Building the Gigabit City

A Planning Guide Vol. 2.0

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Compliments of Calix and Pulse Broadband

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This is dedicated to the doctors, nurses and rehab specialist of Alameda Hospital, Alta Bates Summit Medical Center, Rehab Without Walls and Devine Home Care. These folks are true miracle workers.

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Introduction: A stroke of insight about community broadband

"What do you mean, I had a stroke?!"

I'm a scale of 1-10, with 10 = dead, I was hovering around 6 when they rolled me into the Emergency Room. Lucky for me, the stroke I had at the end of January left my brain just lightly scrambled instead of deep-fried. Eventually I was able to start to thinking about the revision of my book, *Building the Gigabit City*.

One of the things I struggle with is figuring out how to convey the serious need for community broadband. As I started revising my book while I worked through my recovery and rehab, a thought hit me. In many ways this R & R process would have been limited – if not actually impossible – had I been living in a small, a rural or even an urban low-income community without broadband.

When someone suffers from a stroke, responders have three hours to get her or him serious treatment or else the patient will not recover from the debilitating effects of the stroke. I was lucky, but for a person living alone in a community with bad communications infrastructure, the patient can easily fall outside of the three-hour window.

Wireless and other technology enable emergency responders to be able to treat the patient while they are still at their home and in route to the hospital. You need sufficient broadband to make this a reality.

I didn't know it at the time, but Alameda [CA] Hospital has a righteous stroke center. The neurologist who runs the center has computers, monitors and a server at her home. When I hit the ER at 10:45 that night, she directed the entire team of five or six doctors and nurses from her home office, and saw everything they saw. A feat highly unlikely in broadband-deprived communities.

After a serious event such as a stroke, the presence of family and friends is valuable to a patient's recovery. Facebook, Twitter, video clips and audio messages were just what the doctor ordered. All of these communication tools are facilitated by broadband.

Being self-employed, I really didn't have time to be ill. Though some of my physical limitations affected my work, these were easier to deal with thanks to dictation software. Internet capability enabled me to "teach" the software to conform to my business vocabulary. I was able to resume my Gigabit Nation radio show in April, and the broadband capabilities that enabled the shows allowed me to conduct interviews and research for the book.

My rehab therapists at the hospital and at home were excellent, but they couldn't be there all day. When you have stroke, you have to use the affected muscles constantly in order to heal them. A company called Flint Rehabilitation Devices developed a product called MusicGlove, which incorporates sensors, software, the Internet and a Guitar Hero-type game that tricks your hand into believing it's actually moving. After a few weeks, the hand catches on and begins to move.

Dr. Nizan Friedman, CEO and Co-Founder of Flint, believes broadband has particular

value in small rural communities because it bridges the gap to knowledge, medical or otherwise. “People can access and use applications such as ours,” he says. “Patients can tap into expertise being used by leading medical facilities in the country. Furthermore, with sites such as Twitter and Facebook, collaboration and motivation between patients is now possible. It all helps the healing.”

I really hope people don’t need to have a stroke before having that “A-ha moment” and realize that good and bad, broadband is magic that directly or indirectly enables us to do things we could not do before, or do them easier. Whether in entertainment, healthcare, education, business, the way we govern ourselves, the way we do life, everyone can use that magic.

This is why more of our communities must get off their hands and join in the broadband movement. As Next Century Cities Executive Director Deb Socia said on one of my shows, “We’re not going to have these great creations and opportunities we’ve been promised unless we have the networks that helps support those creations.”

So folks, time is a-wasting. "Rather than wait for incumbent ISPs to build the network your cities want and need, you can take control of your own broadband futures," Gigi Sohn (Counselor to FCC Chairman Tom Wheeler) recently told a group of us conference attendees, "Rather than thinking of yourselves as taxers and regulators, think of yourselves as facilitators of the kind of services you’ve been begging the incumbents to provide for years.” Probably the most important questions you should ask yourself are, If not us, who? If not now, when?

1. Unfair Competition? Nope. Community Broadband Is a Vital Asset

Some critics say that municipal broadband is an unfair competition to the private sector. I say - bunk!

Today consumers, business, educational institutions, medical facilities - they want fly. On space shuttles, figuratively speaking. Going at gigabit speeds. Chattanooga, TN, Santa Monica, CA Wilson, N.C., Lafayette, LA and several hundred cities and counties have fiber networks that fly. Does your community want to fly too?

Let's be clear here. Muni broadband is not "unfair competition" by local government. When Wilson's 12-person IT department planned, built and managed a network that delivered speeds when they launched 20 times faster than the best Time Warner Cable offered, that's competing with superior technology. When Comcast customers switch to Chattanooga's gig network because EPB offers far better customer service, that's competent competition. When tiny Reedsburg, Wis. refuses to compete against the large cable company on price, but beats competitors by offering greater value provided by local management, they compete based on local credibility.

But is muni broadband even playing in the same game as incumbents? Fred Pilot, Principal of Pilot Healthcare Strategies, make the case that it is silly to even consider what communities are building is in some way compete with what telcos and cable companies are marketing.

"It's a fallacious argument because the incumbents and communities aren't in the same business - a basic prerequisite for market competition. The incumbents are in the business of packaging and selling discrete bits of Internet bandwidth. They sell it by throughput speed with speed-tiered pricing for service and by volume. The faster the connection and the more bandwidth consumed, the higher the price. Naturally, the incumbents segment their service territories and product offerings to generate the highest possible profit for that bandwidth. After all, they owe it to their shareholders.

"State and local governments on the other hand aren't in the bandwidth business or selling it to generate maximum profit. They are in the infrastructure business - planning, constructing and financing it to support public objectives such as economic development and enhancing the delivery of public services. In the 20th century, they did that by building roads and highways. In the 21st, they do it by building FTTP infrastructure."

21st Century infrastructure - and vital community asset

The first step towards creating broadband as a community asset is to describe it as such. If all we want to do is create ways to pass around YouTube videos, Facebook kitties or Netflix flicks, much fewer city officials would give broadband on second thought. However, the reason communities coast to coast are spending millions dollars is soon creates valuable assets that benefit local government, economic development, education and healthcare.

A rising number of city leaders are starting to wake up to the fact that we need to reframe the discussion about high speed Internet access. Conferences nationwide are bringing together folks who have success stories about using broadband as an asset together with those who were beginning their journey. It helped that President Obama this year has blessed broadband in Cedar Fall, IA and across America as 21st Century infrastructure.

The second step towards creating valuable broadband asset is defining what success means. The network itself is not what changes communities. Whether your broadband infrastructure runs at 100 Meg (100 Mbsp) or at 10 gigabit is a secondary consideration. Whatever value your community derives from the infrastructure depends primarily on what you end up doing with the network.

To those critics who say all muni broadband efforts are doomed to failure, we say success is about how much money did you make, how much a stockholder value did you generate and so forth. Success in and of itself is still a challenging concept. However, in many communities, the value of the network its often about the intangibles, like quality of life or the ability to retain your best businesses. We can produce what seems like a positive economic impact, yet the direct dollar impact may not be felt for a while.

It is imperative that a community develop objective criteria for measuring those things that bring value to the community, and justifies an investment, for example, $25 million dollars for a mid-size city or $2 million for small town or township. The bottom line is that if you're going to spend a certain amount of the bond money, taxes, capital fund or some other investment, citizens of your community have to feel this is money for the asset is well spent.

In interviews with communities that have their own public broadband network, I asked them two very simple questions: what were your goals of the network which justified the investment in their infrastructure; and do their citizens feel they got their money's worth? Given that these communities are spending a lot of their own money, these are the main questions that matter. The incumbents and their lobbyists don't (or shouldn't) have a say in the discussion.

Communities have four ways they derive value from there network investment. They build broadband to improve the operations of city government and/or the public utility. By improving the communication and business operations of those entities, they generate their return on the investment. The ROI puts them in a position to expand services out to other parts of their of their community.

Another measure of success is using the network for economic development. Are we going to entice new businesses to town, or are we making current businesses more effective? The third measure of success is the how much does the network transform the education within the community, whether we're talking K-12, or we're implementing it at colleges and universities.

The fourth reason is 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.

Rollie Cole, Founder at Fertile Ground for Small Business, reminds broadband advocates

that we must consistently and persistently try to change the discussion from "Internet as a commodity" to "the gigabit as community asset." It this way, we can raise the importance our constituents give to public networks. This may not be an easy job.

"I continue to believe that the 'demand side' of the equation is not here yet. That is, we do not have enough people convinced that low-cost, ubiquitous computer connectivity is worth more than it costs, even if it costs more than it generates in revenues.

"We provide roads, water pipes, sewer pipes, and electrical lines to many places beyond where service fees cover the costs. We do that because keeping people hydrated, their sewage treated, and heat and light in their homes is good for them. I believe the same is true for broadband - it allows faster, better, cheaper government services, more self-sufficient economics, etc. I do not think that enough of the general public or the powers-that-be yet believe that. And I do not think talking to them will change that.

"What I recommend (and hope for) are clear demonstrations from the gigabit cities that have moved forward in the U.S. If and when their economies boom and their governments operate more cost-effectively, the case will be made. Unfortunately, it takes several years after the network is installed for those effects to show, and all our places are too new yet."

Be very clear on what your asset is

Few people fully understand what a gigabit is and the value it delivers, believes Todd Christell, Manager of Network Architecture/Support for Springfield, MO's public utility. Christell educates customers on how to maximize and find new uses for the speed they order, which for many businesses is around 40 Mbps symmetrical.

In 2001, a decade ahead of the pack, the utility offered a gigabit service over its Springnet fiber network. Very few people knew what a gig was, let alone worried about the lack of gig applications. But the local hospital right away understood that the killer app was the speed of the connection.

The hospital relocated their radiology department, and used the gig connection to enable the main facility, the ER, the clinics and other locations to send their x-rays to the radiologists "The revolutionary part was the evolutionary path to grow their business through the capabilities of our network, which became an extension of their local area network," states Christell. "Regardless of how remote their buildings were, personnel could access and manipulate data at gig speed with low latency. This immediate benefit justified the hospital's investment."

"For us, the speed is the app," says Concordia Bank Senior VP Corey Hall. Headquartered in Concordia, MO, they were one of Co-Mo Electric Cooperative's first gig customers in 2012. "We have four locations and each had a server and software to manage, maintain and upgrade. We quickly switched to just one server, which saved costs for hardware, software, plus the speed opens endless possibilities to do new things with technology we already have."

Christell sees potential for immediate and limitless benefits in cities that bring new gig networks online and create direct links to existing gigabit networks. Existing gig cities can direct connect with each other to expand the benefits they are already receiving.

Mike Bradshaw, Executive Director of Chattanooga's CO.LAB, which owns GIGTANK, is directing a project linking the city's network directly with the gig network at the University of Texas in Dallas for 3D manufacturing. He says, "The need to constantly transfer massive amounts of data while building complex products requires huge network capacity plus near-zero latency that you get with direct gig connections. The manufacturing benefits of this project are just the tip of the iceberg in terms of what is possible once more of these direct connections are in place."

For a little bit of perspective in regards to speed, here are some numbers I collected in a survey of 320 Broadband Communities Magazine readers in 2013. I wanted to find out how people correlate network speed to several economic development outcomes. 25% of respondents are city or county government administrators, managers and staff, and 4% are from government-owned utilities. 14% are broadband consultants, 12% are from nonprofit organizations and 22% are service providers including wireless ISPs.

Figure 1.0 - Speed's impact on economic outcomes

	2–4 megabits per second (Mbps)	10–12 Mbps	20–25 Mbps	100–120 Mbps	500 Mbps	1 Gigabit	Total
Attract new businesses to your area	3.10% 7	4.87% 11	9.73% 22	26.55% 60	13.27% 30	42.48% 96	226
Help local companies grow	4.87% 11	7.52% 17	20.35% 46	29.20% 66	9.29% 21	28.76% 65	226
Increase home-based businesses	5.80% 13	13.84% 31	26.79% 60	25.89% 58	12.95% 29	14.73% 33	224
Individuals' income earning increases	8.64% 19	16.82% 37	23.18% 51	25.91% 57	11.36% 25	14.09% 31	220
Revive depressed business districts	6.31% 14	11.71% 26	18.92% 42	27.48% 61	12.61% 28	22.97% 51	222
Revive depressed communities	7.14% 16	16.52% 37	17.86% 40	27.23% 61	12.95% 29	18.30% 41	224

The highest percentages of magazine readers believe 100 - 120 Mbps is the minimum network speed required for all economic outcomes except attracting new businesses to a community, for which the highest percentage (42%) believe at least 1 gigabit per second is required. This finding for gigabit speed is consistent with International Economic Development Council (IEDC) members who were surveyed the previous year. An almost even number of magazine readers believe 100 - 120 Mbps and a gig are the minimum speeds required to impact existing businesses.

It is important to look at the percentages of respondents who believe 10 - 12 Mbps speeds

will impact economic outcomes. These are low compared to percentages of respondents favoring other speeds, yet 10 -12 Mbps is what communities realistically can expect from LTE wireless networks that are being marketed as “leading edge” technology.

2. Success Breeds Success

Public network failures are greatly exaggerated by critics who misinterpret what exactly is community broadband success. Giant providers want us to believe that the only measures of success are huge profit margins, quick payback for network buildout costs and well-compensated stockholders. However, ask elected officials, civic leaders, businesses, and regular citizens, and these folks understand the value of the broadband as an asset and the return that asset has for the average taxpayer. The taxpayers for whom these networks are built to serve, often at little or no risk to tax dollars, have a very different yardstick for measuring success.

Nearly 400 public-owned networks operate in the United States, according to the Institute of Local Self-Reliance, including 89 fiber and 74 cable community-wide networks, and over 180 partial-reach fiber networks covering business districts, industrial parks and medical and university campuses. Evaluating these networks' impact on job creation, education and stirring innovation, as well as their financial sustainability, uncover hundreds of success stories that can be replicated.

A sizeable number have been operating successfully since at least 2003, and some have operated since the late 90s. These communities defined success as meeting the goals that communities used to justified the investments in their networks.

If, for example, a town spends $1 million to build a network, and broadband is one of the main reason three companies moved to town and generate $500,000 in tax revenue, that means an ROI a little over two years. If the citizens are happy and feel tax revenues justify the expense that is a successful network. If a rural county's citizens believe that the quality-of-life benefits of highspeed Internet justifies the network losing $100,000 a year and they voted for that, the network is a success.

Stop critics from dictating the terms of a community's success. I started surveying community network operators in 2014 to understand how date measure success. The survey isn't finished yet, but some trends are starting to take shape.

- About half of networks were initially built with the goal of facilitating government or public utility operations.
- Over half had a second goal of improving economic development, mainly by retaining current businesses or attracting new ones.
- Most of those interviewed had one or both of these goals initially and added more goals along the way that further justified the investments in the networks. About two-thirds report reaching or exceeding one or both of their initial goals.
- About half report their networks increased local government efficiency, boosted economic development, transformed healthcare delivery and improved education. An additional one-quarter said their networks mainly helped the economy.
- Initial investments range from as little as $160,000 to $750,000 and as much as $12 to $15 million in smaller communities. Investment amounts vary depending on a range of factors, including the size of the community, number of public resources to wire and whether residential subscribers were connected. Larger cities such as

Chattanooga and Lafayette made considerably higher investments in the initial years.

• Some networks have never operated at a deficit because 1) the initial infrastructure for government or utility use paid for itself in cost reductions, and 2) they incurred costs for expanding the network for the public that were directly in proportion to subscriber revenue growth.

Cities such as Santa Monica and Burbank, California, for example, cover all costs for personnel, network operations and network expansion by adding just three to four business customers per month. They're also able to build free public Wi-Fi capability throughout the cities, thanks to the fiber infrastructure connecting government and utility facilities.

A number of cities carry their initial debt for build-out anywhere from 10 to 25 years, and most (except some networks built within the past two years) currently generate enough revenue to retire the debt on schedule, if it hasn't been retired already. This, by the way, is what cities do—they carry debt for many years for infrastructure projects. Critics try to paint this as another negative that justifies anti-muni network laws—"we're protecting" taxpayers from debt.

How do these cities measure success?

Some networks such as those in Cedar Falls, Iowa; Thomasville, GA; Santa Monica, CA and Bristol, VA have operated successfully for over 14 years. **Thomasville** Mayor Max Beverly reports that their 16-year old network now generates $2 million a year for city coffers. This enabled them in 2012 to eliminate taxes. "We provide all of our city services without needing tax dollars because we generate our revenues internally within the various agencies that pays for everything."

Danville, VA's public utility's network that launched in 2004 helped cut the locale's unemployment in half, down from 19 percent, by directly enticing several large companies to the area, and creating a local technology industry that otherwise likely wouldn't exist. **Santa Monica's** fiber network, launched the same year, reduced government voice and data communication charges by over $750,000 a year. Those savings, plus selling fiber services to local businesses helped build a $2.5 million surplus.

In April 2015, **Layette, LA's** public utility's broadband network, LUS Fiber announced an upgrade by Standard & Poor's in the Communications System's revenue bond rating to "A+" from "A" with a stable outlook. The stable outlook reflects S&P's expectation that LUS Fiber's strong financial profile is sustainable. The upgrade reflects S&P's view of the utilities system's sustained strong fixed charge coverage and liquidity levels, and the communication system's improved cash flow.

"The network breaks even at about $1.1 million in annual revenue," states **Loma Linda [CA]** Assistant City Manager Konrad Bolowich. "The network is directly responsible for bringing two hotels to town that generate around $600,000/year in various taxes. It also helped convinced the government to build a VA clinic here that created 1,500 jobs and generates over $500,000 annually in property taxes. So if just one clinic worker eats at a restaurant and produces $1 in revenue to the city, that's an extra dollar the network has earned the city."

Longmont, CO passed a $45.3 million bond referendum in 2013 to fund their public utility's network. In the first week after launch, on the strength of one marketing letter, 20% of residents in the first fiberzone of 500 homes signed up. The business plan called a 20% take rate - but not until the end of 2015!

The Los Angeles Department of Water & Power 20 years ago invested $20 - $25 million for a fiber network to support the power grid. Years later LADWP built out the network to provide service to businesses and other constituents, a venture that earns about $6.5 million annually, which offsets network expansion costs. The network also fosters competition among broadband providers that further benefits L.A. businesses.

Murray Electric System in Murray, Kentucky had two main goals. They wanted to enhance its electric infrastructure, and the community wanted competition to force faster and better Internet connectivity, more TV channels and better customer service. Incumbents increased Internet speeds before the network buildout even began. MES has over 60% cable penetration, customer satisfaction is high and MES was cash flow positive within five years of launch.

Wilson, North Carolina, which successfully petitioned the FCC to get relief from that state's anti-municipal network law, invested $28 million to build a network with three primary goals: 1. supporting the economic health of the community; 2. enhancing the quality of life for citizens; and 3. improving delivery of city services. They report the significant accomplishment of all three goals, and annual revenues are on track to pay off the outstanding debt by 2023.

Medina County, Ohio in year-two of running the network, and continually have the challenge of engaging cities within the County to use the network and realize its benefit. We have little support from the State even though we are saving public and private institutions significant money. The county launched with four distinct goals: 1. increase economic development to the region; 2. bring competitive telecommunication services into the area; 3. reduce current pricing of incumbent carriers; and 4. generate enough revenue to cover the bond payments.

County official have seen a reduction in the incumbent carrier pricing by about 20% and approximately 75% of the companies looking to relocate in Medina County have required a highspeed broadband as a minimum requirement. Most of the healthcare facilities in Medina County are operating across the fiber services allowing the support of advanced services. Only two schools are on the network so far. However, these schools have realized a savings of $100K annually.

Total bond support for the network is $14.5 million. Construction of the backbone was $7.5 million, and laterals account for another $3 million. The remainder was for early bond payments, closing costs, etc. The County expects to complete bond repayment in 20 years.

Benton County, WA began its fiber network in 2001 with the goal being simply to "bridge the digital divide" in their community. They provided fiber-optic based broadband services to schools, libraries, medical facilities, police/fire and city government. It was assumed that the network would stimulate business growth, and that revenues from private businesses would provide the financial returns necessary to pay for

the initial investment.

The County believed the network would improve its electric distribution system through increasing the amount of live operational data over a higher speed connection to their substation automation system. Officials also hoped that private sector ISPs would share the county's infrastructure.

Benton County's invested $8.5 million over five years to build a network with the primary initial goal being "simply to bridge the digital divide in our community. Our core objective to build out to schools and other community partners was met."

These are but a handful of success stories. We really have to get more communities telling their stories of how they're using broadband as an asset because there are some amazing testimonials from all over the country. As we get more people and organizations to give an objective look at what these networks are achieving, more communities will take the muni network projects getting off the drawing boards.

