Google is finding that incumbents, by their anticompetitive nature, do whatever they can to prevent upstart competitors from gaining traction in various markets. Those delaying tactics can cost a company like Google or municipalities valuable time. Municipalities also have vertical assets such as rooftops of public buildings, and greater leverage negotiating access to privately held vertical assets.

As the industry ponders Google's wireless moves, what will they make of [Facebook's dabbling in wireless](#)? In a PC magazine article, we find out about “Project ARIES, a plan to extend connectivity to rural areas cheaper and faster, so people who live

close to cities will be able to access the Internet. But Facebook's newest project is on the ground. It's called Terragraph, a low-cost, high-speed wireless network that will replace fiber in big cities." Facebook is testing Terragraph this year. Community broadband planners need to keep a watchful eye on these powerhouses.

### **Mobile hotspots for your infrastructure strategy**

In my report on libraries and broadband, I wrote about a particular innovation that merits review as urban cities develop their infrastructure deployment strategy - mobile hotspots. These are small devices that qualified low-income residences can use to access LTE networks such as Sprint and T-Mobile. Their average download speed is 8-9 Mbps and come with no data caps.

Because there is no data cap, the devices qualify as a good stopgap measure as communities work on acquiring faster infrastructure. Mobile Beacon is a nonprofit that is limited to selling to other nonprofit organizations. Libraries, the primary market Mobile Beacon sells to (Sprint has coverage in 500 cities), loan these devices to their patrons for any time between several weeks to six or 12 months.

During the organization's trial period, 75 libraries field-tested hotspots found them to be very popular, according to Mobile Beacon, a non-profit organization that distributes mobile hotspots. The New York Public Library (NYPL) system, with 92 locations in the Bronx, Manhattan and Staten Island, ordered 10,000 hotspots. In recent years, the NYPL prioritized technology with the addition of more tech labs and greatly increasing computer training to advance its patrons beyond digital literacy to digital fluency. New York City is articulating what a digitally inclusive community should be, with the library being an important part of that conversation.

"Millions of New Yorkers do not have Internet at home, even as so many of us take our connectivity for granted," said NYPL President Tony Marx in a 2015 press release. "It is a regular occurrence throughout our system to find folks sitting outside our branches before we open and after we close, because they have no other option." The grant funding for the NYPL's program was from Google, the Knight News Challenge, Open Society Foundations, and Robin Hood Foundation.

Because the units have to be returned within several weeks, at the outside within one year, it's not a long-term digital inclusion solution. But libraries' willingness to alter the financing model by charging for the devices, coupled with the FCC revising its Lifeline program, could elevate mobile hotspots' role. The Lifeline program initially subsidized low-income families' \$10/month basic phone use, and now the FCC wants to expand the program by subsidizing broadband access.

Mobile Beacon's Managing Director Katherine Messier observes that, "Mobile hotspots resolve a serious challenge because patrons many times can't satisfy their Internet needs in those 30-minute to 2-hour time allotments that libraries have to



enforce. The hotspot-lending program has waiting lists at many of the participating libraries.”

### **Who owns the physical broadband infrastructure?**

Who owns the physical infrastructure is key. Community ownership and local government ownership do not have to be one and the same. Co-ops are private-owned entities, for example, but they exist for the betterment of the community. Huntsville, Alabama is popularizing the option of a community owning the infrastructure while outside providers offer broadband services across the network.

When a private sector entity or an organization not created by a community owns the physical network, the community’s interests may not always win out if there is a dispute. Fort Wayne, Indiana formed a public private partnership with Verizon to bring fiber connectivity to residents. However, when Verizon sold its FIOS assets to Frontier, Frontier promptly raised rates 46 percent on subscribers’ TV services and introduced \$500 fiber installation fees, effectively neutering fiber’s progress there.

After Google announced the Kansas City deal, Connecting for Good and the Rosedale Development Association proposed a Wi-Fi co-op that would tap into Google Fiber to provide Internet connectivity for Rosedale, a low-income community. The community has no library or community center that might act as a broadband hub. Google initially rejected the door on the idea, which led to a lot of bad PR. Eventually the company totally revamped how it addressed low-income residents’ needs, for the better, but it had to win back its goodwill with the community.

The lesson here for every city is, it’s hard for communities to hold the driving wheel when they don’t own or at least rent the vehicle. They are ultimately passengers in someone else’s ride. At some point, the needs of the network owner could trump the needs of the community.

If you cannot cover all of the build out costs, what are the alternatives for funding the infrastructure and what are the trade offs of pursuing these alternatives? John Brown, CEO of CityLink Telecommunications told Gigabit Nation in an interview that communities have to do a great job crafting the deals they strike with private sector companies if broadband is to deliver the benefits that communities expect.