Co-ops are community networks too

I described a community network as broadband infrastructure that the businesses, institutions and the individuals of a town, city, county, etc. collectively own, either in part or in whole. The municipal government or public utility could operate the network. In a true public private partnership, a local government entity or utility owns the infrastructure and possibly the services in partnership with a private sector company. All share the risks and the rewards. A community could create a foundation or other type of nonprofit on behalf of its citizens.

Telephone or electricity co-ops that own networks are special. They are business ventures that are driven to a certain extent by profit and loss. However, everyone in the community who buys services from the co-op are the "shareholders" who receive "dividends." Subsequently, there is through direct accountability to the citizens of the community. While co-op managers do get paid, there is a greater sense of loyalty and commitment from them to the community than from executives living thousands of miles away.

I will address the topic of co-ops in more detail in the Chapter 10. But I want to touch briefly on some of successes that co-ops have had building broadband networks.

"Many co-op members can't get broadband, but they know they need it and they want it," states Alyssa Clemsen-Roberts, Industry Affairs Manager for the Utilities Telecom Council (UTC), a trade association for utilities and co-ops. "A year ago just a handful of co-ops were offering broadband services. Now it appears 10 - 15 percent of them are actively planning or building networks, and other co-ops are discussing it while watching how initial networks are panning out."

When co-ops first formed 70- or 80, rural people could barely comprehend the value of electric lights in every room, let alone the marvels of TV and the Internet. Similarly today, some people may not understand what a gigabit is, but there is fairly widespread understanding that life for rural businesses, schools and consumers will improve with faster Net access. This dynamic drives take rates to the point where some co-ops' goals often are met right from the start.

"Further driving take rates is the fact that 340,000 people and a sizeable number of businesses have moved from rural areas in the past three years," states Clemsen-Roberts. Local governments and business owners who fear their communities will become ghost towns no doubt are leading the constituents pressuring co-ops to take action, and also are some of the biggest potential broadband customers.

Co-Mo Electric in Tipton, Missouri is quickly becoming the poster child for electric co-ops. Co-Mo is notable for being the first electric co-op to launch a FTTH to all its members utilizing its own funding, with no government support. Big-city tactics and benchmarks would clearly be out of touch for their service area that today is mostly un-served or underserved.

Co-Mo conducted extensive consumer surveys of its members to help it determine not only the extent of broadband coverage, but to test different service tiers. In 2009 they discovered that 80 percent of their members were relying on dial-up and satellite Internet services. Now Co-Mo Electric Cooperative, which celebrates its 75th anniversary this year, is bringing Gigabit service to 34,000 subscribers in rural central Missouri between Kansas City and St. Louis, some areas with only seven homes per square mile.

Meanwhile another pioneering co-op, **Midwest Energy Cooperative** in southern Michigan, believes rural communities are best served through a mix of technologies. They developed two proposals for the broadband stimulus program that was a hybrid fiber and wireless network. Unfortunately neither proposal was accepted, but Midwest learned in the process that communities' diverse needs benefit from flexible approaches to technology.

Midwest also takes care to match the speed it promotes to the different constituents' needs. "We might push a Gig, but we have plans to heavily promote 10 Mbps and 20 Mbps services," states Bob Hance, President and CEO. "Executives of companies and universities often are not able to be productive working online from home, so they'll want a Gig. But for those performing basic tasks, 10 Mbps is a big deal."

Barc Electric Cooperative serves 1,500 square miles of Virginia from the Shenandoah Valley to the West Virginia border. Barc expects to begin building out fiber services to members in the fall of 2014 or the beginning of 2015. A needs assessment survey by the Virginia Information Technology Agency shows 67% of the co-op's customers only have dial-up or satellite Internet access.

Barc commissioned a second survey, this time asking members what kinds of services they want and how much they are willing to pay for those services. Results show there could be between 70 and 80 percent take rate. "In our financial plan we conservatively project a 40 percent take rate," states Mike Keyser, who is the CEO. "We plan to invest revenue from initial subscribers to fund the network buildout to our outlying customers."

Throughout the book I will highlight various cities, counties and regions of the country. Many of these communities help me make a particular point or other. All of these stories provide useful lessons for anyone working for, supporting, funding or extending broadband projects.

The market success of community networks

“$50 million ships out of the state annually by our 45 small towns for Internet service providers, yet none of our towns have universal broadband,” states Monica Webb, Chairman of the Board of WiredWest, a regional project in western Massachusetts. “If we don’t take matters into our own hands, these long-term negative trends that are impacting us today will determine whether there is a future for our communities or not.”

Contrary to the hue and cry from detractors, public-owned broadband is very much a free-market play. “We have been marinated in a corporate culture that believes only a Fortune 500 company is able to deal with high tech,” stated Wally Bowen in a Gigabit Nation radio interview He’s the founder and Executive Director of the nonprofit Mountain Area Information Network (MAIN) in western North Carolina. Quite a few community organizations such as MAIN find the do-it-yourself strategy is giving them the broadband their constituents want.

First, the municipal broadband movement started because the free market time and again failed to deliver vital services to potential customers. Make no mistake, the local governments are just as much broadband customers as are local citizens and businesses. And as customers, if they cannot get what they want from what vendors or service provider, they have every right to look elsewhere or make it themselves. Many small governments and some larger ones decided that they wanted to own their own, or build networks with partners other than incumbent telcos.

Second, if a rightfully elected government, as a potential customer of particular services, decides it wants to get into a business to provide those services, then they answer to the citizens for that decision. I don’t remember in my civics classes where it said we as Americans have abdicated our right to hold our elected officials accountable to the will of *The people*, not just some incumbent’s shareholders.

Basically those officials work for us, and we the people are customers as much as government organizations are. We can buy from whomever we choose and build whatever we want - or not - as people so decide with their votes and their wallets. Therefore, all of the actions to prevent governments from taking actions that elected officials feel is in the best interest of their citizens seems pretty much counter to the ideal of democracy.

Broadband suffers from a case of mistaken identity (if you leave our critics) that could be costing your community lost opportunities in economic development, improved healthcare delivery, advanced education and other significant benefits. It’s time you turn this situation around.

You often hear critics say, “let the free market take care of broadband.” Whatever companies do to make a buck that shortchanges communities is generally a-ok because in the end, “free markets” serve the public’s best interests. Can’t get any provider to deliver broadband to your area, no problem because the “free market” has decided you’re not worth its effort. Only have one choice for service and that service is overpriced and sucks, not to worry. That’s the market force at work.

Owning the business of broadband

If you plan to make your broadband network a valuable asset, the community has to

establish ownership. Whether you on network outright as the local governments or public utility, through an entity such as a co-op, through a public private partnership or you decide to have a private company run the network, the community "must own the business of broadband."

Owning the physical network and providing highspeed Internet access is a business. But "the business of broadband" is that process by which communities use the technology as a tool to improve economic development, transform education and expedite healthcare delivery. Owning this process, whether or not you own the physical infrastructure and services, is how communities build a broadband asset that produces short- and long-term returns on communities investment.

Here are some guidelines to help you and your stakeholders begin to get a handle on a complex topic, what I called the "7 Habits of Highly Effective Owners of the Business of Broadband."

1. **Have a broadband champion.** Usually one person, a Lead Cat Herder if you will, should be a key force uniting and driving community stakeholders to achieve broadband's promised benefits. It's ok if a group shares leadership responsibilities but to maximize the effort. Several years ago, "It got so people would see me coming and try to get away because they knew I was going to talk their ear off about broadband," says Dan Speer, Pulaski, Tenn.'s broadband champion. He's now hailed as the primary reason Pulaski shares the Broadband Winner's Circle with its bigger neighbor Chattanooga. Research a broadband success story and you'll find they succeeded largely due to their champion.

2. **Establish a single purpose**. Santa Monica, CA developed their fiber network initially to replace the city government's aging data and voice communications systems. The savings were so significant the city could afford to expand the network citywide to serve government and local businesses. Chattanooga's initial network goal was to modernize and enhance how electricity is delivered to business customers, an improvement collectively worth millions to local companies. Danville, VA's network was initiated to tackle the city's 19 percent unemployment rate.

Identify one broadband goal that is significant enough by itself to cost justify much of the network's expense. It may not be sexy, or viewed as a "killer app." But this singleness of purpose launches the network and provides a foundation for future success. Hundreds of worthwhile applications will follow.

3. **Do a thorough needs assessment.** Kansas City's day-long community-wide brainstorming session was a critical early step. Follow this with multiple assessments, financial analysis and planning efforts within various constituency groups (business, education, healthcare, nonprofits, etc.). The Cape Cod region in Massachusetts and Chattanooga, TN were planning for over a year before the 2009 broadband stimulus. This is how communities drive technology for maximum impact. A major grant or a benefactor such as Google accelerates the drive, but progress doesn't stop if the benefactor doesn't deliver as expected.

4. **Determine how to financially sustain the network**. The needs assessment should identify who's going to subscribe to, or invest in, both the network and the business of

broadband. The most awesome broadband technology won't mean jack unless communities turn identified needs into grants, subscriber fees, donations, investments and so on.

5. **Have a solid marketing plan**. One project leader recently recruited to run a network project said "It's clear these folks wrote a great application that won stimulus money. But it's also clear that when they won it two and a half years ago no one really knew then how they were going to market the thing."

Awkward (panicked) is that moment when a community realizes whomever is running the network fully understands how to market, when to market and to whom. The community has to drive much of the marketing in partnership with the network operator.

6. **Own the customer relationship with private sector companies**. Or at least own half the relationship. Private companies have needs. The community has needs. Sometimes, these needs will conflict. If the community has not negotiated a partnership that protects the community's ability to use/leverage the network to meet its broadband needs, many of these needs may remain unmet.

7. **Demand measurement and accountability**. If the needs assessment and planning are done properly, it becomes evident how broadband progress should be measured. Don't be shy in holding stakeholders, project leaders, vendors, providers and others accountable for reaching benchmarks and on-going successes.

It's necessary to have businesses help communities in any number of ways. But never forget a community's success in maximizing the technology depends on stakeholders owning the business of broadband.

3. Making the Business Case for Broadband

We have seen broadband progress from a technology discussed mostly among leaders of small communities where they are deployed, to one of the top media stories locally and nationally as well as major agenda of President Obama. Spicing up the media attention is controversy (incumbents hate them), fawning (local politicos love announcing them), bloviating (marketing people hype the gig mercilessly) and before you know it, reality becomes overwhelmed with too much sizzle.

The primary purpose of this chapter is to begin to build the business case broadband starting with the impact of the technology on local governments. I want to instill in everyone, particularly broadband project teams and stakeholders, some realistic expectations of what broadband can do for you if you let common sense and good judgment shape your decision-making processing.

True 21st Century government

I tell communities that using broadband to improve government operations is very wise for a number of reasons. First, broadband technology can replace existing data and voice communication services in ways that cost less and perform much better. For example, how many large and small see governments rely on T1 lines for which they may be charged $2,000 or $3000 per line that only deliver 2Mbps or 3Mbps. Instead, governments could get 50 Mbps, 100 Mbps, a gigabit per second! Doing this type of math led Santa Monica to determine broadband but sense by eliminating $750,000 annual costs for data and voice services.

Second, once city or county staff start communicating at 100 Meg or gigabit speed, productivity should soar. Third, not only will staff such as inspectors, administrators, fire fighters, police and other local government personnel work more efficiently with each other, their ability to work with the public improves significantly thanks to broadband. The ability to move 100 Mbps or a gig of data through networks empowers your citizens with two-way communication, collaboration between the governed and those governing, and the ability to do more for themselves.

A fourth area in which broadband can help local governments is the “Internet of Things” (IoT) the term used to describe the use of sensors and other Internet-connected devices to track and control physical objects. Local governments have lots of resources such as traffic lights, vehicles, technical equipment and furniture. Resources that can be underutilized, lost, misplaced or damaged, costing local government money and lost productivity. An aggressive resource management strategy has better chance of succeeding when broadband enters the picture, adding hundreds of thousands to cities’ capital budgets.

Going door-to-door to make the case

To paint a good picture of broadband’s value as a tool for improving your local government’ effectiveness and efficiency, to go door-the-door to each department or agency and ask, “how would your life change if you had unlimited bandwidth?” Then

calculate their answers in terms of money saved, revenue earned and/or personnel used more effectively.

It's a good bet that abundant broadband will change the ways departments conducts business, everything from expediting emergency services and processing building permits to delivering inspection service visits via video conferences. Voice and video technology 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 combination of wireless and wired broadband helps government emergency teams do better job of protecting and if need be, evacuating building facilities. With redundancy is built into the network, local government can potentially improve disaster recovery. In a range of scenarios, broadband improves city, county and state agencies' ability to work independently or together.

Calculate the benefits of wireless networks and devices that enable mobile government workers to provide services to constituents in remote areas. In general, wireless let's you put more feet on the street increasing the hours that mobile workers can stay in the field. Add to this capability barcode-reading equipment, sensors, recording devices and imagination, staff will realize monetary savings by getting more productivity from resources and the personnel who uses them.

Don't forget to calculate potential of benefits of recovering loss resources. In 2005, the City of Philadelphia discovered $2 million in artwork had been warehoused and forgotten about over time. How many resources has your city replaced that a robust network and appropriate technology could track?

When you finish your door-to door-assessment total of the benefits, you may pleasantly surprise. A good portion cost of building out your network could be offset just in in ways outlined here.

A digital government in action

Morrow County, Oregon has built one of the most extensive muni broadband networks in the world, and it is a great example of the Interest of Things. The driving force behind this network was using it for rapid emergency response and public evacuation in event of several significant crisis events. What some may find interesting is the heavy use a wireless technology given the worry in certain quarters about security of wireless.

The Morrow County Emergency Management Center's (MCEMC) team of first responders relies on a 700-square mile WiFi network to manage a myriad of monitoring and emergency response resources. A software application and sensor devices that monitor the atmosphere for chemical spills are the nucleus of the emergency response system. It not only detects, but also plots out in which direction a chemical spill will travel and how fast. The data is automatically routed to field staff's laptops.

Morrow County is the site of the Umatilla Chemical Depot that holds a stockpile of chemical warfare materials. The county is home to the Hanford Nuclear Reservation, and they operate a nuclear power station. Morrow hosts major natural gas and energy production and distribution facilities.

Cameras linked to the network stream real-time, full-speed color video to monitor all of these facilities, and these can be remotely controlled to turn and zoom in on specific areas. Cameras also monitor the highways since in the event of a chemical disaster the staff has only about 10 minutes in which to respond. If they need to quickly evacuate residents, MCEMC relies on those cameras and the network to remotely re-direct traffic by controlling traffic lights, drop-arm barriers and billboard-size electronic message signs that can post new text as needed.

MCEMC deployed WiFi access points mounted on buoys on the rivers and waterways to provide warnings to watercraft as well as back up to land-based WiFi points. This same system can operate un-manned fireboats to fight hazardous materials fires on or near shores.

The main PBX phone lines have VoIP capability and provide backups to the cell phones. Emergency response vehicles are equipped with mobile WiFi access points, plus the network was designed to handle hand-off along the highways using 66 towers with long-range antennas. Responders can stay connected to the network while driving up to 100 mph.

The network is HIPAA-certified safe so patient data can be wirelessly transmitted while en route to hospitals. On top of that, the network is also Fed Info Protection Standard (FIPS 140-2). MCEMC doesn't worry very much about security being breeched, or network failure at a critical time. They bought two commercially available WiFi security applications and later hired a security team to come in with special equipment to try to hack the network, which they couldn't do.

To fortify the network against natural disaster strikes, Casey's crew relies on two massive fiber networks that come in from Portland. The WiFi mesh integrates with the fiber networks and has the access points densely deployed to provide overlapping coverage over many areas. There are trickle charge batteries that back up access points for eight-to-twelve hours and in some case solar panels recharge the batteries, plus uninterrupted power supplies and standard generators provide yet more backup. The access points are placed to minimize vandalism, and the mobile access points offer yet another level of redundancy.

Nobody markets like Chattanooga

Probably the most well known public utilities running a network is Chattanooga's EPB. Since the network launched, EPB has seen operating cost savings of $10.5 million, and $50 million in savings to the community through reduced power outages. EPB Fiber Optics, the division that runs the network, has paid $83 million to the parent organization from the launch until July 1, 2013. 18 months after launch EPB had its first profitable month.

Mayor Andy Burke was one of my guests for the 3rd anniversary broadcast of my Gigabit Nation radio show. He shared some of the results of the innovative thinking that permeates City staff.

Gigabit Nation: What has been the impact on government operations with your network?

Mayor Berke: Well for us it's been a real important driver to becoming more innovative and more advanced. We've used broadband as a jumping off point to improving our own operations. That means making sure we open up more of our data for consumers, for constituents, for anyone who wants to use it. We've had an ongoing open-data project that we're very excited about. A week or two ago we honored as one of the first *What Works Cities* by Bloomberg Philanthropies. We're using data as a way to providing better service to the people in our community.

GN: How do you expect outdoor WiFi together with the Internet of Things to further improve government operations?

Mayor Berke: Over the last year we made sure we put in as much public WiFi as possible. We even gave it a snazzy name, Nooganet. It's in our youth and family development centers, parks, public spaces and government buildings. We're trying to make sure we cast as wide a net for it because the ability for our constituents to use it to improve their quality of life is important.

GN: Have you guys gone with smart parking meters?

Mayor Berke: We do have an ongoing parking project. We definitely have the newest meters, and we're looking right now at how we take the next step forward with smart parking. But it's about more than that. Chattanooga is the only U.S. home for Volkswagen manufacturing. We make the Passat here. We started an innovation district a little bit over a year ago and I asked Volkswagen to be a large player there. One of my pitches to them was, 'Doesn't Volkswagen want to be the company that solves the question of how cars and parking spaces interact in the best way possible?'

GN: You've done a lot of marketing of the city in such a way that the network plays a leading role. How does that come about? Do you plan that?

Mayor Berke: We market this city heavily. However, a couple years ago, there was a lot of stuff happening but it wasn't an organized coherent effort. I put together a group of people a lot smarter than me and asked them to put together a plan for capitalizing on the network that the City could follow. They wrote the Gig Technology & Entrepreneurship Report.

The plan said we needed a more aggressive unified marketing strategy, and it should come through an organization that was dedicated to this and other tasks such as pursuing digital equity and an innovation district. Now the Enterprise Center has a central point of contact where everything flows through and enables us to market the city. We talk a lot about our entrepreneurship, our gig network, and the way that technology is driving better economic results and a better quality of life in Chattanooga. It seems like that message has been out there for a while, but we're always trying to make it more prevalent and widely disseminated.

GN: When hundreds of cities have a gig, does that change the look of marketing for you? Do you rely less on broadband then?

Andy Berke: Absolutely not. We want every city to have access to this technology. A couple reasons. Number one, I am an American and I think we have to be at the forefront of technology and make sure that all of us have access to a future of opportunity and high quality of life. I feel that way about every city, not just my own.

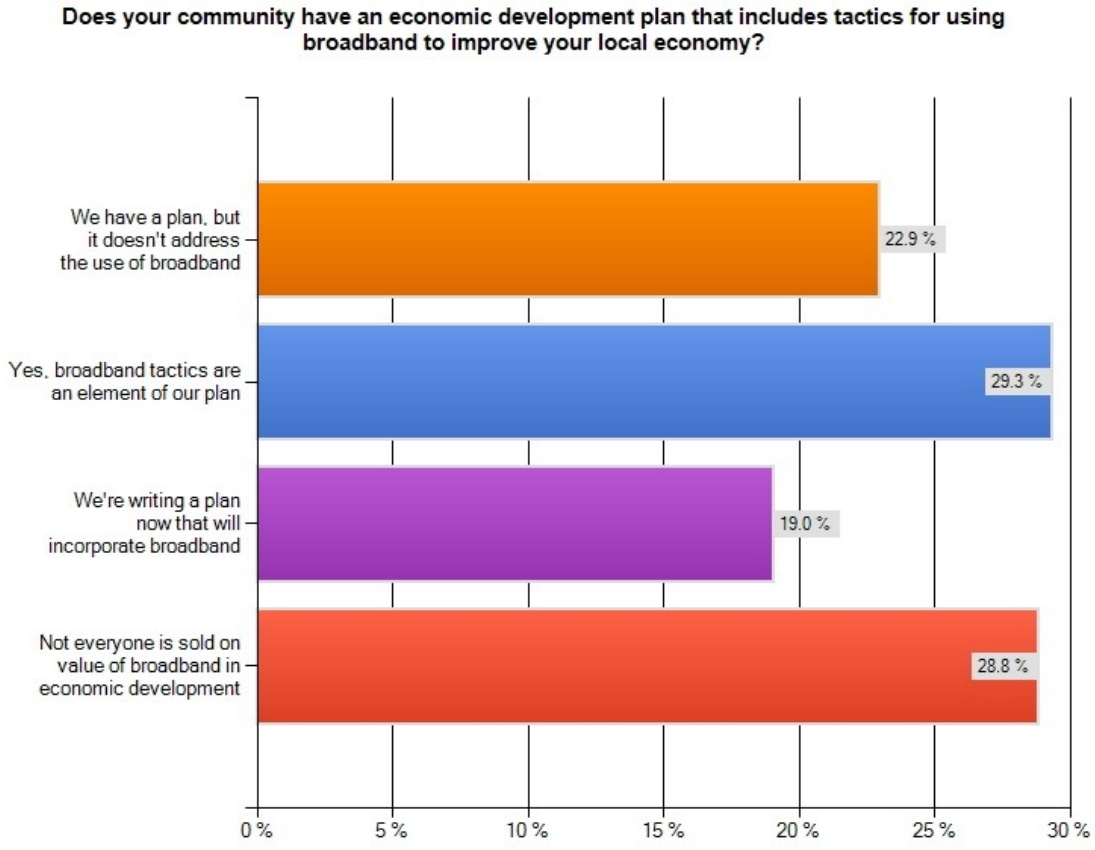
Second, as a Chattanoogan I want to see every city and every citizen have access to broadband. If we can develop this great technology that uses the gig but if nobody else has the gig, there's nobody to deploy it to! Who do we sell to out there? For us, I see the growing number of cities that have access to the ultra highspeed as growing markets, not competition.

4. Broadband & economic development - don't miss the boat

While it is true that municipalities and public utilities can realize significant returns on their investments in broadband, economic development is the "golden child" of cost justification of these networks. Media stories, conferences and webinars devoted to the topic abound. It seems like you could be walking down the street and if you say to someone broadband, that person will respond "good for economic development."

Clearly among economic developers the topic is serious concern. Just about every year since 2006, I have surveyed members of the International Economic Development Council (IEDC) to get their take on how broadband impacts local economies. My question in 2014 about whether their communities have an economic development plan that includes broadband tactics reveals a glass is half full or half empty, depending on one's philosophical view. 48% have a plan with broadband or are writing one, 52% do not. 61% of rural respondents have or are writing a plan that includes broadband tactics (**Figure 3.0**). My 2013 survey of Broadband Communities Magazine had almost equal response.

Figure 3.0



I admit that it is easier to do a cost justification when we're talking about using broadband to improve local governments', public utilities' and co-ops' ability to operate more efficiently. Economic development can be such an amorphous term. When you use

blanket statements such as “broadband improves local economies,” you take on more the role of propagandist rather than the role of problem solver, visionary or savior of your people.

Broadband champions and project teams always struggle with the fact that economic development isn’t always a black-and-white issue. Furthermore, find trying to connect the dots between the hope of broadband networks and economic results, no matter how those results are measured, is sometimes difficult.

When I surveyed IEDC members, I broke down six categories in which there are ways which you can either justify cost on the front end of building a network, and measuring the results on the other end. These area are:

- Attracting new companies and organizations to your community
- Making current businesses more competitive
- Reviving depressed business districts
- Increasing home-based businesses
- Improving personal economic development
- Reviving distressed or depressed residential communities

By 2012, the percentage of respondents who indicated to what degree they felt fiber and wireless networks impacted these six categories, the percentages were not wavering in any appreciable decree. Broadband Community Magazine readers were only minimally different in their response from the IEDC respondents, so I’m including the more 2013 recent statistics (**Figures 3.1 and 3.2**).

Figure 3.1: Fiber networks’ impact

	Definite Impact	Indirect impact	Too soon to tell	No Impact	Difficult to measure	Total
New businesses moved to your area	60.35% 137	16.30% 37	14.98% 34	3.52% 8	4.85% 11	227
Revived depressed communities	26.22% 59	22.67% 51	29.33% 66	11.11% 25	10.67% 24	225
Individuals' income earning increases	24.23% 55	22.03% 50	29.96% 68	6.61% 15	17.18% 39	227
Revived depressed business districts	26.87% 61	22.03% 50	29.52% 67	13.66% 31	7.93% 18	227
Local companies more profitable, competitive	36.12% 82	33.04% 75	20.26% 46	5.29% 12	5.29% 12	227
Increase in home-based businesses	53.95% 123	15.35% 35	19.30% 44	3.51% 8	7.89% 18	228

Figure 3.2: Wireless networks' impact

	Definite Impact	Indirect impact	Too soon to tell	No Impact	Difficult to measure	Total
Revived depressed business districts	22.62% 50	21.72% 48	22.17% 49	16.29% 36	17.19% 38	221
Individuals' income earning increases	16.22% 36	22.97% 51	27.48% 61	13.51% 30	19.82% 44	222
Revived depressed communities	16.36% 36	22.27% 49	28.18% 62	16.36% 36	16.82% 37	220
Increased home-based businesses	29.60% 66	19.73% 44	21.97% 49	13.45% 30	15.25% 34	223
New businesses moved to your area	25.68% 57	16.22% 36	23.87% 53	19.37% 43	14.86% 33	222
Local companies more profitable, competitive	25.34% 56	22.17% 49	21.72% 48	15.38% 34	15.38% 34	221

Making the case for broadband's impact economic development

Attracting new companies

Many articles about community broadband make the case front and center that building these networks will increase the number of companies that either start up within a community or relocate or expand facilities to a community. Chattanooga has become the media poster child floor getting companies to move their city because of the gigabit network. Lafayette, LA was praised for convincing a company with several hundred employees to move to town even before the network was built.

Quite a few midsize and even small towns can boast of their network convincing companies to move to their community, but make sure their results don't skews the perception of success. Former Town Chairman of Three Lakes, WI, Don Sidlowsky, believes policymakers and others who influence federal programs and policies intended to help rural communities often don't live in small towns. Their collective worldview measures economic development success in hundreds or thousands of new jobs and millions of dollars in new revenue.

"For a town our size, a business that brings three or four new jobs in the community is a big deal economically," says Sidlowsky. "A corporate executive deciding to migrate here and telecommute thanks to our network also brings along a slice of his or her operation in

order to be more productive. Eight jobs might be created. That's a major relocation for us."

Making current businesses successful

I'm might incur the wrath of the Data Survey deities, but notice how the previous charts indicate that fiber networks' ability to attract new business has an almost 2:1 edge over fiber's ability to make current businesses more successful? I strongly believe that in the short run at least, broadband networks will have the greater impact on current businesses, not attracting new businesses to town. Why?

Some small towns are as big as they've want to be and there's no interest in attracting new companies. Sebewaing, MI is one of those towns. Their public utility, Sebewaing Light and Water (SLW), has built a gigabit network for the community. SLW Superintendent Melanie McCoy this says that theirs is a developed community of 1,800 residents and they feel they have everything they need in terms of businesses. Building a network, however, retains companies that otherwise might move away.

Most communities that have built their own network had a line waiting around block for services. WiredWest, a regional network in Western Massachusetts, has numerous businesses that have paid their first month's deposit even though the network won't be built until 2016. Longmont, CO can barely keep up with business demand for their gigabit network. As soon Three Lakes completed their network several businesses begin using it, including one dentist practice expanded and opened several offices within the town that are all linked via broadband.

The problem is, it's sexier to talk about bringing a FedEx distribution Center or an Apple repair warehouse than Bob & Susy's Down Home Bakery. Local media eat up this "Grand Opening" stuff, local elected officials swoon the opportunity to have a ribbon-cutting photo op and the general populace can be star-struck at the prospect of a national company putting their city on the map. However, it takes a while to close the big deals plus some communities give up so much to get the deal closed that it's a question mark whether a town is better off.

Spend the time to really delve into questions with your small and large businesses to determine what percentage of companies will buy your services and what services persuade them renew their broadband contracts. Because of the logistics of setting up with a new service provider, businesses tend to be loyal customers. They are not liable to be swayed by special promotions and other tricks competitors will use trying to win back these customers.

Impacting individual economic development

The role of the individual either as home-based entrepreneur, employee or as unemployed worker may not receive a lot of consideration in the planning of broadband deployments. Most likely, if any consideration is given in the planning process at all, these segments of the population are lumped together into the general category of "residential take rate." The jobless might be addressed in discussions of digital inclusion and broadband adoption.

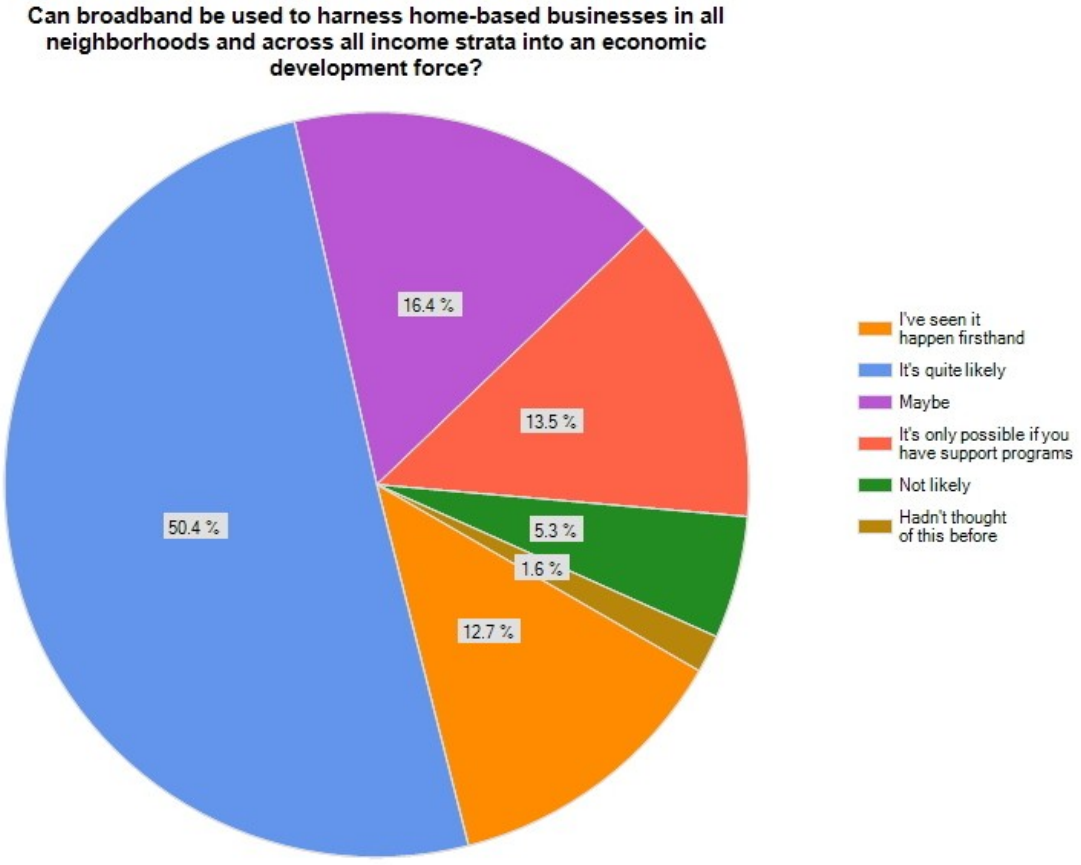
Home-based offices and individuals using the Internet to get ahead in their professional

lives are very difficult to track. Subsequently, unless you extensively research these segments, you can be hard pressed to create any quantitative predictions or measurements of how broadband can improve this aspect of economic development. However, a lot of people believe in broadband to deliver this outcome.

Broadband Communities Magazine readers believe in broadband's potential to be used as a tool to harness home-based businesses into a local economic force that community leaders identify, educate, motivate and coordinate. Respondents see this economic development strategy moving from local government or community initiatives to entice individuals to become entrepreneurs, and then uniting them throughout the community.

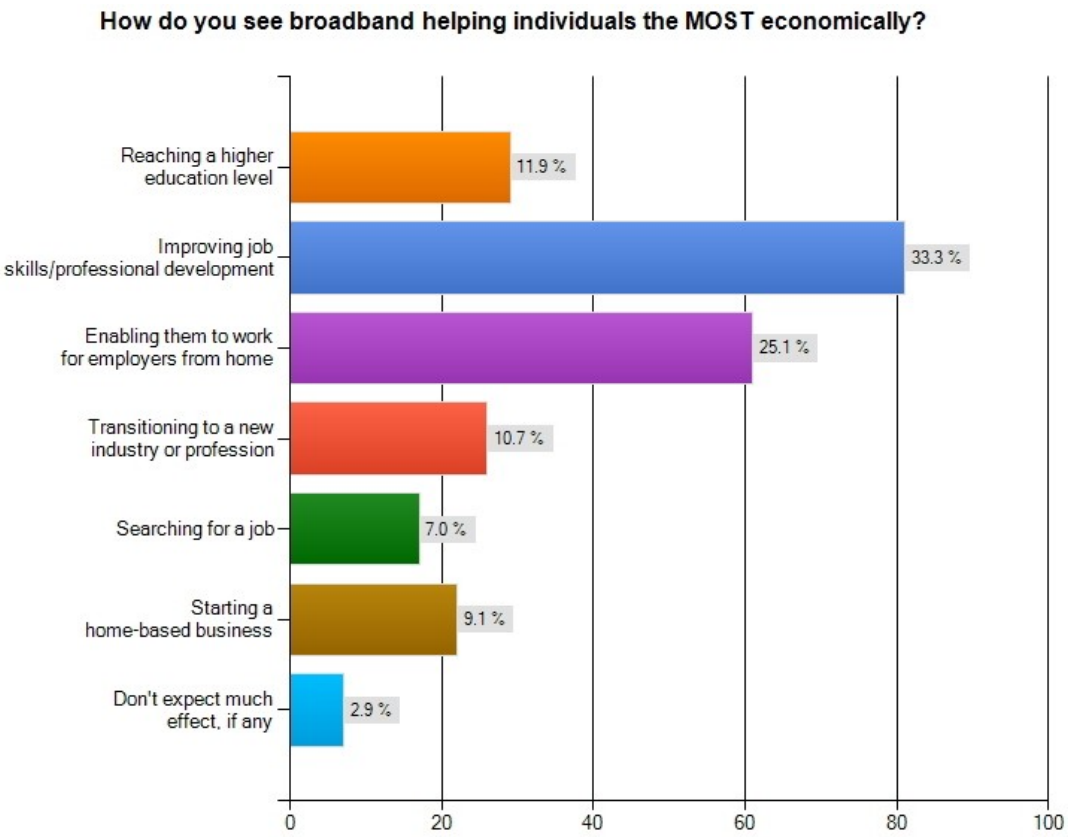
50% have strong faith in this strategy in addition to the 13% who have seen this strategy effectively executed (**Figure 3.3**). A sizeable number of respondents believe that this strategy only will be successful if there are effective government and/or community programs to support the strategy. It is not enough just to make broadband available, communities also must enlist partners to deliver various business support services.

Figure 3.3



33% of magazine readers feel the leading benefit broadband can deliver to individuals is to help them improve job skills and professional development (**Figure 3.4**). Helping individuals adapt to new industries and reaching higher education are viewed favorably by nearly equal percentages of respondents.

Figure 3.4



Policies and grant programs that define broadband's role in personal economic development as simply a job-search facilitator will dramatically fall short of the potential that respondents believe broadband can deliver. In pursuing such a narrowly focused mission, policymakers, government officials and community stakeholders risk implementing underperforming solutions that produce disappointing results for constituents.

I also asked respondents if they feel broadband can be used as a tool to encourage and facilitate low-income individuals to become entrepreneurs. While we can assume that many of these individuals would start companies in their home, it is a fair assumption that individuals' entrepreneurial efforts also would be cultivated in business incubators, work-share spaces and traditional office spaces.

48% responded that it is quite likely this transformation can be made, or have seen efforts such as these be successful. Another 22% feel it may be possible. It is very important to note that 24% of respondents believe such a transformation is possible, but stakeholders have to be willing and able to create, fund and staff programs that support individuals once they have access to broadband.

Reviving businesses and communities

When people talk about broadband and economic development, you don't hear a lot of discussion about reviving distressed business districts or disenfranchised communities. For one thing, it's hard to isolate broadband as the sole factor contributing to the success of such a project. Several things can contribute an equal or greater value to the overall

solution: public or private funding, good public transportation, the collective income of residents or businesses, convenient services, relative lack of crime, etc. Without the right confluence of contributing factors, is hard for broadband alone to make a difference.

These types of projects can require a lot of time, while quite a few of these community networks are still young. Also, with all of the other issues, deadlines and stress, revitalization projects could be on the back burner of some people's consciousness.

Broadband adoption seems to be lowest in lower income communities, so you have a chicken-and-egg situation. If people don't have enough money, they can't access broadband that could help them raise enough money to afford broadband. How favorable is the local political climate for supporting not only the network, but also the training to use computers and the Internet when you're not sure the population can harness the technology?

5. Making the Case for Education and Healthcare

Even people who have moved off the grid, cutting the cable or living in the wilderness understand that broadband is the Holy Grail of education technology. The majority of people understand that Internet access it is critical to children's education, whether it's K-12, or college. Even those people whom don't have children can understand the frustration of having to drive to a McDonald's parking lot in order to download the latest homework assignments.

When developing the business case for government and economic development in your broadband plan, there are many ways to measure a network's value in dollars and cents. At one level, a lot of your calculations of the broadband benefits will be qualitative it comes to education. However, there are also quantifiable benefits.

Broadband facilitates change an education

At the college level, Internet access is a more of an economic issue than a quality of education issue in some respects. Teens as well as their parents are taking note, rethinking college and how they pay for it.

By making the cost of college more affordable via online curriculum, students not only save money for courses, but also get opportunities to find more affordable colleges and reduce travel costs. Some will attend community colleges two years and transfer to universities. Some community colleges, either in the classroom or by long-distance, provide sufficient preparation to land good-paying jobs. Broadband makes these benefits possible.

The ability for broadband to create multi-gigabit connections between colleges and universities is a benefit for smaller institutions in less populated areas, and for communities wanting to keep their educated people in town. When you combine fast Internet with video and audio technologies, small local colleges can expand their curriculum, their "campus" community and their professors' opportunities. A sizable number of small and rural college-age students would prefer to stay in the area where they grew up, while college administrators, local businesses and government also wish the same.

Khan Academy, started by Salman Khan to provide "a free, world-class education for anyone, anywhere," uses the Internet to upend our approach to education as well as the cost of education. It started when Khan was tutoring his cousin in math. He decided the best way to help them was to make little videos and post them on YouTube.

Influential people such as Bill Gates (himself at one time a college dropout) endorsed the Khan approach saying this is an effective way to teach, particularly in college. People of all ages are saying that, "instead of having a mountain of debt I can go to Khan Academy, pick and choose things I need or want to learn, pull them up on YouTube and boom, there ya go!" The more popular Khan Academy becomes, the more critical students are of the money they've put into traditional education. The crux of the Khan's success is video, and you have to have super-fast broadband connectivity to drive the necessary video

capability throughout a community.

Kids these days

From the K-12 perspective, enlightened people understand that kids are different than they were 20 years ago. For a raft of reasons they think and learn differently. They process details differently. Technology and education must change to keep up with the "how" of learning, and by default the "how" of teaching. Not only that, there's a lot of pressure on parents to keep up with that both.

One of the things that broadband does is expand the ranks of teachers. Not necessarily locally, but from your town you can connect with more teachers globally. In Kansas City, one of their initiatives is to link all their schools together via the Google gigabit network, as well as link them to schools and educators outside Kansas City. Kids coming into class in cities with community broadband are now reaping the benefit not just of the teachers in front of them, but a digital universe of teachers.

The Youth Institute, which is run by the Long Beach YMCA, is an example I cite regularly when I talk about changes in the educational processes being driven by technology, and by default, driven through ubiquitous broadband in a community. Their program is quite simple but effective. They have kids of different ages from low-performing schools, and teach them how to use technology in real-world, practical ways. Instructors don't give lectures, they say to students, "Create a digital newsletter," or "make a TV show to talk about what happens in your neighborhood or classroom." They will show third graders how to take a simple multi-media program and teach the kindergarten and first grade kids their ABCs.

The kids eat this stuff up. Hundreds of them go through this program every year. Knowledge retention is higher, competency is higher, there is greater success moving from grade school is high school. Along with the technology is taught basic business skills, lessons in how to dress and how to talk, how to be in business environments. They're taught consulting by teaching multimedia to nonprofits, which they make money for doing a good.