### **After smart grid comes...**

Many cities got their community broadband projects started by installing fiber to beef up their public utilities’ smart grids. Now there’s a new type of grid that may part of the broadband picture – microgrids.

San Leandro, California got its broadband start when a local business owner decided to start a service provider and partnered with the city government to offer local businesses fiber services. The city expanded on the original 9-mile fiber build with additional infrastructure to address city needs.

In summary, a microgrid is a localized group of electricity sources that can be part of an electricity grid, or operate in isolation. And either mode, broadband facilitates its operation. Olidata Smart Cities is a technology provider that helps create smarter cities by optimizing people, places and things. The company's core technologies leverage microgrids and the Internet of Things (IoT) to achieve, among other things, carbon emission reductions and energy security.

Olidata has secured a tentative commitment for a first phase installation of an island microgrid on the San Leandro Tech Campus, to be completed in the summer of 2016. The city's fiber network is a key component of the installation. This installation is helping to jumpstart the small businesses that will help Bay Area communities respond to the rapidly expanding demand for the design and installation of advanced renewable energy generation systems. The City and Olidata are planning to expand the microgrid (along with fiber) into other parts of the city with a particular focus on the vast acreage of underutilized rooftop and parking lot space in the City's commercial and industrial district.

Many cities may want to consider microgrids as part of a long-term "smart city" buildout. As public utilities are doing with smart grids, they can use broadband to facilitate microgrids, and once the broadband infrastructure is in place enhance it to support residential and/or business customers.

### **It's all about that money, honey**

Most midsize and large urban cities have lots of land mass and lots of people, so the thought of covering one of them with broadband creates a lot of heartburn. But should it? Some folks can't get past the price tag for the infrastructure, and a self-imposed limitation on possible financing options (raise taxes, float a bond, pray for a Google check).

Communities need to step back and consider the problem from different angles. Rather than limiting themselves to the usual funding sources and then despairing when these sources don't work out, they should cast their nets wider, looking beyond the institutions and partners that aim to fund broadband networks.

In a paper released several months ago, I challenged broadband teams and community stakeholders to identify needs and opportunities for the various constituencies. Then identify government agencies, philanthropic organizations, service groups and wealthy individuals who can fund solutions to meet those needs.

Finally, create a game plan for asking those funding sources to underwrite large chunks of the broadband bill.

This is not quick, often it's difficult and you may have to build your infrastructure in segments. But it can be done. Download a copy of this report ([Show Me the \(Hidden\) Money for Community Broadband](#)) and put your creative constituents to work raising funds.

### **Community foundations. Why didn't we think of that?**

Community foundations are in a good position to take on a thought leadership role that influences municipalities and communities at large about broadband," says Leon Wilson, Chief Technology & Information Officer. "Because we are living in a connected era where everything we do is influence by our ability to stay engaged physically and digitally, it is incumbent upon community foundations to find a way all residents can play a role in that digital age."

Foundations might fund efforts by nonprofits and others that want to expand or deploy broadband, or they might work with cities and counties to inform them, incentivize them, to partner with them. The Cleveland Foundation is taking on the latter role within Cleveland and the surrounding areas of the county. "We are helping city and county leaders to understand the importance broadband, and winning over any who are reluctant to get on board," says Wilson.

There are over 400 foundations, some which have over \$1 billion in assets (including Cleveland, Kansas City, Chicago, Boston and Silicon Valley), and many with under \$1 billion. The large and some of the midsize cities have much greater flexibility to invest in large projects that are transformative in nature. The smaller foundations focus on projects that can impact organizations and local economies immediately such as the Boys and Girls Clubs of America and public libraries.

Regardless of the potential funding role, all foundations can play a key part in the effort for raising funds. My report on fundraising explains how to do a needs assessment that uncovers potential funders. Because foundations do a lot of fundraising, it seems logical that for them to set up an ecosystem for raising money for broadband.

Community foundations are nonprofit entity. As a nonprofit, the foundation can build, staff and operate a community network. More likely, the foundation can create a nonprofit entity to run the network, similar to the Cleveland Foundation's Evergreen Co-op, a quasi nonprofit that installs solar panels. The co-op was spun off and diversified into laundry services that they provide to hospitals and hotels. Local or national businesses can make donations for the buildout of the network, as well as be network customers.

Connect Your Community is a nonprofit that has recruited, trained and equipped more than 10,000 Cleveland and Detroit residents to connect to the Internet. Bill Callahan, Director, observes that a number of those aggressively building out broadband infrastructure are nonprofit organizations. “Cities and foundations pursuing this tactic have to be extremely diligent in use of legal and accounting experts to set up the structure,” he says. “Co-ops offer different tax benefits, but it definitely behooves cities to explore this option.”