It's true that broadband changes the way students and teachers perform at school and at home. What broadband also has economic aspect as well by making sure school districts get better value for the money they spend for aspects of technology.

Iowa has a number of education initiatives, including "flipped classrooms." Instead of your child going to school, getting lectures, and coming home with homework, teachers package up the lectures and send them to students' home via YouTube. Then when students go to class, they get one-on-one assistance from the teacher with what they learn at home. But some schools view this it as a good-news, bad-news situation. The good news is that this was an effective way to teach. The bad news is when students have very poor Internet connectivity at home, they cannot benefit from the flipped classrooms.

Schools across the U.S. are starting to give iPads to students. But once again, hundreds of thousands of dollars being spent on education technology is stymied because students lack sufficient broadband at home. How many stories have we seen in the media where students are forced to drive to McDonald's parking lots in the dead of winter just to access the Internet because coverage is lacking in their homes? High school students that

have an excellent chance at attending college are finding that the application process is online, but so are training programs that help students prepare for their SATs.

Many towns and cities are very much in support of broadband to facilitate economic development, so they make it a number one priority to have their current and future businesses get the best Internet they can. But they fail to see the economic value of bringing broadband to the home, or they are content to let large provider deliver inadequate services at high costs. Successful communities are those that makes sure communication services for the home are on par with services for businesses and schools.

Healthcare, medical services delivery - the "sleeper" killer app

Danville is a small town in Virginia that is done a big job proving out one of the strengths broadband that contributes to the business case you build for community broadband. They connected their main hospital, four clinics and physicians in private practice together in one medical network. They were able to communicate with each other, doctors can share results with each other and medical facilities overall became more effective in treating patients.

Equally important, Danville linked their facilities with other medical facilities in the country so they can provide more specialized consulting for patients. The same way the teacher in the classroom who has a digital universe of educators behind him or her, now you have doctors in Danville who has the digital medical community behind them.

In addition to improved healthcare, Danville's medical network became an economic development tool. One reason why businesses are moving to Danville is that it has great medical care. Their employees are well taken care of with medical treatment. This is especially important for businesses that are considering re-locating to small towns and rural areas because it's hard to get the access to medical expertise.

"Telemedicine advances will improve services such as critical care for patients in our smaller hospitals, says Terry Huval, Director of LUS Fiber. "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, our network will give the medical community new capabilities to exchange data and improve service."

Ongoing professional development is valued by medical personnel and appreciated by everyone. If they are in an isolated community, will they ever be able to do that easily? Well, going back to the Khan Academy example and how it's changing the face of teaching and learning, you can be assure that medical science will follow this procedure. How well this will impact you medical community depends on the quality of broadband you have.

For resource management, 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, former CIO 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.

For patients, opportunities and challenges

For patients, the ease of getting in to see doctor is a factor when you have to take time from work, and in winter can be even harder from your outlying areas. 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.

Getting a prescription filled can be a challenge. There are places now where pharmacy techs work in local facilities and are supervised by a licensed pharmacist remotely, which is another way broadband can serve those communities.

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. Some of you may have a relative who’s getting older. A lot of seniors are wedded to their homes in small towns 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. Johnston believes, “Broadband can do amazing things to change how people receive healthcare. Unfortunately, potential capability is having a slow 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. Actually,

it's about the money that the rules hinder.

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 through gigabit connections from their respective homes linked everyone to each other and to the city's hospitals. Dr. Busch wrote software to enable the group to deliver new services. The network and software together allow them to 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.

Big cities need broadband for telemedicine

The Illinois Medical District in Chicago plans to take broadband and telemedicine to new levels with a new 100-gigabit network. In what might be a model for the rest of the country, the District includes 560 acres of medical research facilities, labs, a biotech business incubators, universities, and more than 40 healthcare related facilities, all connected by fiber. District Executive Director Warren Ribley expects this $4 million "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 point regarding the seemingly equal need for faster, better broadband within urban communities as much as rural areas. Many federal grant money for broadband, such as the 2009 broadband stimulus or 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.

Economic developers' take on broadband, education and telemedicine

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.

About half of economic developers feel their current broadband speeds could be better in order to achieve education outcomes in **Figure 4.0**. However, a higher percentage of them feels their current broadband speeds are sufficient for education than feel speeds are sufficient for business.

Figure 4.0: Do Internet speeds impact education outcomes

	Depends on area of town	Yes	No	Yes, but could be better
Use Net to assist homework in K-12.	30%	42%	5%	23%
Enable students in multiple locations to collaborate.	28%	39%	9%	24%
Schools maximize education technologies.	19%	43%	8%	30%
Assist college work done off campus.	26%	39%	5%	30%
Increase K-12 student/teacher/parent collaboration.	22%	37%	7%	34%
Enable online continuing education/professional development.	25%	39%	5%	31%

Using broadband to improve education can create complications for economic developers because, even though education enjoys widespread public support, many these professionals often are not evaluated on the quality of education in their city or county. Furthermore, to fully realize the benefits to education that broadband promises, homes must have sufficient broadband. Some communities intent on using these networks to improve the local economy focus heavily on wiring businesses but ignore residences.

Figure 4.1 presents how respondents feel about the auxiliary programs that are required in addition to the physical network. The FCC and other federal and state agencies funding education-related broadband projects really should pay attention to the fact that their programs are perceived to be unimportant by 16% of respondents and considered difficult to implement by many.

Figure 4.1: Factors important for leveraging broadband

	Not important	Important, but hard to implement	Very important
The FCC's eRate, other grant programs.	16%	45%	40%
Increase teachers' Internet skills.	3%	25%	72%
Improve libraries' tech resources.	6%	18%	76%
Inexpensive tech hardware, software.	8%	25%	66%
Teach parents how to use Internet, computers.	9%	38%	53%

Does telemedicine warrant a closer look?

Only 43% of IEDC members see broadband-driven healthcare and medical services delivery as important to economic development. The responses from rural IEDC members are only a percentage point or two different from the total responses, which is itself interesting. Rural communities are seen as the ones most in need of these types of medical services, yet an equal percentage of members across the spectrum of rural, urban and suburban see the services as important for their economies.

Two-thirds of respondents' current broadband conditions are not great for producing healthcare-related outcomes that can help communities attract and retain both individuals and businesses (**Figure 4.2).** Furthermore, these are higher percentages than those who feel speed is insufficient for education or businesses.

Figure 4.2

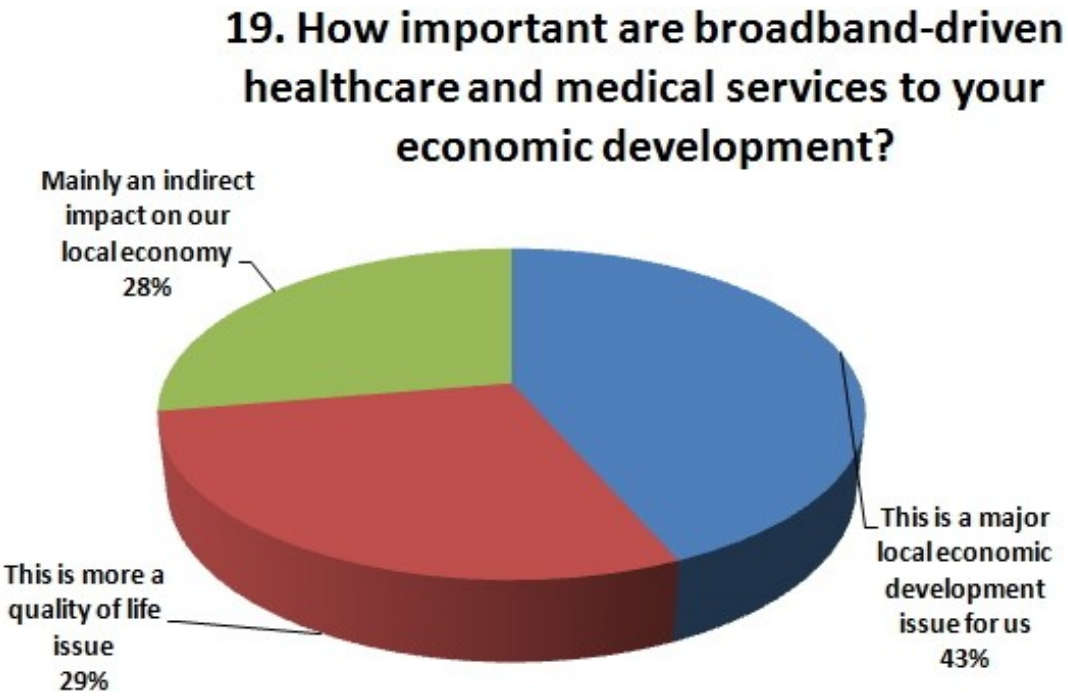


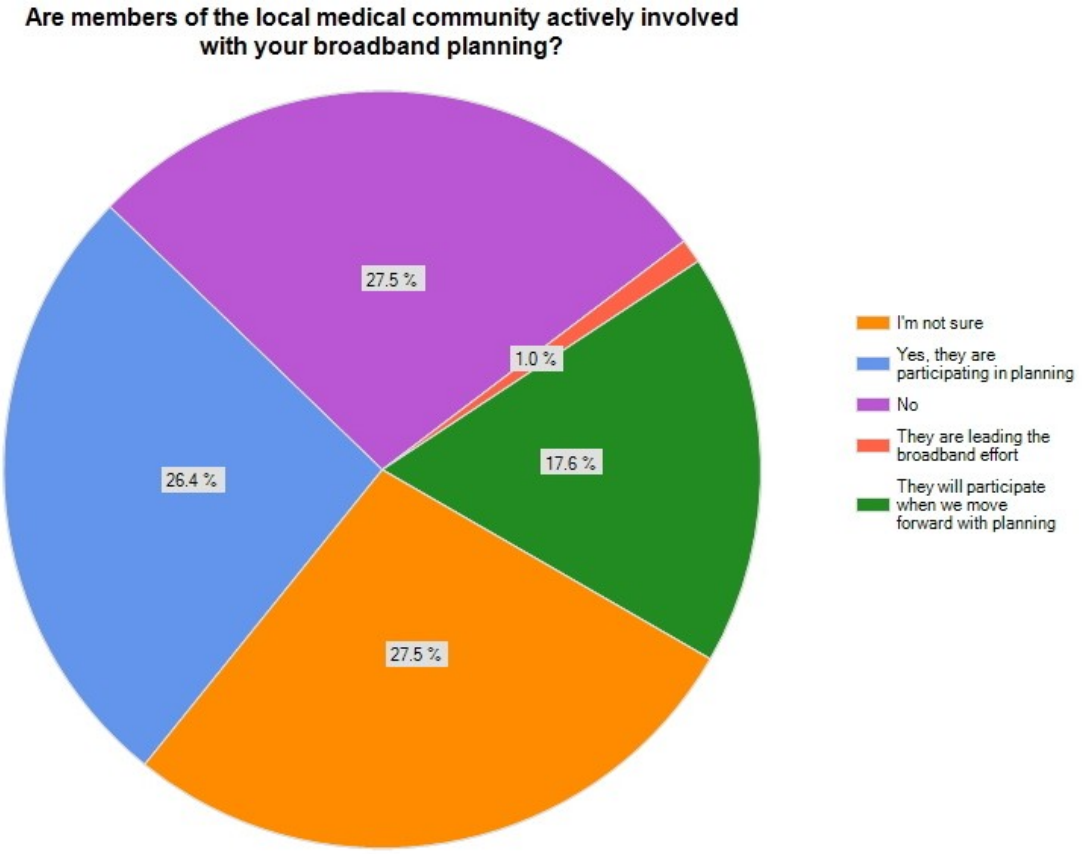
Figure 4.3: Are Net speeds impacting healthcare outcomes?

	Yes	Depends on area of town	No	Yes, but could be better
Attract new doctors, medical professionals.	32%	27%	13%	28%
Monitor seniors' medical condition, treatment at home.	23%	37%	16%	24%
Medical facilities exchange video files with other cities.	34%	23%	12%	31%
Attract medical research grants.	30%	16%	28%	26%
Enable doctor/patient video conferences.	27%	32%	15%	26%

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

community involved with broadband planning. On the other hand, the fact 28% are not including these representatives in planning might speak to a need to educate economic developers more extensively in this topic.

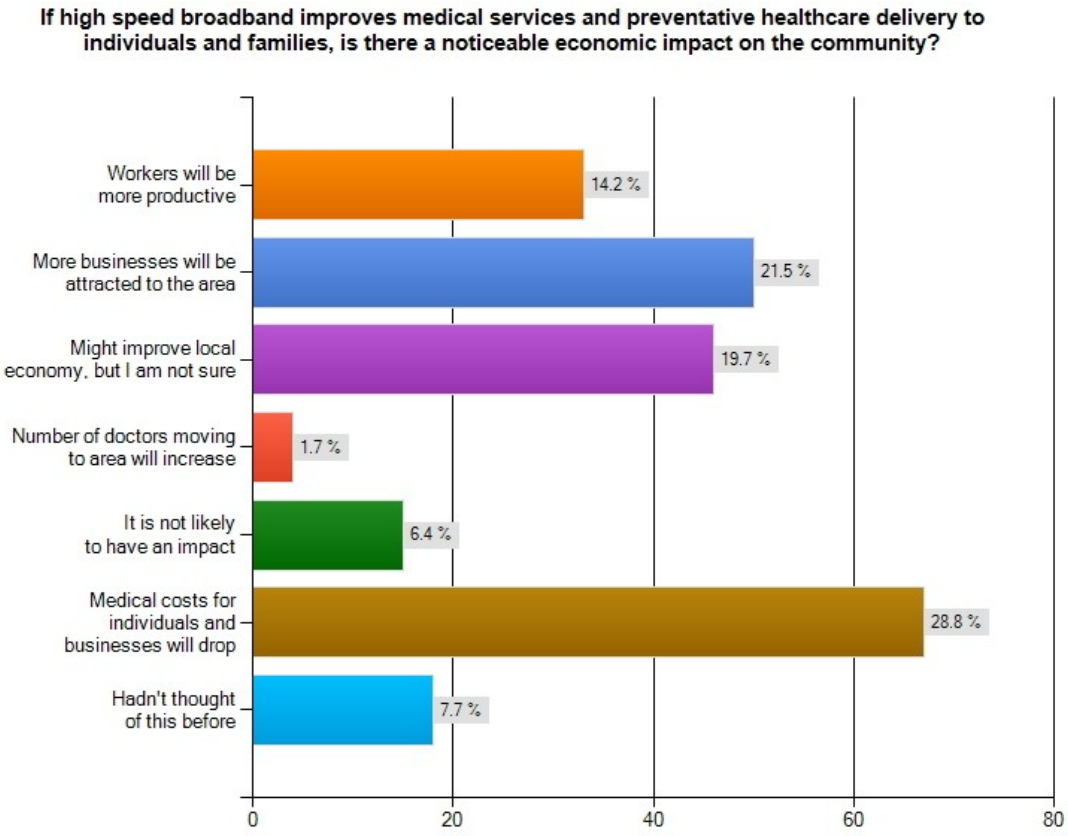
Figure 4.4



Danville, VA and Loma Linda, CA are two communities in particular that economic developers should study to understand how broadband-driven healthcare and medical services can impact local economies. Each city used broadband to link their hospitals, clinics, physicians (including those with private practices) and other medical professionals such as radiologists together on a portion of the network, which in turn links to medical facilities elsewhere in the U.S.

I found it interesting to look at how non-economic developers feel using broadband to deliver healthcare and telemedicine will impact the local economies. In my survey of Broadband Communities Magazine readers, the main outcome expected by 29% of respondents is that both businesses and individuals will save money. This makes sense when one takes the long view. If the technology makes it easier to access knowledge to prevent or minimize the impact of medical issues, or if online resources lead to healthier lifestyles, companies and individuals will spend less.

Figure 4.5



A surprisingly small percentage of respondents (1.7%) believe that having more doctors move into an area is an economic benefit. Small and rural towns are having difficulty attracting and retaining qualified doctors. Highspeed Internet access is not the sole or even primary criteria a young graduating doctor uses to select where they will settle down, but the lack of it can remove a town from consideration if there are similar locations with fast broadband. Without more doctors staying and a new generation of doctors moving in, the probability for reaching the other outcomes listed here are difficult to achieve.

6. Create an Effective Project Team and Steering Committee

Giving advice on how to create a broadband project team is more about providing general suggestions rather than rigid corporate-style guidelines since we would, in effect, be trying to create road maps while people are still trying to figure out what roads to build. But here goes.

You may be hard pressed to find a universal "right" person or group of people with extensive experience in broadband depending on where your community is located and the specific business model you choose. Determining that you should have your community foundation build and run the network, for example, may logically lead the foundation to want to hire someone with telecom experience. But if they are a small rural town, where do they find such talent? Urban communities don't necessarily have a talent shortage, but there will likely be strong competition for the good talent that is there.

Steuben County, IN, the Vermont community nonprofit ECFiber and the Cape Cod, Massachusetts region's OpenCape are among the many that have found success creating the necessary teams from local people. Before sitting down to form your project team, listen to the Gigabit Nation interview with Dan Gallagher of OpenCape to learn how they created a steering committee that moved their project forward (begins min 5). Also listen to this interview with ECFiber as Tim and Leslie Nulty describe (beginning min 30) how they formed the nonprofit's governing body that advanced their broadband project as well as manages the teams that build out the physical infrastructure.

Forming a team - the preliminaries

There are three distinct aspects of recruiting to address. The first is recruiting the initial members who take the idea of getting better broadband and moves to forward through a needs assessment and general strategy plan that produces an appropriate business model. The second is adjusting the project team based on the business model they choose. And third is adjusting once more the members of the team that builds and operates the network.

As an example, a project team may research and then develop an action plan that recommends, among other things, creating a steering committee comprised of various local stakeholders to oversee the broadband initiative. The plan also could recommend creating a nonprofit entity that recruits a governing board to direct local workers and contractors in building out the network. Once the network is completed, the board then hires an executive director who in turns hires a team that runs the broadband business.

Project teams reflect communities and their respective needs, so these teams will be different from each other in their composition. However, there are some common threads that will probably identify good prospective candidates for the project team.

The internal and external politics of communities, combined with the evolving nature of broadband, require that you assemble a team of individuals with a diversity of skills and social/professional backgrounds. You're looking for people best suited for the tasks and challenges at hand, but dealing with the realities of the available talent.

You may end up with a core team of a dozen or fewer stakeholders consisting of volunteer business, education and social service professionals, government professionals, one or two consultants and headed by the city's CIO. In Ottumwa, the economic development agency and I made up what I jokingly called The Mod Squad, and the three of us working on-site plus my California colleague formalized their broadband initiative by executing a needs assessment process.

Each community has to decide what role it wants to have Internet service providers (ISP) and vendors play on the project team. Some municipalities will ask an ISP or local telecom company to come in and run the whole show. Another option, for when the community knows from the beginning it's going to work with a specific ISP or telecom company, is to have the provider be a member of the team but not lead it. Other communities may want to complete the needs assessment, select a business model and then put out an RFP for one or several providers to be part of the team.

Specific details on building a project team and steering committee

Steering committee

Mike O'Connor served on the Minnesota Broadband Task Force as well as previously participating on several task forces involving large-scale technology issues. "Before you start to recruit stakeholders," O'Connor advises, "write a project charter, a project plan and a "sales brochure" that you use to go sell those stakeholders on why they should be part of your project. With these in place, you know who you have to recruit and why, you have a guide to help people better understand what they're signing up for and what's expected of them."

If you're going to set up a steering committee of stakeholders, choose them to be representative of the various constituent groups in the community. The body has oversight responsibility for the project, and is the main conduit for funneling feedback to the project team. It's helpful if they have strong ties within their respective constituencies. The committee as a body should reflect the economic, ethnic, political and other aspect of your community's diversity.

Committee members need specific goals and established areas of responsibilities. One of those should be to play an active role in targeting and recruiting constituents to participate in the needs assessment. Make sure they target constituents for this process who have broadband access as well as those who do not so you are assured of getting a balanced picture of your needs.

Finally, have clear delineation of the responsibilities of the steering committee as it relates to how the committee and the project team work together. When you have lots of people who are leaders in their respective stakeholder groups, they often are used to be leaders in all aspects of their lives. Put as much as you can within practical reason in writing.

Project team

The project team is responsible for the day-to-day tasks of managing the broadband initiative. Keep the team lean in terms of numbers in order to move quickly, but it should be balanced according to individuals' skill sets and interests. For example, you may have

one or two creative minds and a couple of task-oriented worker bees. Understand that, in many communities, you my not have initially the ideal number of people or the desired skill set. Some of the traits described here may have to be developed through on-the-job-training.

Not everyone on the steering committee or the project team has to come to the group knowing a lot about broadband or technology in general. It helps, however, if they have a capacity to quickly pick up the basics of how a technology can be applied to meet average business or community needs. Conversely, your team or committee members who are the tech experts should have at least average people-skills and ability to empathize with those who have zero understanding of technology.

The project team should be run following the rules of good general project management, and communication skills are essential. Anytime you have politics involved there are a greater number of people who you must communicate with and get to buy into broadband. Keep the community aware of the project's successes are as they happen. Keep the team and the committee focused on the end goals so they are not thrown off stride by the various bumps in the road they will encounter along the way.

The mayor, county commissioner, city council or other political leaders probably won't play an active roll in managing the project team's daily operations. But civic leaders can establish how constituents view your project. Having these leaders as proactive, publicly visible supporters of the project creates a buzz that increases your pool of qualified and motivated people to work with the project team, and the steering committee may be the best place to assign officials.

The project leader

The person tasked with leading the project team and/or steering committee should be more than just a technologist or just a politico. The political climate around community broadband, regardless of the business model, requires someone who is deft at handling occasionally clashing interests and personalities, and the technology is changing too quickly for someone who doesn't have at least a solid grasps of the key aspects of broadband. Of course, if you can't find a techie with political savvy, lean towards political savvy and good business sense. A city or county IT manager or staff person or competent consultant can compensate for a lack of tech expertise.

Additional qualities you want to look for in the leadership role is vision, the ability get others to share the vision, tenacity, multi-tasking capability, the ability to motivate volunteers and juggling skills. A sense of humor and appreciation for the absurd helps too. The person leading your project doesn't necessarily have to be a business owner, but they should have some entrepreneurial skills. Other helpful traits include being knowledgeable about how organizations work, and the ability to create a positive group dynamic that fosters collaboration.

The project manager

The person filling this role may change as the project goes through the three phases. The project manager needs to be strong in business or project management skills and have some expertise in technology deployments, even if it isn't broadband. This person

handles all of the daily pieces of the implementation, including selecting the vendors and overseeing the physical infrastructure's buildout.

For pre-deployment there is a unique mix of business research and planning, economic strategy development, and policy development. There's also stakeholder analysis, planning responses to potential opposition, determining level playing field issues and working with a broad range of constituent groups. These require some level of business management skills.

Effective communication skills come in handy. Good negotiating skills also help, as some are comprised of multiple counties and stakeholder partners, some who may not have a great history of working amicably 46together. If you're bringing broadband access into a community that's never had it, you need to be sensitive to their social or cultural issues, and also to their feelings about technology. Some people distrust technology given that it's new and outside of their comfort zone.

Industry consultants

Whether your planned broadband coverage area is small or large, you may also find that a consultant becomes a third member of the project team's leadership. This person may not be a pure technology consultant, but a blend of that and a government or general process management expert. These consultants and firms know the right questions you need to ask, players in the broadband industry and which technology trends require attention.

Fred Dyste, founder of Dyste Business Development, helped Grover Beach, CA with a broadband middle mile project. "Many clients do not lack employees or talent, they lack an available person with project management experience to bring the pieces together and see the project through to completion. A consultant saves them from the process of hiring a full time employee or overburdening an employee with additional priorities and responsibilities."

To find the right consultant, look very closely at their background working with communities similar to yours and private sector organizations. There's no rule that says you have to leave town to find the right consultant. In really small communities there still could be a number of homegrown sources of experts who like and play with this technology, such as universities. Broadband plays such a crucial role for communities you don't want to shortchange yourself, either. Cast the net near and far if the local talent pool doesn't cut it for you.

Once you bring a consultant on board, take effective action to ensure their success. "Establish clear cut and measurable objectives," advises Dyste. "Agree to a set number of hours or a 'per task' fee-which helps both parties stay within budgets and expectations. Keep the consultant in the loop. Don't omit them from informational e-mails and updates." Dyste believes consultants have some responsibilities in this relationship as well. "Try to be involved early in the planning process and when you are, listen, ask questions, and learn. Stay informed of the direction planning is going even if you are not tasked with all elements of the project."

A Project Team Checklist

Here are some guidelines to keep everyone on the steering committee and project team on the same page.

1. Establish systems that allow team members, the steering committee and other stakeholder representatives to share ideas and track progress during the project to prevent a lot of duplicated effort.

2. If people outside of the project team will share data that sits on your current network servers, make the necessary technology and security provisions to manage their access. Establish secure accounts, passwords and authorization levels for everyone and be sure they fully understand what can and can't be done.

3. When hiring people and recruiting volunteers, consider not only each person's talent, but also the personal chemistry between key members of the team. Either resolve early what appear to be clashes that can harm the project, or re-assign people to different tasks or other parts of the team. You can't keep people on the same page if they don't forge a good working relationship with each other.

4. Establish procedures for rapid responses to very important questions, and timely quick responses to most of the rest.

5. Put a system in place to immediately cancel user access and passwords for those who no longer work on the project. Even though you're not working on top-secret plans to invade the moon, there are times when some news and developments you'll prefer to keep "in the family."

To sum it up

One of the more surprising things I've seen consistently is that the core teams driving broadband initiatives, even for mid-size cities, are not very large. Santa Monica and Wilson started with a dozen or fewer staff. ECFiber runs its nonprofit broadband business with a similar number. The Steuben County Community Foundation built and operates their 75-mile dark fiber network with a team just two people.

In all of these and similar examples, the project teams hire engineering design firms, and often, local construction companies. Recruiting the right people for the project team is vital. If you don't do this part of the project well, there will be serious wailing and gnashing of teeth to contend with sooner or later. Probably sooner. However, you learn about the key element of the business, enlisting the right staff and contractors will get the job done.

7. Getting To the Heart of the Matter - the Needs Assessment

There are probably a dozen variations on the needs assessment. Which variation is best for your community has to be decided by your stakeholders and whatever consulting people you may bring in to help. Here is an overview of my approach doing an assessment as a starting point. Adapt and perform.

The assessment's initial stage begins with preliminary individual interviews of key stakeholders who have a vested interest in the success of a broadband network, including:

- managers of the city and county economic development agencies;
- a senior member of the Chamber of Commerce
- leaders (CEO, COO) of two of the larger companies in town;
- commercial real estate agents;
- one or two elected local government officials;
- several representatives of a cross section of neighborhoods, such as African American Hispanic and Asian communities, senior citizens, low-income residents and college communities;
- a representative from either a medical facility or an agency who can speak knowledgeably about local healthcare delivery and technology; and
- an administrator from the school district.

These interviews set the stage for survey, workshop, meetings and the like. They are definitely critical to the full needs assessment process. During this preliminary phase, your steering committee, broadband project team, or whomever is driving the process may want to review written and online materials from various sources that give you a overview of community broadband. Together with the interviews, create a profile from community sources of the state of communication technology within the local government, the economic conditions in you area and the advance or decline your education and healthcare systems.

After the interviews, it may be effective and efficient to conduct three or more half-day stakeholder workshops over a number of days. Each workshop should bring together a different set of representatives from stakeholder groups. For example, have representatives from businesses and economic development agencies in the first workshop, governments departments and community leaders in the second, and schools, hospital and nonprofits in the third. Add others as appropriate. In Philadelphia, when they began their needs assessment for their wireless network, they held 15 focus groups that covered a range of constituencies.

In each workshop or focus group participants receive a high-level briefing on what changes and improvements are possible by using broadband within their respective areas of concern (business operations, classroom instruction, public safety, etc.). Then discuss the direct financial impacts if participants' organizations were to experience these outcomes as well as the qualitative effects of broadband. The meeting concludes with participants describing what they would hope to accomplish using broadband.

I like to give participants a "homework" assignment to go back to their respective constituencies to discuss what they learned, and to ask for additional feedback and ideas. The emphasis of this tactic is to 1) educate constituents, 2) brainstorm for ideas on how they would use broadband, 3) help stakeholders determine whether or not pursuing broadband makes sense, and if so, 4) motivate constituents to support and eventually subscribe to the network.

As many of the stakeholders as possible (or designated stand-ins) should reconvene within 10-to-14 days for a two- or three-hour summary session. During this session each stakeholder group gives a 10-minute re-cap of their best three ideas generated since the workshop, describes the top potential financial or economic development benefit of each idea and indicates whether they feel the city should pursue a broadband project.

Data-gathering activities

In this phase of the project, we gather data and direct feedback from a variety of sources to determine in greater detail:

- what Internet infrastructure and services are in place as well as resources that can facilitate much of the city and constituency groups (schools, hospitals, neighbors, etc.) shifting to a digital economy;
- do those resources adequately meet the current needs of various constituent groups;
- what are the current and future needs of those constituents who are likely to use broadband in ways that produce the economic outcomes desired (e.g. local companies become more competitive, individuals improve job skills training);
- the potential financial or economic impact for respective constituents and organizations that use broadband to meet the needs identified;
- technology options that make sense relative to the short- and long-term needs (e.g. wireless, fiber, cable);
- what network funding and business model options make sense; and
- which agencies and nonprofits potentially can facilitate network funding, broadband adoption and moving communities towards a digital economy.

In addition, I intend to create profiles of three categories of constituents who will play important roles in the network's financial success. First are potential stakeholder individual or groups and organizations that can drive broadband adoption among businesses. For example, chambers of commerce and Rotary Clubs. Second are potential anchor "tenants," organizations such as local government and companies that could be big customers, each buying large quantities of broadband access. Third are anchor institutions, which are organizations such as hospitals, libraries and schools that have direct relationships with many individual constituents,

The technology inventory

To create a technology inventory of available broadband infrastructure and services, interview City IT staff and (when possible) service providers, as well as analyze the pros and cons of existing wireline and wireless broadband options in the area. This includes documenting availability, costs, maximum speeds, average speeds, prices, etc.

The inventory identifies physical and other resources that can facilitate broadband deployment, such as vertical structures on which wireless access points can be mounted and existing or planned public works projects that can facilitate installing conduit, a main component of broadband infrastructure.

During the preliminary interviews with stakeholders, have them identify as well as they can what resources they can bring to the table that can facilitate broadband deployment. Colleges may have fiber, businesses may have roof access to house wireless technology, and someone may have access a data center where servers and key electronic components can be stored.

There may be commercial construction companies that have plans for doing work that involves tearing up the streets or building new structures that can be fit with conduits. Your inventory definitely should have owners of rights-of-way. Many broadband projects have been stymied because no one bothered to determine who has rights-of-way until the project is underway.

At the turn of this century, a number of fiber optic networks went bankrupt leaving some unknown thousands of miles of fiber in the ground. It's advisable to look through public records to determine if some of that cable might be in your town. Cast your net wide with a summary of viable broadband technologies used in other U.S. communities, plus a brief assessment of broadband technologies expected to roll out to the market in the next two or three years.

Gathering constituent data

The objective this part of the assessment is to get some amount of useful data from as many constituents as possible. The primary questions to be asked are: 1) what kind of broadband service do you have currently, 2) is the current service meeting your needs, and 3) what do you expect your broadband needs to be in the next two-to-four years? It is also helpful to know what financial and economic development impacts meeting these needs have on constituents, though this is difficult data to extract through simple survey tools.

Knowing how much people are willing to spend for broadband is another important question. It can be a difficult question to get answers for when dealing with certain constituency groups, which can drive up the cost of the research. However, this is vital data and the more you know bettor planning you can do. You have to take into account there can be a significant gap between how much people say they are willing to pay versus how much they will actually pay when offered a service.

The data gathering process is straightforward in concept but in practice, the execution must be well thought out so that you don't duplicate efforts, ask the wrong questions or misread the market.

One of the more economical and effective ways to gather this needed data is to set up an online survey that individuals and businesses can complete on the Web or via e-mail within a specified 30-day period. To include constituents without access, maybe you can recruit public institutions such as libraries and government offices and several business establishments to provide computer access for individuals to drop in and use. It will also help if some of the stakeholders participating in the workshops volunteer to help drive

this particular task.

Two or three "town hall" style meeting can ferret out a lot of issue and generate enthusiasm for participating in your surveys, so publicize them well and be sure they are open to all citizens. These meetings, similar to the workshops, begin with a high-level presentation of what is possible with broadband, followed by an open-mic discussion.

At the conclusion of the town hall meetings, the campaign kicks off to gather survey data from constituents. The following as a survey I developed to administer to one community's businesses.

1. What is the intersection nearest your main office/facility?

2. Who's your service provider?

3. How do you <u>primarily</u> get your broadband Internet Service?

Cable Modem
DSL Service
T-1 line
Fiber
Satellite
Cellular Wireless
Fixed Wireless
Dial-up
Broadband isn't available
We can't afford broadband

4. What do you currently do with your Internet connection? [Check all that apply]

- Run a business at home
- Email
- Browse the Web for business-related information
- Send/Receive large data files (e.g. manuals, brochures, PowerPoint presentations)
- Send/Receive graphically intensive files (e.g. color catalogs, schematics, complex images that are larger than a megabit)
- Run video applications (e.g. online training/sales videos, live video conferencing, live video streaming)
- Run applications between your company and suppliers, customers, partners, etc. (e.g. inventory mgmt, ordering systems, Electronic Data Interchange - EDI, collaboration software)
- Telecommunications such as VoIP (phone calls over the Internet) or PBX software
- Remote access by mobile or home based workers and executives, telecommuting
- Cloud computing (running software applications stored on remote computers), running Web-based applications such as Salesforce.com

5. What would you like to do now, or do more frequently/intensively, that you currently cannot do because your existing Internet connection is inadequate? (Check all that apply)

[Same choices]

6. Looking three (3) to five (5) years in the future, what would you potentially need or want to do with your Internet connection? (Check all that apply)

[Similar choices]

7. What is the minimum amount of broadband speed you feel you will need for your business in three-to-five years

- 4 Mbps to 10 Mbps
- 25 Mbps - 50 Mbps
- 100 Mbps - 120 Mbps
- 500 Mbps
- 1 gigabit or more

8. How do you feel about the value your business or organization receives from your broadband services?

- We receive great value for the money we spend for broadband
- The value we receive is adequate for the money we spend, but the service could be faster/better.
- We spend too much and receive too little value for our broadband investment

Since the Web is flexible, some of the questions to gather these answers can be modified to specific types of organizations or constituents. I'm a big believer giving survey respondents an open-ended question to see what kind of issues concerns and suggestions I can gather.

In addition, consider other sources of information such as demographic data on your city and trends within specific industries such as education, professional services and manufacturing. Include broadband data from the telecom and cable companies, but when you can make sure there is a source that can validate their data.

Partner development

While conducting town hall meetings and surveys, someone should reach out to potential marketing partners to attend. These can be large businesses, colleges or nonprofit organizations that are willing to help drive broadband adoption by offering special services, business opportunities or other benefits that draw subscribers to the network. For example, local banks or credit unions may want to offer special services to network subscribers who open accounts online, which was done in Missouri when Co-Mo Electric, (an electric co-op) started marketing there fiber network.

Discussion with potential partners will ferret several possibilities for marketing and

business development activities to pursue with the network's operators. Some of these partners may be based in other parts of the state, but nevertheless see value in having ties to broadband infrastructure in your community. The teams that gets created to run broadband projects has ultimate responsibilities in converting ideas generated through these meetings into concrete action plans.

Delivering the final report

The needs assessment report will serve to guide and motivate stakeholders, the organization or project team that deploys and manages the eventual network and those constituents who take an active role in marketing the network. Sections of this document will likely be valuable for completing grant and other applications to secure funding.

The report offers feasible infrastructure, technology, and policy recommendations. It also presents cost estimates for that infrastructure, maps of current broadband coverage, and supporting documentation with all of your constituent research.

Included in the report should:

- a vision statement to unify and motivate stakeholders and general users of broadband in and around your community;
- an overview of the main applications the project team should expect individuals, businesses and organizations to run over the network (e.g. education, video conferencing and related systems, voice over IP, data warehousing);
- logical technologies for delivering the broadband access that survey respondents and others indicate they need over the next five years,
- suggested broadband infrastructure configurations for maximum effectiveness and possible price ranges for services;
- estimated broadband infrastructure build-out costs and suggestions for sources of funds to cover these costs;
- several options (at least two) for funding models to consider for raising money to pay CapEx costs, and advisable business models for managing and operating the network;
- a list of potential anchor tenants that collectively can buy enough broadband services with a goal to generate revenues to cover from one-third to over 50% of the network's total operating costs;
- an overview of key policy issues to address, such as should the city government become a network anchor tenant, and/or become providers of broadband resources for the network;
- a high-level roadmap of broadband adoption tactics to use to generate subscription revenues and possibly partnerships from entities within and outside your community.

Real-world examples of other communities' successes will accompany recommendations so stakeholders can have context in which to evaluate and implement them.

The report should present a sampling of tactics for creating a digital economy, such as programs that teach teens Internet technology skills and then graduate them into tech support jobs for local businesses. Or chamber of commerce support programs to

encourage home-based businesses that will use the network. Local stakeholders should be responsible for refining and expanding these tactical ideas into workable programs.

8. The Mindset Driving Successful Broadband Fundraising

No matter how noble our intentions, we cannot escape the fact that money makes the broadband world around. Networks cost money. Providing services costs money.

One of the things that distort conversations about money is how we talk about the amount of money that we need for broadband project. People read reports about Chattanooga, Kansas City, Columbus, OH and others, and they get fixated on the price that these cities paid for their networks. Even before leaving the starting gate, some communities feel that all is lost.

After you finish this chapter, you should be in the right mindset for the next chapter, which deals with thinking outside of the box. Once you look at the issue of funding from different perspectives, I think communities fixate less and find more creative paths to get to the ultimate goal, which is to get broadband deployed.

Are you asking the right questions?

By now you probably have picked up on the fact that I ask a lot of questions. I feel a lot of broadband projects get bogged down because people don't ask the right questions up front. Doug Dawson of CCG Consulting; Bill Coleman from Community Technology Advisors and Mark Erickson, City of Winthrop EDA Director presented the following questions at broadband conference this year. These should be presented to your stakeholders as questions your needs analysis should answer.

In general you must be able to demonstrate that 1) you have a well-conceived plan and 2) people in your community support your efforts. Your path from concept to deployed fiber project will probably take longer than you expect.

Do you have a champion? Is there one person or a team of people who are willing to step up and devote the considerable amount of time needed to undertake the necessary steps?

What is the competitive landscape? Do the incumbents do a good job? Are they well liked? Have you talked to the incumbents about upgrading their network? Is there an opportunity to partner with the incumbent?

What are the specific benefits to the people/businesses in your community from the network you want to build? Beyond just better streaming on Netflix or Hulu, will the network improve the delivery of health care in your community? Will it provide new educational opportunities or improve the quality of life for senior citizens? Will the presence of a fiber network improve the ability of local businesses to compete in the marketplaces? Are your businesses and institutions ready to step up and make use of new network capabilities?

What kind of support do you have in the community for the project? How do local businesses feel about the city becoming involved? Are your schools on board? Have you talked with the health care providers? You will need to be able to demonstrate support, meaning customers, before you can attract financing.

Who's going to help you? Have you selected a consultant to draft a business plan? You also might need an engineering firm to provide an estimate of network costs to verify the numbers suggested by your initial consultant.

You are going to want to find a financial advisor who is appropriate to your planned form of financing. Get their opinion early to make sure that what you have in mind is feasible and legal. Be prepared to be flexible on many aspects of the business, because the realities of getting funded may make you do things differently than what you had planned.

You also need a plan to bring the public on board. Educating residents about the benefits of a fiber network is key to gaining their support. If they see the benefits they will be more inclined to support your efforts. This is going to require efforts like surveys, mailers and newsletters, websites and lots of public meetings.

You will need a team of local volunteers to handle the early work that needs to be done. Somebody has to take charge of working with the consultants and working with the public.

Who's going to pay for the development costs? Expect that before you go for final financing that you are going to have to pay for feasibility reports, engineering, legal advice, advertising and public awareness, etc. This cost can be considerable and generally is proportional to the size of your project. Make sure you know up front how you are going to raise the needed money. These upfront costs can often be repaid from final financing, but somebody is going to have to write the checks to get the project to the point of being financeable and shovel ready.

How will you be organized? You need to know the business structure you are planning to use to own and operate the business. This means determining things like structure (municipal, cooperative, non-profit or for-profit corporation).

If it's going to be a municipal business this means getting the local politicians involved, holding public hearings and asking them to vote to support and fund the project. If more than one municipality is involved then you will probably have to create some sort of Joint Powers Board as a way for the communities to act together to get this done. Expect in every community that there will be naysayers for using public funds to pay for fiber.

If it's going to be some sort or corporation or cooperative, then you need to create the operating entity, choose the people to lead the effort, create and implement governance rules.