Wilson notes that recent changes in IRS policies are making it so that foundations and other nonprofits can be more flexible in the financial arrangements cover broadband projects. “In addition to traditional grants, foundations can provide social investments and Program-Related Investments (PRI) that are similar loans, but they take equity positions similar to that of venture capitalists. Instead of 10% interest, the foundation might take only 1%. Every foundation will have its own level of risk avoidance.”

### **What happened when the big-money investors show up?**

People often ask whether “big time” investors will consider community broadband to be a profitable investment. By their nature, public networks are concerned mostly with generating enough revenue to breakeven and keep up with technology upgrades, not generating the kinds of profits that excite venture capitalists.

However, the investor community’s interest in broadband perked up with the news of a particular deal in Utah. The Utah Telecommunications Open Infrastructure Agency (UTOPIA) is a group of cities that banded together to bring affordable broadband via an open-access network supporting several ISPs. In 2014, UTOPIA announced a public private partnership with Sydney, Australia-headquartered investment banking firm Macquarie Capital, in which Macquarie will build the fiber network without burdening taxpayers with additional debt.

Then in 2015, Macquarie announce a similar deal the state of Kentucky, and a firm call SiFi Networks from the UK indicated they were pursuing a public private partnership in another state. On the broadband conference circuit, several companies are letting it be known that they at the teamed up with a financial interest to make investments in promising community networks.

Oliver Pilco, CEO of Access Infrastructure Partners LLC, has participated in several telecom industry investments. His vantage point gives him an interesting view of the lay of the land. “Investors I work with don’t necessarily need a fast turnaround on their return ROI and they’re ok with annual returns of 5% or 10% over several years,” he says. “They’re comfortable with investing in a wholesale (i.e. open access, middle-mile infrastructure), but these investors definitely don’t want to be on the retail side of the ISP business.

On the city/county government side of the equation, elected officials generally have two main concerns. First, they want to reduce a significant amount of their expenses by using fiber to replace incumbents' data and voice communications services. Second, they want to ensure the public good, particularly as it pertains to closing the digital divide. A potential third concern is the potential to raise money from the services the city sells. For the most part, governments and public utilities want to generate revenue to cover network expenses and future infrastructure expansion, but expect them at some point to want to expand revenue beyond these base lines.

However, there are conflicts that make it difficult for cities and investors to work together. "Investors want to maximize their investment in a broadband network," Pilco continues, "and when cities own their network services, that is money is not adding to the investors' ROI." Also, some city officials feel that the revenue generated by anchor institutions such as hospitals, libraries and schools should go to cities directory to help it pay for the network. In that scenario, this becomes one more revenue stream that's not returning to investors.

To further complicate things, investors and city leaders both desire to have the revenue that comes from anchor institutions and government spending, but some are not eager to offer retail ISP service to residents and smaller businesses. Cities are bullish on providing digital inclusion but neither cities nor investors see this is a big revenue generator.

Some of the initial excitement generated by Macquarie and SiFi stem from the assumption that there would be revenue sharing between cities and the investors. After reviewing the deals, it turns out that Macquarie actually puts the communities at financial risk because the cities have to charge and collect residents' utility fees and put the cities' money on the line.

"If you arrange to revenue share from the beginning of the relationship, all the partners are treated equitably and several years later cities can earn more of the revenue," say Pilco. Cities and investors have to resolve situations where the city has built a sizable percentage of the infrastructure, such as in Columbus, OH, which has 400 square miles of infrastructure already built out. "It's possible a number of small and regional ISPs may form a consortium to serve a city or county using municipal infrastructure, and the consortium becomes the investment opportunity."

## **Conclusion**

This is a new beginning of a concentrated focus under needs and opportunities urban and large metropolitan areas. While the Financial numbers are daunting when we look at large urban area, the resulting benefits are huge. Chattanooga, Kansas City and Columbus, as well as smaller cities such as Lafayette and Santa Monica, have been pioneering broadband tactics and strategies for a while. But there are plenty of lessons as well urban cities can learn from their rural counterparts.

The key is too stop circling, put finishing touches on final plans and go, go, go.

### **About the author**

Craig Settles helps communities [develop their business plans](#) for broadband networks, identify customers for the network and assists with economic development fundraising in support of these networks.

For over 25 years Craig Settles' [workshops](#), consulting services and books have helped organizations worldwide use technology to cut costs, improve business operations and increase revenue. Mr. Settles authored the broadband business guide, "Building the Gigabit City," he writes [a blog by the same name](#) and many in-depth analysis reports makes him a prominent thought leader on executing appropriate broadband strategies. He currently hosts [Gigabit Nation](#), an Internet radio talk show, and is Co-Director of [Communities United for Broadband](#), a national grassroots effort to assist communities launch their networks.

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