How is this going to operate? How will you operate - by hiring employees or bringing in an outside firm? In either case you will need a detailed plan of how this will work before you get funded.

Will you have any partners? If the project is going to involve multiple entities, those agreements must be reached early. If this is to be a public private partnership, then all parties must be on board early in the process with a clear understanding of roles, risk assignment and limitations and governance.

In the end of the day, you are going to ask someone to lend you a substantial amount of money, either from a private or public source or a combination of sources. More sources

equals more complexity. Cities need to understand that borrowing money for fiber projects is never easy and that the final step of getting financed is the hardest step in the process.

Start from within

I posed a question in an article in 2012 that gets to the heart of why you should pursue an "investor" strategy. If Green Bay, WI (a city of 105,000 souls) can raise $70 million in five weeks to rehabilitate its football field by selling $250 stock shares, I bet $250 there's a community in America that can raise $2 or $3 million the same way for a broadband network. Any takers?

The Green Bay Packers raised this amount of money right before Christmas, during a serious economic downturn and using an investment vehicle (stock shares) that has nearly zero financial worth to investors. Granted, broadband does not incite the same passion as one of America's most popular football teams. But then, not every broadband project needs $70 million.

If a community wants good broadband that delivers speeds fast enough to produce significant economic, educational, healthcare and other advances, it's constituents must take the initiative and maintain a leadership position in pursuing broadband solutions. Furthermore, it is more than likely that whatever solution you eventually settle on will present funding challenges.

What the stories in this book say loud and clear is that there are workable alternative routes to acquiring the money needed to build broadband networks. These stories are not the only alternatives, and the fundraising tactics presented here likely will be refined and enhanced as their use increases. However, "we don't have money" and "we might fail" are no longer valid reasons for not having broadband in your community.

There are common threads that run through community broadband stories that point the way forward for your particular community and its unique needs.

- These and virtually every successful community broadband project has a champion, someone local who lives, breathes and endlessly advocates for broadband.
- Creating the overall business structure - a nonprofit - is relatively easy, and it was a concept easy for people to get their minds around when presented with "yes, we can fund this network."
- Never underestimate the power of broadband to inspire community investors.
- Doing a needs assessment properly is neither easy nor quick. But if a community doesn't do this right, they probably will not generate CapEx funding or financially sustain the network once it's built. When you dig deep into these stories, you typically find a lot of planning went into the network. The strength of the plan reassured and inspired early investors who in turn inspire future investors.
- Doing all the paperwork and doing it right cannot be emphasized enough. These communities here DID NOT cut corners on competency when finding professionals to help them.
- Rome wasn't built in a day, the entire network need not be built in a year. Many of those interviewed here owe their success to initiating a buildout, generating

broadband adoption, expanding buildout, adding more customers. Repeat.

Maybe communities need to become CLECs. Some appear to be better informed of the option and the required certification process. It is not an easy process. In states where incumbents hold huge sway with state legislatures there could be hurdles indeed if municipalities attempt this. Co-ops and nonprofits can expect lots of static as well. However, billions of dollars in FCC grants plus numerous other state and federal grants targeted to broadband are open to organizations branded as CLECs. The FCC also refers to them as Eligible Telecommunications Carrier (ETC). The rewards can be worth the paperwork pain. Just don't underestimate the pain!

Consider the value of economic fundraising

National Community Development Services, Inc. (NCDS) specializes in boosting the economic health of communities through economic development fundraising. CEO Tom DiFiore explains, "Most successful fundraising campaigns for community and economic development initiatives usually adhere to four core principles:

1. It's about the *community's needs*-not the organization's needs. So you make the community and the benefits they'll receive from broadband the focus of the campaign, not the organization.

2. It's much easier to raise big money for specific initiatives and projects [digital inclusion, workforce retraining programs, improving healthcare delivery] than it is to fund an "organizational budget." No one is interested in ensuring an income stream for an organization. They want outcomes in the community-not 'activity.'

3. What they help write, they will help underwrite. Key stakeholders and funders must have a sense of ownership in the initiative being funded. The best way to achieve that is to involve them during planning and development.

4. The initiative must be *relevant* to the community's needs and opportunities; there must be *measurable* goals that define progress and success; and the leaders of the organization/ initiative must be *accountable* to the investors.

Read more tips from DiFiore.

When you're going after money, overestimate costs, underestimate revenue. Jim Baller, president of the Baller Herbst Stokes & Lide and an expert in public broadband, advises, "Each of the options that communities pursue for funding has its strengths and weaknesses. A community must have realistic expectations and cautious action plans. Most successful projects have been those in which communities rallied around clear, compelling, and tangible economic goals. They deliberately overestimated costs and underestimated revenues to give themselves a lot of headroom when the pushback from the incumbents inevitably occurred.

"However attractive a community broadband initiative might be in theory, success was not guaranteed and has to be earned every day. Only by proceeding with their eyes are wide open and making necessary adjustments as they went along were they able to stay the course and succeed in the end. Those that did were well rewarded for their vision and persistence."

Make your funds go further by lowering buildout costs

The focus of these previous fundraising tactics is to pull together people with money they're willing to invest. However, there is a sub-theme at work in some communities, which is they reduce the funding hurdle through improved cost management.

Communities need to devote some creativity and planning resources to determining how they will manage the cost of building the network, as well as create forward-thinking plans to control the costs of operating the network. It is easier to get investors involved with a network when they can see project teams are managing money well from the outset.

ECFiber and Emporia have strategies that call for building part of the network in an initial effort, and then selling services to residents and businesses in this area. As sales pick up, they expand the network.

"This is a reasonable approach from a purely financial standpoint," states Chris Janson, former Senior Marketing Manager for Ciena Communications. "It minimizes the odds of both organizations becoming overextended ahead of revenue generation. However, there is a risk that if they encounter obstacles in construction (such as right-of-way issues) or generate lower than expected subscriber up-take, the network team could end up serving only areas that are prime for immediate financial return and ignore other areas. As a result, they'd still have under-served areas that cannot benefit from access to broadband. A lot of contingency planning is necessary to avoid this problem."

In addition to leap-frogging the buildout, there are also other opportunities to keep costs manageable. Alan Davis is President and CEO of CapeNet, which is built a major fiber network in Cape Cod, MA, the OpenCape project.

"Communities are already saving a significant amount of money by managing the buildout themselves," Davis states. "A Comcast or a Time Warner will hire a subcontractor to build the network, but they will add a sizeable margin of profit above the contractor. A community could hire the same contractor and save that mark-up."

Another cost-saving measure is building an intranet, a network that provides closed links between or within local government departments, college campuses, K-12 schools, medical facilities and institutions. Intranets do not link to the public Internet, which has cost implications.

Multiple city and town governments sharing a network, such as with OpenCape, can have links just to benefit the respective towns' specific public safety agencies or mobile employees working between jurisdictions. Davis also points out that "applications such as GIS can be very expensive when bought and used just within a town. But if the GIS app can be shared across towns, then overall costs can be reduced."

Communities, particularly those participating in regional projects that involve multiple jurisdictions, need to identify ways in which they can lower buildout costs without lowering the network's overall quality. And then do not be shy about these measures. Tell everyone. Investors reward financial prudence.

9. Show Me the (Hidden) Money for Funding Broadband

Many a plan for building a community broadband network has been snagged on the shoals of financial uncertainty. However, there's actually much more money available for broadband than many communities realize.

Typically, local businesspeople, educators or a visionary political leader start agitating at city council meetings, saying that the town should have its own broadband, just like Chattanooga. Citizens get excited as they recognize the possibilities. Then someone asks, "How can we afford it?"

People discuss passing a bond measure, but these aren't popular everywhere. Traditional loans are another possibility, but these may not be popular, either. Finding a Google Fiber to be a broadband sugar daddy has a lot of cachet - except for such nagging issues as communities' lack of say in key decisions (such as where the profits go). A public-private partnership is only as good to the community as the lawyers who craft the deal. Federal grants offer hope, but there isn't enough broadband money to go around.

After exhausting this list, broadband planners hit the brick wall.

Cast a wide net been hunting for funding

Communities need to step back and consider the problem from different angles. Rather than limiting themselves to the usual funding suspects 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. They need to find people who pay for results, not for technology. These funders may not know the difference between a gigabit and a giraffe.

The U.S. Department of Transportation 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 city of 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. That means its IT department 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 offer broadband to homes and businesses.

Communities build broadband networks to solve specific problems. You should identify government agencies, nonprofits, foundations, local businesses with spare capital, wealthy individuals and others that have available funds to help solve similar problems you hope to use broadband to address. Bits, bytes, conduits and fiber wires are just concepts. A lot of funding organizations don't care what the technology does; all they care about is whether it answers the need - and whose name is on the check they're about to write.

Suppose your city has a large Hispanic population that is not currently using the Internet in large numbers. One approach might be for you to formulate a five-year research trial to definitively demonstrate that high-tech adoption affects employment in Hispanic populations. Include in your proposal a budget for building a network that covers the Hispanic population and a control group, and then present this research proposal to, for example, foundations that focus on advancing employment for Hispanic youth.

Getting the grant funded will enable the city to pay for a portion of its network and may make additional grant funds easier to obtain. Financial institutions, too, are more inclined to make loans when recipients have several sources such the foundations to bring to the table.

The needs assessment process helps cities identify groups of constituents that want or need a broadband determine how many of them there are and where they are located. The Fund-raising game plan is about finding the lenders and investors.

Identifying broadband need a key to success

If you treat community broadband as a business, with highspeed Internet connectivity as the primary product, you have to determine who wants or needs this product so badly they're willing to pay to have for it or pay for someone else have it. The needs assessment process is all about identifying what kinds of person want the product or service, how many of them are there and where they are located. In order to build the product or the mechanism for delivering the service, you have to fund these yourself, find some lenders, find investors or some combination thereof.

The needs assessment is all about assessing who needs the product. The fundraising game plan is about finding the lenders and the investors. In the needs assessment you build your database of potential lenders and investors. Gathering information on the various needs of your community is how you get an idea of how extensive you network has to be, and what type of technologies your network requires. This impacts the amount of your funding goals.

As you discuss needs with the different community stakeholders, many of them should be able to give you particular entities such as foundations government agencies even wealthy individuals you should target for fundraising efforts.

Every opportunity to meet with constituencies, you should end a discussion with a question about which entity or individual could potentially make funds available to help build the network. You never know from where a great idea will spring.

A typical report has say a vision statement to unify and motivate stakeholders and potential users. Ideally, a potent vision statement will also inspire potential network funders. The report should include an overview of the main applications the community expects to run over the networks as well as subsequent benefits of these applications. Funders want to know that their money is going to impact significant outcomes.

Although potential funders may not have a deep understanding those the technologies involved, they still want assurances the technologies your use are sufficient to address the current and future needs your community. Lenders in particular want to feel comfortable that your estimated infrastructure build-out costs are accurate, and that your business

model is built on reality. All potential funders want confidence that the project team, your partners and vendors are confidence for the job of running the network successfully.

The Fundraising game plan

As you get your ducks in row, it's time to let the creative juices flow. In the previous chapters, I discussed the four main categories that comprise the business case for broadband use: improving local government operations; boosting economic development, transforming educational; and improving healthcare delivery.

The first category obviously resonates within government circles, though the public may not be aware of this benefit. Broadband as an economic development tool is becoming an increasingly easy image to sell because so many journalists and the federal government are reinforcing the image. Broadband-assisted education and healthcare are viewed in some circles has just another side of the economic development game. However, the impact of both of these outcomes is beneficial enough that each deserves its own place within the fundraising game plan.

As you walk through each of these categories and identify a major impact that broadband may have, asked the question: who has an interest in seeing that outcome come to fruition? You may find that a particular nonprofit, while it does not have an interest in broadband, it has a most definite interest in transforming education in underserved communities. A foundation may have significant funding for programs that reverse offshoring with building particular manufactured goods in the US. You may have 10 funding entities interested in your network. Maybe there are only two, but together they can pay for the entire network.

What follows are some important questions about certain economic and other outcomes resulting from bringing highspeed Internet access to town. This is a way to stretch your imagination and the creativity of the people around you. Let the Force be with you.

Show me the money economic development - six ways

- Attracting new companies and organizations to your community;
- Making current businesses more competitive;
- Reviving depressed business districts;
- Increasing home-based businesses;
- Improving personal economic development; and
- Reviving distressed or depressed residential communities.

I frequently repeat these economic outcomes that are the result of community broadband because listing them helps you focus on the goals you are trying to achieve. Some entities such as foundations, corporations, associations and government agencies care enough these categories of that they are willing to fund technology that produces these outcomes.

<u>Attracting companies to town</u>

Start by asking which potential funders have a vested interest in attracting businesses to town. You have to be sure that these entities can clearly see the link between broadband and more companies making the decision to move into the area. As part of your needs

assessment, consider including formal or informal surveys to a sampling to companies in the type of industries you are likely to draw. Be sure to research factors about your community that will entice or repel target companies. A lot of communities get very excited about attracting data centers, for example, which you can't get without highspeed Internet. But in reality, data centers don't require a lot workers and it can be easy to lose money operating them.

There are few potential entities may fund broadband as a way to attract new companies to town. Local businesses, development agencies, local and regional associations, state and county economic development agencies, colleges and universities are some.

Making current local companies more successful

A lot of times when you read articles about broadband and economic development, it's usually from the perspective of the network attracting new companies and a lot of jobs. I strongly believe that in the short run at least, broadband networks will have the greater impact on current businesses, not attracting new businesses to town.

Nard large national businesses, homegrown ISPs Mahaska Communication Group (MCG) in Iowa and local or state economic development agencies are some of the entities that may have the goal of supporting broadband as a way to strengthen current local businesses.

Reviving distressed business and residential neighborhoods

Some broadband-driven projects only impact sections of a city or town, but many of the same entities that support projects that draw businesses to town also will consider projects that only address a portion of the community. You obviously can scale back the amount you're trying to raise for what I call "limited-reach" networks. Your fundraising efforts for these can enable you to compile a directory of financial supporters that you can tap again should you decide to expand broadband infrastructure over the entire community.

Home-based businesses, personal economic development

Largely it is very much a qualitative exercise to make the business case for potential funders without doing extensive survey work and extrapolation of data, which can be expensive. Communities subsequently must build a case for the building a network, offer residential services, and hope entrepreneurs and self-motivated individuals will add some unknown economic impact. Or, as quite a few communities have done, they build their own network for businesses only while leaving it up to private-sector service providers to take care of people who work from residences.

To win over perspective fundraisers, combine entrepreneurial ventures and personal economic development with other outcomes (e.g. improving education, access to better healthcare) as reasons to build a residential network. You can collect and present data that strengthens your case, but I think that in the end you will have more fence sitters then if you build a comprehensive set of outcomes.

The exception might be if you can find a foundation or nonprofit agency with a funding budget for first personal advancement that is willing to fund broadband adoption

programs. Granted, it doesn't build you a network. But with pledges of money, you might then be able to convince investors or lending institutions to fund a buildout.

One example of the home grown ISP

Emporia, KS is a town of 30,000 people in which AT&T has no interest in investing, and Cable ONE has no interest in expanding or improving their current infrastructure. These incumbents see no profit potential here. Four local guys with backgrounds in the telecom industry decided to start a company called Valu-Net and find investors with clearer vision.

Valu-Net's engineering study determined they needed $12 -14 million to build a fiber network for the entire town. They estimated that with $5 million they could build enough of the network to start selling and delivering services.

"We went to local banks who endorsed our plan and its financials," says Tidwell. "They committed to help with debt financing down the road. Communities need at least one-third of the expected total cost so you can get to the point of generating cash flow. Keep your labor force low. It's a race to sign up customers before you run out of money. If you can get 500 customers, for example, can you make payroll, then use capital to generate capital?"

Rather than go the co-op route, Valu-Net decided to become a private telephone company, technically a Competitive Local Exchange Carrier (CLEC). It took a year of hard work and lots of paperwork to become a CLEC, a designation blessed by the appropriate state agency. There may be different requirements in each state.

Valu-Net then pursued a small number of large-sum investors rather that hundreds of people willing to make small investments ($2,000-$3,000) because investor relations is easier to manage. Valu-Net asked for an initial investment of at least $50,000. The company got early interest, with most of their initial investors living in or right around Emporia. The founders put up $500,000 themselves.

The company raised $6.8 million initially and shut off investments before they became oversubscribed. "We were surprised by the people who put money in who you wouldn't expect to have this much to invest. There were small business owners, farmers who'd done well. Mostly average people who invested because they believe in the founders and believe that it eventually helps the community."

Tidwell has friends in Nebraska who are executing the same type of investor strategy. They plan to duplicate their company once they get the first network project up and running in. He believes there are a lot of small communities that need broadband, and many have residents with money that they're willing to invest.

The success model for Valu-Net's investors is built on a 50% subscriber take rate, meaning 50% of potential subscribers actually buy services. However, at a 30% take rate the model still works. The size of the investment amounts is an individual community's decision. But getting local investment is the main objective.

Fundraising game plan for education

If you review all of the types of organization listed previously, you'll find some of them

could be potential funders of broadband for educational objectives. Even the organizations that are devoted exclusively to economic development can see the economic impact of wiring a town for broadband to facilitate education and healthcare.

One vital piece of information that every needs assessment should uncover is, what Federal, state and nonprofit organizations have education grants that can facilitate broadband deployments as part of the bigger project. These may be grants specifically for broadband, or grants that can you can re-purpose for technology solutions to include broadband in the same way the Department of Transportation funded Columbus, OH fiber in their traffic lights.

Don't leave money on the table

A surprising numbers of broadband stakeholders may not be aware if their school districts are eligible for the FCC's e-Rate grant program. This program funds providers to build broadband that service K-12 and libraries. The FCC reformed the program so communities can access the FCC-built networks when school isn't in session. New reforms as expected to open up eligibility these projects to municipal and public utility networks.

Stakeholders need to inform themselves about e-Rate, understand whether your town is receiving e-Rate funds, and determine if there are similar programs at the state level. Learn if your state makes it easy or difficult to get the type of certifications the FCC requires of their e-Rate recipients. Getting your community network eligible for e-Rate is an extensive process, so you want to begin working on this before you even start putting fiber in the ground.

School administrators are not the only ones unknowingly left out of certain Federal broadband bonanzas. The FCC, through its 2 year-old Rural Health Care Program, has allocated $400 million annually which has yet to be committed, much less spent. While there is no cap on projects or applicants, there is a $150M cap for upfront payments and multi-year commitments. Healthcare providers (HCPs) either stand-alone or as part of a consortium are eligible for the grant.

On the one hand, some will say that the FCC needs to be more aggressive in its promotion of the program. Conversely, others will argue that a lot of communities are clearly aware of their need for better broadband, so how can there not a line at the FCC stretching around the block? FCC is not the only Federal agency with grant programs to facilitate broadband deployment.

Communities that are assessing the landscape in search of potential funders should examine local and national entities that provide money for education technology or for any educational outcome that broadband can assist. Both state and local school administrators are rolling out new technologies out to students and teachers. However, rural neighborhoods or entire town don't have the Internet capacity many of these technologies need to reach their potential.

Education technology companies have a vested interest in funding or facilitating the funding of community broadband. Your broadband team and the elected city officials should be exploring opportunities form partnerships between your community and these companies. A case can be made that funding broadband infrastructure will make the

distribution, customer service and upgrades more efficient from K-12. Software designed to facilitate collaboration between students, teachers and parents can get a boost as well.

Leveraging education to reduce FTTH costs

Once you know you can fund putting conduit in the ground, determine if you have room in the conduit and the budget to add fiber lines to whatever fiber you need for the schools. With a good engineering design firm, can you link together your elementary, middle and high schools with fiber in such a way that it can pass a significant number of houses? Factor in private as well as public schools, with the private schools contributing some money to the network.

If the schools, for example, only need 10 fiber strands to meet their broadband needs but the conduit is thick enough to hold 96 strands, lay in 48 strands to provide broadband to the schools and homes. It's more economical to expand a grant-funded network to cover a large number of homes than to pay to build separate networks for the schools and for the residents.

Or you might want to design the network so that many of the larger businesses as well as the schools are passed, and run 72 fiber strands through the conduit. Subsequently, your conduit covers more homes, and your businesses add to the revenue stream.

10. The Many Ways Communities Can Own Broadband Infrastructure

One the first things I tell communities is that they should not go into the needs assessment process with their mind already made up about what type of business model they should pursue. There are many options for how communities can proceed, and you run the risk of selecting the wrong model that ultimately cost you time, money or opportunity.

If you don't thoroughly understanding various constituents' needs, you can easily pick the wrong technology, you might build infrastructure in the wrong place or not build out to the right places. In the heyday of muni WiFi, dozens of municipalities spent thousands of dollars pursing a technology that was doomed to fail because it was the wrong technology for meeting many constituents' needs.

As you gather data from various constituents, catalog your various technologies, discuss preliminary engineering designs and determine your financial needs, it becomes easier to decide which model makes sense. Sometimes the right business model jumps up and yells, "pick me, pick me!"

As your community and its stakeholders evaluate business model options, I encourage you to keep the public-ownership option on the table. But if your community is in one of the unfortunate 21 states that have laws restricting public broadband, there are other business model options to consider that likely can move you past the restrictions.

It is important for communities to understand that these business model options are not automatically good or bad. The key here is to conduct a sufficient needs assessment to determine which model makes the most sense financially, operationally and politically. Any of these models can be tweaked, combined with other models, or put aside in favor of a completely new approach. As the assessment progresses, which of these options is viable should become clear and begin to gather initial support from stakeholders.

Assessing options for business models

While it is possible to rely on large Internet service providers to bring highspeed broadband measured in the hundreds of megabits per second to your community, history works against this happening anytime soon in, particularly in small and rural towns. Furthermore, to trust the development of a major economic development asset to those who do not treat a community's needs as its priority is foolhardy at best.

Conversely, small and mid-size service providers do offer hope, and several business models include creating partnerships with these local and regional providers. They are part of the community and likely have much closer ties to the people in it, so it is easier to create a mutually beneficial relationship. In Keene, NY, residents and businesses united to raise money to help service provider Keene Valley Video and Internet pay for a network upgrade and fiber expansion.

One thing to keep in mind is that you want to determine which model to use based on

how much speed your assessment determines is needed not just now, but three-to-five years down the road. Getting better service doesn't help in the long run if the improved speeds are still below what's needed to produce the desired economic, educational and other outcomes several years from now.

1. City or county owns the network

The benefit of this approach is that constituents, through their local government, control the asset. When the department in charge of the project plans and executes well, sometimes with the assistance of an outside company to manage aspects of the buildout and operations, the network is successful. Santa Monica, Loma Linda, CA and Wilson, NC and others have small IT departments but have effectively marketed and operated their networks, some for a decade or more.

Setting the bar higher for municipal ownership, Wilson's neighbor in the state Salisbury just announced the nation's first 10-gigabit network. After five years of building out its fiber network and launching gigabit services 2014, the city's Fibrant is now offering to every premise the highest citywide speeds available in any U.S. community. Salisbury is staying ahead the technology curve via point-to-point Ethernet technology today from Calix, and transitioning in 2016 to next generation Passive Optical Network (PON) technology as it becomes available. "Fibrant is doing something special in Salisbury," said John Colvin, senior vice president of North American sales at Calix. "In making the leap to multi-gigabit services Fibrant has set a new bar for communities across America.

One potential downside is that the business operations could overwhelm the government staff. Furthermore, public networks will constantly be the objects of negative PR campaigns and predatory business practices by large incumbents, which can put some city staff at a disadvantage since they are not used to working against competition. However, of the 342 public networks in operation, some for as many as 12 - 14 years, almost all are still in business providing good service despite the obstacles.

With an estimated population of 835,950, Columbus, OH has one of the largest city-owned fiber networks in the country with over 500 miles of broadband infrastructure. With the U.S. Department of Transportation grant the city received, fiber cabling is connecting all of their traffic lights. City staff has contracted several small ISPs to offer Internet services (including gigabit services) non-exclusively over the cities network to residents and businesses. Large incumbents can either play along or be left behind. For midsize and large urban, this could be just the ticket to enable their citizens to get a gig in a way that avoids a lot of risks.

2. Municipal utility owns the network

Chattanooga is perhaps the most well known municipal-owned utility network. Their fiber network began as a project to improve EPB (Chattanooga's utility) electric service delivery by building a smart grid. EPB Fiber Optics began offering Internet, phone and TV services to EPB customers within the utility's 600 square mile footprint. The network's monthly operations currently are profitable and serve over 40,000 customers. The municipal utilities in Springfield, MO, Cedar Falls and Indianola, IA and dozens of other communities run their respective town's network.

The strength of a utility owning the network is that their business operations structure is well suited to adding Internet services to their offerings. Electric utilities are typically the ones building networks, not only to improve smart grid operations, but also to supports smart meters at customers' homes. This leads to additional cost savings and increased customer satisfaction. Local municipal utilities often have a positive reputation with customers, and this good will is a big advantage when marketing broadband. As a public entity, municipal utilities face many of the same political challenges as local government-run networks, plus they are forced to compete for the first time.

3. Community creates a nonprofit organization to build and run the network

Mountain Area Information Network (MAIN) is a community-owned nonprofit corporation that began in western North Carolina in 1996 to bring dial-up Internet access and other communication services to an area telecoms refused to serve. Over the years MAIN has evolved to provide other services, including wireless broadband and fiber middle mile access for ISPs. Today MAIN is a full-service ISP providing last-mile services.

Creating a nonprofit organization such as MAIN or ECFiber with a governing board comprised of community representatives and structured to operate a broadband network is a straightforward, though tedious exercise. It demands that lawyers rigorously attend to details to ensure the nonprofit does not have legal troubles later. The organization must plan and execute well, particularly in financial management and marketing. It is advisable to hire or retain someone with proven telecom industry experience to lead the nonprofit, but who also is capable of working without the many organizational resources that exists within larger telecom companies.

A main benefit of the nonprofit is the fact the community owns it, and overseas it in a democratic manner, but it avoids the threats brought on by anti-municipal network state laws. Hired management runs day-to-day operations in a businesslike way that avoids a lot of local politics. Nonprofits of this type typically do not have and won't invite layers of bureaucracy since it is possible to have local contractors build and service the infrastructure.

One potential downside is that the nonprofit likely will not have access to the same money resources or have the same perks as private companies. But this is all offset by the fact that these staff is typically from within the community, so they are willing to look at their roles as an advocacy as much as it is a job.

4. Community creates a co-op specifically for running a broadband network

There are legal, organizational and financial differences between a nonprofit corporation and a cooperative. In Maryland, stakeholders created the Maryland Broadband Cooperative (MDBC) to build a middle mile fiber network across eastern, southern and western rural counties, and have local communities build last mile networks.

Co-ops are membership organizations, so in some ways more democratic in how they are governed, and have other legal differences from regular for-profit companies. There do not seem to be any inherent weaknesses for towns and cities to create co-ops or even a nonprofit specifically to run broadband services. However, it seems that the broadband-

specific co-ops out there were created to run large regional projects.

5. Community recruits existing nonprofit to build network

Foundations offer a number of benefits. First, they are often formed to drive local economic development. So this mission makes building and operating a broadband network devoted to the same goal a compatible venture. A foundation's staff and board of directors are local community leaders, they usually have a positive, respected position in the community and the staff has many key business contacts that can become customers for the network.

A foundation's staff probably has no telecom experience. However, selling and managing dark fiber infrastructure doesn't require dozens of people if a foundation partners with the right provider and uses good contractors, as proven by Steuben County's two-person staff and local contractor who manage that business. A foundation, as a nonprofit, may not have the attraction for venture capitalists and traditional money people, but they can use their community standing and nonprofit status to facilitate fundraising for the network.

6. Telephone, electric or other co-op transitions into broadband business

Dozens of utility membership co-ops (electric, telephone, gas, water) are building, planning or considering extending their services to include broadband. The North Georgia Network is the product of two electric co-ops that teamed up to build a $42 million, 1,000-mile middle- and last-mile network. By the time of its launch, the network had already turned service on for 2000 residents, 50 schools and colleges and five hospitals.

Similar to municipal utilities, a utility co-op's existing business infrastructure and operations make Internet services a logical next step. Northeast Missouri Electric Power Cooperative is a co-op that offers dark fiber in Missouri and Iowa as an extension of their electric services. The advantages of a utility co-op expanding into Internet services are similar to creating a co-op or nonprofit. An additional upside is that a long-established co-op (some date back to the early 1900's) often has a stable business operations plus marketing and financial management expertise that a new co-op won't have. This is valuable if the co-op wants to raise money.

7. Public private partnership runs the network

One of the more popular business models but an often-misused description is the public private partnership. In a true partnership, both the public sector entity and a private company have money and resources invested into a broadband operation, and either both sides share ownership of the infrastructure and services, or one entity owns the infrastructure and the other owns the services. Some partnerships are merely a matter of the public sector organization cooperating with a private provider, but the provider retains ownership of both infrastructure and services.

Ontario County, NY is one of the more effective partnerships around. They built and own a fiber network that covers the county. Several local service providers and Verizon offer services over the network. Additionally, Verizon uses fiber strands from the network to beef up speeds and capacity of data traffic across its cell phone towers.

Google Fiber in Kansas City is an example of a "public private cooperation" - the city signs agreements offering Google access to some public resources, makes permitting easier and faster and offers cooperation in other areas. But Google owns both infrastructure and services, so in broadband matters when the public good conflicts with Goggle's business interests, the city may influence decisions but ultimately there are limits in what KC can expect from its demands.

The greatest value of a good partnership one in which the public and private sectors own a "piece of the action," and a good contract protects everyone's interests. The community has leverage to meet constituents' needs and the private company still is able to make money. If the private sector company is bought or sells off its stake in the business, the community still has leverage.

8. Communities find a mini-Google

Three counties in upstate New York wanted a backbone of fiber optic cable that businesses could use to tap in to the global economy. Corning Incorporated, a manufacturer of high-tech glass (including optical fiber), came though for the community, picking up $10 million of the project's $12 million tab. "We saw this as an investment not only in the community's future but in the company's future," said Dan Collins, a spokesperson for the company. Collins says backing a project that helps Corning (the company) and Corning (the town) was a no-brainer, especially as the company employs about a fifth of the surrounding community.

Bob Whitman, VP of market development for Corning, added, "This was a good decision that made a lot of sense for that particular community. Other cities need to determine if there are companies willing to enter into similar arrangement. We've seen several communities initially plan on building their own networks but change direction when a business shows interest in helping with the funding."

Along with the promise of these mini-Googles, there is a significant caveat for communities. Even though many local governments and local economies are struggling for money, they must resist the urge to close a deal at any cost. Stakeholders must maintain control of the business of broadband, that process by which communities use the technology as a tool to improve economic development, transform education and expedite healthcare delivery. Owning this process, whether or not they own the physical infrastructure or services, is how communities reap significant broadband benefits.

As the surging wave of gigabit initiative builds, we should expect to see a corresponding increase in creative public private partnerships. But the bottom line is that all negotiators of these deals should keep in mind that "private companies have to make money, and reinvesting in the public interest is always going to be a secondary concern," states Forbes blogger McQuaid. Smart negotiating and planning, though, is how everyone wins.

What happens when states restrict public networks?

But this drive to provide public-owned broadband solutions in unserved and underserved communities is stymied by a daunting barrier. 20 state legislatures passed laws restricting to varying degrees public-owned networks, and Iowa legislators expanded an existing law for public utilities to now require municipalities pass referenda to be able to provide

broadband.

Constituents and their leaders have finally said "Enough!" and are actively pushing back or aggressively planning ways to work around these barriers. Even some of the more conservative legislators in the country are re-examining these laws with a growing sense that maybe they weren't the wisest decisions ever made. Most notably, Chattanooga, Tennessee, and Wilson, North Carolina, each has literally made a Federal case out of this issue, petitioning the Federal Communications Commission to rescind its states' anti-muni network laws.

What would be the practical impacts on cities and states if the restrictions were to be rescinded? Part of the answer depends on how well communities plan and build these networks. For these communities to join any wave of new projects, they'll need to hire or retain knowledge experts in funding sources, infrastructure design and multivendor integration.

Dissecting the laws against public-owned broadband

Technically, 21 states have some level of restrictions on public networks. The laws vary from almost total bans on these networks to states in which they are not the significant barriers that people believe.

Even without the laws, progress can be impeded by the politics driven by the free-market philosophy that only the private sector should undertake broadband projects. This philosophy ultimately was the rallying call that enabled state legislators to pass these laws in the first place.

I've arranged the 21 state laws into three categories: the **If-Then Law**, the **Minefield Laws** and the **Total-Ban Laws**. Each category presents communities with a different degree of difficulty in pursuing broadband deployments.

If-Then Laws

The If-Then Laws are fairly straightforward requirements rather than restrictions, and they don't require communities to jump through too many hoops in order to move forward: if you meet requirement "x," then your community can build a network. A couple of laws, such as the one in Washington state, are pretty simple. Several states such as Iowa and Colorado require communities to hold referenda: if a ballot measure passes, then the community can build a network.

Pennsylvania is one of the states in which communities need to present their broadband wishes to the incumbent for the area. If the incumbent won't build it, then the community can move forward.

A bigger barrier in these If-Then states, though, appears to be one of perception. Beth McConnell, policy director at Philadelphia Association of Community Development Corporations states, "Unfortunately, many communities honestly believe that the state has a complete prohibition of any kind of public-owned networks." One county in the Keystone State (Cambria) navigated the waters and built a network. But despite that county's success, no other Pennsylvania community has followed its lead.

States requiring referenda offer examples of communities' perceptions holding them

back from building networks. Many communities fear a referendum is a near impossible mountain to climb because the incumbents will crush them in an electoral battle. However, they fail to realize that Longmont, Colorado, and a handful of small towns in Colorado and Iowa have created a roadmap for winning referenda. Longmont, backed with $5,000 in contributions, passed its second referendum by a 2-1 margin despite Comcast's spending $350,000 to oppose the measure. In November 2014, eight Colorado communities faced almost no opposition to passing referenda to take back their authority to pursue public broadband.

Minefield Laws

These state laws were written with the primary intent of prohibiting public-owned networks without coming right out and stating it. The laws create multiple layers of rules that are so onerous as to make compliance a significant financial burden. Or they are worded so vaguely that they become minefields in which one wrong step could trigger incumbents to take legal action. North Carolina and Louisiana are two states with laws of this type. Wilson, North Carolina unsurprisingly joins Chattanooga, Tennessee in petitioning the FCC to have their respective state laws rescinded.

Small and rural communities in these states are particularly disadvantaged because they don't have the legal resources and experience to battle giant incumbents' legal teams. Midsize cities such as Lafayette, Louisiana and Chattanooga have greater resources and were able to overcome major legal challenges. But these communities would prefer to avoid the additional costs and time delays while legal battles rage toward uncertain conclusions.

In general, these laws have so many levels of restrictions and requirements that the best way for cities to move forward—though not the only ways—is to get legislators to reverse all or parts of the laws. Or for the FCC to step in and use its authority to rescind the laws. Neither option is particularly easy.

Total-Ban Laws

These laws typically are short and unambiguous—public entities are prohibited from providing services, or they can provide services only to a limited audience and only on a wholesale basis. However, there may be loopholes in a couple of state laws that can be exploited, as you will read later in this report.

It may surprise many people that Texas is not in the report at all, particularly since the Lone Star State has a law that says public entities cannot own or operate telecommunications services. However, as was pointed out by Texas telecom attorney Clarence West in a filing with the FCC, "Texas cities are not prohibited from providing Internet connectivity, as it is a [sic] federally classified as an 'information service,' and not a 'telecommunications service.'" There are Texas cities that have provided Internet connectivity on a citywide basis, and Greenville, Texas, currently provides both cable and Internet access service."

Analysis of the legislative landscape

On one hand, things are dismal for states that have total bands on community networks.

You can only hope that the winds of political change loosen some of those restrictions. For the other two categories there are ways in which communities can deal with varying degrees of success in terms of getting the broadband the need. There is always the danger that legislators in other states will entertain similar restrictions. However, with the increasing popularity and necessity of broadband, threaten pushed back from communities are diminishing the threat these regulations.

Here are some observations that I've noticed over the pass couple of years.

State restrictions aren't the only barrier

Some of the barriers are relatively small or at least manageable for cities willing to put in some hard work. Once you dig into the nature of the restrictions of If-Then laws, communities can get a clear understanding of what the real situation is. The minefield states are a mix of those with so many barriers they may as well be total bans and Florida and Tennessee, where stouthearted communities with good lawyers have a reasonable shot at overcoming the barriers.

The FCC's chances at overturning state laws present a complex question and food for another discussion. However, feelings are mixed about a hypothetical flood of muni networks resulting if the FCC is successful. Removing the laws would be a net positive in terms of increasing the number of community networks. But other barriers would remain that communities must address.

In Iowa, the state restriction is a distraction but "The main barrier also is financing," said Curtis Dean. "Those cities that voted to become broadband utilities but haven't built a network yet don't have a lot of money sitting around." Attorney Ken Fellman believes most Colorado cities would explore public network strategies, particularly if an organization such as Google or Gig.U offered to step in to help fund them. Even communities in widely conservative Louisiana would consider government-owned networks if someone else paid.

Over the past three years, carriers have lobbied state legislatures to pass bills to free them from Carrier of Last Resort (COLR) obligations, including in New Jersey, Michigan and Kansas (both passed in 2014), California and Kentucky (killed in 2014). A lot of rural constituents won't become aware of this activity in their states until after these requirements are lifted.

Communities, particularly rural ones, in those states with anti-muni network laws will suffer a double miscarriage of justice. 1) Regulations that had guaranteed communities in otherwise poorly served areas have disappeared, leaving constituents with decrepit copper infrastructure, cellular service insufficient for future needs or nothing. 2) Communities will be legally prohibited from replacing the COLRs with local public networks that could compensate for the loss of incumbents' services.

There are some silver linings

Each state is different, but communities often find that getting better broadband is locally a nonpartisan call to arms driven by strong economic and quality of life issues throughout their areas. The bipartisan nature of public broadband was on full display in November when eight Colorado communities, some with distinctly left- or right-leaning

constituencies, passed referenda by over 75 percent margins to take back broadband authority.

Some laws can actually provide an impetus to build better networks, such as in Michigan. Sebewaing Light and Water (SLW), the village's public utility, had to get the city council's approval to make a request for private service providers to build the network. Next, they had to issue an RFP for the type of network they wanted to serve their 1800 residents, and wait 61 days to see if a minimum of three providers would respond. Because none did, SLW could build its own network, but only after preparing and presenting a cost-benefit analysis to the council that predicted costs, the number of subscribers, etc.

The analysis had to be publicly available for 30 days before a public hearing to authorize construction, and then reviewed by a CPA. "Developing an RFP that was subject to so much public scrutiny forced us to be thorough in designing the network, and also enabled us to get plenty of constituent feedback to fine-tune our design," states Melanie McCoy, SLW Superintendent. Though Pulse Broadband is primarily a network design firm, its analysis helped SLW meet financial reporting obligations.

One co-op got state ban rescinded

Is there hope for those who suffer under the more egregious state bans? Maybe if you take a page or two from the Kit Carson Electric Cooperative playbook. At one time, the state of New Mexico had a statute that forbade co-ops from providing broadband services. Kit Carson CEO Luis Reyes, Jr., began a systematic campaign of building local political support that was rolled up into state political support.

"We started with big education and face time with elected officials at local levels," Reyes says. "Not just mayors and city council, but anyone who ran for elected office who would benefit by having better broadband." The co-op also got involved with economic development projects in the three counties it services, and developed a track record of success stories.

By supporting projects that directly brought jobs to the communities, Kit Carson built a strong credibility. They then educated the communities on how broadband would bring jobs to the area. With the support built among constituents and elected officials, the co-op generated 1000 letters of support for their broadband plans, which they leveraged with state legislators to get the restrictive law removed.

Furthermore, Kit Carson created allies by partnering with lawmakers to help legislators implement their economic development initiatives. "Cities always go to the legislature asking for something," said Reyes. "But we developed relationships because legislators could count on us to deliver support from our 29,000 customers."

Get more details plus a state-by-state summary of the restrictions in all of the affected states in my Community Broadband Snapshot Report, *How to Navigate, Mitigate or Eliminate the Impacts of State Restrictions on Public Broadband*.

11. Nonprofit and Co-op in Operation

This chapter looks in more detail at two options for communities to own their broadband networks: nonprofit organizations created or recruited to run broadband, co-ops. Here are a couple of points to keep in mind as you go through your needs assessment and consider working with an existing nonprofit organization or creating a new one.

1. Be probing on your assessment. Just because an entity is an existing co-op or nonprofit, this does not mean they automatically care about the public good as much as you'd like. Probably most place a premium on community improvement. But if the people running co-ops and not-for-profits see themselves as businesses first and do not particularly view theirs as an altruistic organization, communities have to negotiate terms of any partnership with eyes wide open. Some larger nonprofits may think and act similar to larger private companies. Conduct careful due diligence to make sure there is a philosophical match as well as a high level of business competency.

2. Try to gauge the level of member or constituent participation. When there is too little constituent participation in a co-op or nonprofit, you may have to worry about whether the community's wishes will be listened to and respected if the organization runs your network. If there is a high level of participation, stay watchful that some members might feel it's ok to get heavily involved in the day-to-day business operations of the network to the point of hobbling the broadband effort.

3. Get a feel for the financial solvency of the organization, and its ability to raise money. Building a broadband network and managing its operations can require a lot of money. It definitely requires sound money and cash flow management. The organizations involved with broadband have to bring that money to the table, and/or be able to raise it. In a small town it can be painful and politically sensitive to turn down some folks who offer to help. But you do not want to be in the middle of a broadband project and find out your main partner does not have the financial wherewithal to stay in the game.

Nonprofits with a broadband purpose

When the Mountain Area Information Network (MAIN) began in 1996, dial-up Internet access was state of the art technology. Yet many rural communities in western North Carolina couldn't get dial up at all, or when they could get it the service was expensive, plus dialing up cost subscribers long-distance toll charges on top of access fees. There were no public places where people could get onto computers with access.

Wally Bowen, MAIN's founder and Executive Director says constituents and local businesses felt the only way to get Internet services was to bring it in themselves. Forming a nonprofit company was for them the best option, in large part because it made them eligible for federal and state grants.

"Equally as important, a nonprofit gave subscribers local control and subsequently a greater responsiveness to constituents' needs," says Bowen. "The money the network made is kept local, and jobs are created for local residents. We also discovered that owning the network kept IT and network expertise, what we call social capital, in the area

and that grows over time." With social capital, when someone wants to learn about new technology they have knowledge resources right there in the neighborhood. Or if someone has a new idea, the network's staff is available to help constituents cultivate it.

Bowen assembled a core group to move the project forward. He believes communities need people on the team who have a passion for the public interest. "A computer retail storeowner came to us. It was clear he was interested in what was good for community as much as how he could benefit. He brought a lot of technical expertise to the table, and brought important information about wireless technology. If someone seems to be in it for personal gain, this is a red flag for me."

MAIN filed nonprofit incorporation papers with the state and the IRS. They selected a Board of Directors from Asheville and the surrounding area. Rules were written to ensure that the network remains community owned, community governed, locally accountable and can't be sold to out of town organizations. The North Carolina Council of Governments helps starting nonprofits prep to pursue federal grant money. Their help enabled MAIN to secure their first grants.

MAIN has grown to currently serve four counties in western North Carolina, offering wireless services delivering 4 Mbps or more (depending on geography) to homes and businesses.

Community foundations

There are over 400 established community foundations covering about 75% of the United States, with a high concentration in Midwestern states. These nonprofit organizations originated 100 years ago when wealthy residents set aside portions of their fortunes to help their communities execute economic development and related projects.

As an increasing number of foundations understand that broadband can improve local companies' competitiveness, transform the workforce and attract new organizations to an area, they've increased their interest in the technology.

The Steuben County Community Foundation in Indiana was established in 1992. As community leaders began formulating ideas for addressing the lack of adequate broadband, the Foundation was an ideal partner with its ties to community leaders and potential funders, as well as its ability to channel network profits into local economic development grants.

The Foundation created a supporting organization called iMAN to build a dark fiber network. iMAN, also a nonprofit, sells access to businesses that contract with ISPs to light the fiber and buy Internet services. 65% of the monthly $225 dark fiber fees go to the Foundation whose Board of Directors selects economic development projects to fund.

iMAN began building the network in 2003. Their CEO Bill Geiger states, "this has always been a needs-driven buildout beginning with the City of Angola that paid $150,000 to build a fiber network to connect city government offices and departments." iMAN raised $2.7 million through donations to deploy 96-strand fiber cabling. Since Angola only needed 6 strands, iMAN built the infrastructure so it passed by hospitals, schools and businesses that use the remaining strands.

Today iMAN's network covers 75 miles and generates $80,000/year. As a nonprofit,

iMAN does not have to repay the donations it raises for CapEx. Dark fiber rates subsequently are kept affordable, which drives up institutional and business subscribers. Donations and subscription fees continually drive network expansion. ISPs carry the costs - and reap the profits - from selling end-user services, also at affordable rates.

Urban communities need broadband too

There is a myth that only rural areas are in dire need of broadband, that the urban poor and underserved have plenty of "good" broadband options. The party line is that poor urban dwellers only need effective broadband adoption (marketing) campaigns to teach them the value of broadband and they'll be just fine.

Horse feathers! as MASH's Col. Potter would shout. Urban areas need new broadband infrastructure almost as much as rural communities do. Policymakers and others need to understand that having sufficient broadband is not about having access to the Internet, it's about the speed and quality of that access! Community foundations can help urban areas as well as rural.

"Even if we're in urban areas that technically have broadband available, deep analysis reveals that schools in poor communities actually have the least amount of access," observes Nicole Taylor, President and Chief Executive Officer of the? East Bay Community Foundation (EBCF). "The Internet speeds they get are not fast enough to support hundreds of students using the Internet at the same time. When you look at what's required of the next generation of workers and students, schools' lack of Internet capabilities is perpetuating a digital disadvantage."

There isn't true highspeed residential coverage in the poorest neighborhoods because they may not be wired yet (or have had old infrastructure upgraded), and likely won't be because they offer large incumbents low or no ROI. When people think Alameda County, they think Oakland and Berkeley. However, some unincorporated parts of the county have no coverage. Where there is coverage, it can be too expensive for the people who need it the most because to get the cheapest Internet rates, people have to buy high-priced bundled data-TV-voice packages.

Communities need to engage these foundations that bring key stakeholders to the table to ask and answer the right questions, assess broadband needs and raise awareness of these needs. Foundations also analyze best practices for solving problems, work with stakeholders to locate resources and provide or identify seed capital to help take action. Unfortunately the politics and the providers can get in the way.

The EBCF, which includes Contra Costa and Alameda County, is engaged in moving broadband forward. "We're working with elected officials to see where resources are going, and being proactive with donors," states Taylor. "We're in an area where grass roots activism is popular and as a result, we have become very focused on public-private partnerships."

EBCF is partnering with the East Bay Economic Development Alliance that consists of three Bay Area counties, the Contra Costa Economic Partnership and Solano Economic Development Corporation (they are the lead partners). 28 other members are part of this consortium. As a partner, EBCF provides staff, seed money and planning expertise. "For now we're not sure what the final picture will look like, but we are definitely contributing

to this future," concludes Taylor.

Co-ops, an American tradition

Co-ops are why, in a majority of rural communities, you can turn on a switch and get light, or pick up a telephone and get a dial tone. At the turn of the 20th Century, the private sector would not deliver electricity or phone service to rural America. So communities solved their own problems, following a playbook in which the Federal government provided capital, and communities formed co-ops to get the job done.

Fast forward 100 years, and co-ops are becoming a potent force in delivering broadband, boosted in large part by the broadband stimulus program launched in 2009. Telephone and electric co-ops are typically expanding their respective service offerings to offer broadband services after they build out the infrastructure. Co-ops devoted solely to broadband aren't a new idea, but it may be easier to start a nonprofit.

Most people may not see much fundamental difference between forming a nonprofit such as MAIN or creating a co-op. However, two key factors differentiate these options, one is marketing and the other, legalities.

Typically, everyone who buys service from a co-op becomes a "member" and as such, there is a great perception of ownership that subscribers have. Members attend meetings that set policy, vote for their leaders and get a share of the profits, no matter how small. The co-op is clearly a community organization, but the strong sense of "ownership" has a high marketing value that can be leveraged to drive broadband service adoption.

The legalities that govern and influence co-ops and nonprofits are different. "You have to focus very carefully on tax law when creating them," states Attorney Baller. "If you're looking to establish co-op, there can be substantial tax benefits under IRS Section 501(c)(12), but there are also a number of important compliance issues. For example, there are specific rules for allocating profits back to members." The choices you make during the IRS application process can have a big impact on how you eventually structure and operate the business.

It's also important to understand how laws that are applicable to co-ops operate in a particular state. Some states have restrictions on what services co-ops can provide, and others may draw distinctions between operating as a wholesaler of broadband services and providing those services directly to subscribers for a fee. Compliance rules are complex.

Midwest Energy Cooperative

When you look at the service area of Midwest Energy Cooperative of Cassopolis, MI, you would be surprised that there is a need for broadband in this area between Kalamazoo, MI and South Bend, IN. Both are extremely populous cities with 100,000 in Kalamazoo and 250,000 for South Bend. But their customers tell them it's a dead zone everywhere in between no options with the speed and affordable price other than wireless and satellite.

So Midwest developed a proposal in 2009 for Round 1 of the broadband stimulus program that was a hybrid fiber and wireless network, which wasn't accepted. Midwest

then submitted an all-fiber network proposal in Round 2, which wasn't accepted either. However, the experience taught them two valuable lessons about their market as they found other sources to fund their network.

"Few people dispute that in many ways fiber is a superior technology for broadband compared to wireless," states Terry Rubenthaler, Vice President of Operations and Engineering at Midwestern. "However, the reality is that terrain issues, geographic isolation, low-income status and other factors make it virtually impossible to deliver fiber ubiquitously. Despite the hype and political pressure to deliver a gig everywhere, we have to be realistic with the technology we invest in because our members expect us to spend their money wisely."

Midwest is doing a lot of needs assessment of its members. The second thing that Dave Allen, Vice President of Regulatory Compliance learned is, "Most of them do not care whether they get broadband over fiber or wirelessly as long as the service is available, reliable and affordable. They also don't seem to care speed as long as the other conditions are met and it's fast enough to do what they need."

The co-op proceeded to build out 80 miles of broadband infrastructure. In late 2014, after finishing phase one of the buildout, they launched a five-year mission to build over 400 miles of infrastructure to reach every member in their service area. They expect to have a hundred of those miles laid by the end of 2015.

People in the communities that Midwest serves are clamoring for connectivity so they can have voice and data services. However, they are not yet as concerned about specialized needs such as education or telemedicine. This will come in time. As the co-op upgrades its infrastructure with the latest smart grid technology, residential as well as business customers are starting to realize that they have a need for energy management.

To some observers, co-ops appear to be more willing to make the investment in the infrastructure than municipalities. The town of Niles in Midwest's service area, for example, is not planning to be in ISP even though they built a fiber ring that has been remained dark. The co-op, on the other hand, can offer services without having to deal with political risk even though the Michigan has restrictions on public networks. Also, Midwest has been around 80 years and not likely to be bought, so citizens need not worry about the longevity of the broadband asset.

Co-Mo Electric Co-Op

Co-Mo Electric Cooperative is bringing gigabit service to 34,000 subscribers in rural central Missouri between Kansas City and St. Louis, with some areas only containing seven homes per square mile. Co-Mo has deployed fiber for several years to support their internal electric service infrastructure. In 2009 they calculated that 80 percent of their members were relying on dial-up and satellite Internet services.

Moving the broadband needle forward has required a level of marketing discipline and creativity all organizations delivering community broadband should study. Co-Mo began executing a pilot that was more than a test to ensure the technology worked properly. They built a 1000-mile pilot network covering an area they scientifically analyzed to ensure it represented an inclusive cross section of their diverse demographics and geography. For over a year, the pilot tested construction time and cost estimates, sales

tactics, take rate assumptions and other factors that influence business operations.

"We collected $100 commitments from members to validate their interest in the service, which mirrors how Co-Mo started when its first members went door to door over 75 years ago asking for $5 pre-payments for electric service," says Randy Klindt, the General Manager for Co-Mo's communications division. "We determined that buildout costs could be notably less than projected, and we achieved a take rate of about 46 percent, which was considerably more than expected."

Take rates exceeded expectations as the network expanded. At a recent meeting of the UTC's independent operating unit, the Rural Broadband Council (RBC), Co-Mo and its vendors/partners Calix and Pulse Broadband reviewed the key elements of an FTTH business plan-cost per home passed, cost per home served, ARPU and penetration rate, showed how Co-Mo beat business plan projections on every variable.

"Co-Mo is a very disciplined, but innovative operator. They are doing so many things right that they serve as an excellent guidepost to other electric co-ops. Being the first entity to offer a symmetrical Gig in a very low density, rural area is part of that leadership," says David Russell, Senior Solutions Marketing Director at Calix, who works with electric co-ops and municipalities.

Co-Mo is continuing to use good marketing practices as it swings into full deployment after completing its year-long pilot. In 2013 they completed Phase 1 of the project. In the spring of 2014 they started Phase 2, while at the same time dramatically increasing their speeds. Starting May 1, 2014 Co-Mo raised all of their speed tiers permanently, at no extra charge, from 20 Mbps to 35 Mbps for the lowest tier, 50 Mbps to 100 Mbps for the middle tier, and from 100 Mbps to 1 Gigabit for the highest tier.

Mid-Atlantic Broadband Cooperative

In 2000, southern Virginia was witnessing the exodus of all its major industries critical to the tax base and employment. 10,000 people lost jobs within a three-month period. Community stakeholders needed a bold strategy to re-purpose the entire region.

24 elected officials from Congress, the state legislature and local government met to address the problem. David Hudgins, then Manager of Economic Develop for Old Dominion Electric Co-op, presented a plan to transform the southern Virginia economy to a digital information age economy that relied heavily on broadband. Hudgins told those assembled that this was an all or nothing deal. "Once we agree to move forward, there will be no backbiting, no backsliding, no efforts at political grandstanding or infighting. We're all in. We're all going to pull in the same direction."

Hudgins decided that it made financial and political sense to create a co-op specifically for broadband, the Mid-Atlantic Broadband Cooperative (MBC). Co-ops are eligible for Federal funds, so he went to the Economic Development Administration, which agreed to provide the $6 million match. MBC quickly started selling broadband services to companies that before were paying thousands of dollars a month for T-1 lines, and now get highspeed fiber connections for $400 or $500 a month.

MBC proved they could make money where incumbents couldn't. Once other counties saw the benefits of the initial buildout they quickly got on the broadbandwagon,

aggressively lobbying the Tobacco Commission for money to pay MBC to expand infrastructure to others counties. As local telcos saw they could sell a lot of broadband services with MBC supplying the backbone, they lobbied legislators to support MBC's efforts.

Bigger than services to local constituents, 60% of MBC's revenue today comes from transporting huge data loads for major national and international institutional subscribers needing. MBC's infrastructure is designed to be able to move gigabit and terabit files with just one data hop between US locations and European destinations

RS Fiber Cooperative

Originally 10 Minnesota cities in Renville and Sibley Counties created a joint powers board with the consensus that the board would run the network the communities were planning. However, the cities' attorneys decided it wasn't a good time to advance revenue bonds to finance a network.

In the meantime, the RS Fiber co-op was formed to represent the rural communities' communications interests. With that development, the board decided to take a different tack and sold a General Obligation bond that they used to underwrite a loan to RS Fiber as part of an economic development strategy. The co-op was able to leverage the loan to raise more investment money while the mechanics of the GO bond enabled the communities to lower its cost to get the money by about 30%.

RS Fiber had to take all the loan money at once, but they can manage the construction, financial planning and business operations better, and it reduced the amount of the take rate needed to break even. Several local banks and other investors came together to provide addition capital. The board and RS Fiber agreed that the ISP Hiawatha Broadband Communications should oversee all network operation and marketing. By mid-year 2015 the buildout began.

A fiber backbone will tie together the 10 towns with fiber going to the premises. It will take three years to complete but until then the co-op will provide 25-megabit symmetrical wireless and telephone services from the backbone. In 2018 when the second phase kicks in, RS Fiber will ask the board to pass another bond to finance the remaining buildout to take in surrounding farmlands. In total the entire network will cover over 600 miles and 2500 farm sites.

"Co-ops are interesting because they build they exist to maximize benefits, not maximize profits," Mark Erickson, Winthrop, MN EDA Director and a key contributor to the project. "Co-ops have to break even and put aside money to fund expansion. But members can have a say in how the network is managed and used, as well as share in the profits."

Constituents had to understand and be comfortable with the fact that their tax dollars were on the line, yet the co-op was operating the network. "Ultimately we had to convince people that we had a good business plan," states Erickson. It took several community meetings and a local banker's presentation to explain the particulars of the financing strategy.

RS Fiber didn't have to worry about the state law that restricts municipal networks

because this is a private venture, meaning the co-op is implementing the business plan, and Hiawatha Broadband is managing the network. Because the local governments are just lending the money, there is no referendum required. The cities did, though, have to hold meetings to educate the public about the deal, gather public feedback and have public city council meetings to approve the bond sale.

The all the communities in Minnesota need to focus the fact that the language of the state law prevents communities specifically from having “a telephone exchange. Erickson says, “in reality, we're not building an exchange. We're not operating an exchange, someone else is operating the telephone service. And there isn't a telephone exchange built in to our network, it's a soft switch.”

RS Fiber is on its way to becoming another community broadband success story. There are many challenges ahead, including vigorous competitive efforts such as lower prices and increased speeds. However the co-op will always have the ultimate competitive advantage - the loyalty of its members. “There is widespread community support because everyone can see the promise, they see the potential, they see the benefit and everyone wants to be a part of that success,” concludes Erickson.

12. The Great Thing about Marketing Is… It Works!

"We never thought of it as a purely marketing campaign but it certainly was a campaign. And it is extremely effective and energizes our community, making them feel like they truly do own the utility and the project because in fact, they do."

Tom Roiniotis is the General Manager of Longmont, CO's public utility, Longmont Power and Communications (LP&C). While a lot of people equate marketing with brochures, as and door hangers, Roiniotis hits the nail on the head - what we're talking about here are not run of the mill Marketing 101, but a campaign of intense communication exercises that build customer loyalty that results in broadband network revenue.

This communication with constituents, elected leaders, partners and potential residents and businesses often mean the difference between success and failure. Community broadband operators (municipality, nonprofit entity, local co-op, etc.) must understand early that "serving the public good" is a common and worthwhile reason for building a network. However, if you don't generate enough revenue, your future is uncertain. Effective communication campaigns are how you generate those revenues.

Some of you may wonder why I am highlighting Reedsburg, WI and Jackson, TN when there are certainly more "marquee" cities out there. First, I want to emphasize small town without much money can still play in the game. Second, these two cities had all the marketing decks stacked against them: state laws were barriers, there were few communities to learn from, the general public wasn't sure these would work, and incumbents declared all out war on muni networks. If a city on a tight budget and behind the marketing 8 Ball can still win, then things pretty good for your hometown team.

Reedsburg and Jackson were quite early in the community broadband game, 2003 and 2004 respectively, and definitely have earned the moniker "pioneers."

Marketing begins Day 1

Reedsburg Utility Commission (RUC) and the local government began exploring the option of building a network for this town of 9,000 when the utility was planning to upgrade its electricity service infrastructure, a project that began in 2000. "RUC hired a marketing firm to come in and do surveys to see if consumers wanted another provider," states Catherine Rice, former RUC Marketing & Sales Director.

The two main incumbent providers were Verizon, whose services were later bought by Frontier, and Charter Communications for cable services. "Customer feedback strongly supported the desire for an additional Internet and cable provider," said Rice. "RUC was building an extension to its electricity infrastructure, so the company decided to lay fiber in test beds simultaneously since it would be less expensive than building out from scratch. Once that buildout was completed, the formal marketing campaign started.

In many respects, the marketing began with the feedback surveys, though indirectly. Rice continues, All the discussions about whether to proceed were open to the public and this helped a lot. The City Council and the Mayor frequently talked about the network and so

the community was aware of what was coming. There was a lot of resistance and hurdles RUC had to jump through to become a competitive local exchange carrier (CLEC). There were often questions about "should a government entity be providing telecom services." A couple of bills were written that tried to prevent the network, but the Council decided to let this go through."

The controversy that exploring community broadband generated had two positive outcomes: 1) it generated much awareness through the resulting publicity, and 2) the municipality/utility had to prove their case to the public. By winning support from key stakeholders and elected officials early on, RUC built a stronger position from which to market the broadband services. The community understood and supported the network before it was a reality.

Once the network went live in 2003, RUC used the pride of community ownership of the network to fuel their marketing campaign. Of course, a marketing campaign cannot rely just on the theme "We're the hometown team." Says Rice, "We emphasized service and value. We structured our service packages to be similar to what the existing providers were offering, but tweaked ours with a couple of new services on the cable side, plus more bandwidth and offerings to the Internet access side."

Regarding telephone service, RUC advertised great value for the price, such as special promotional rates and free installation when customers signed up. RUC offered broadband service while they were building out that generated word of mouth support. They didn't lock customers into three-year contracts. RUC provide a lot of education about what to do with our services, particularly for business customers.

RUC religiously avoids getting sucked into price wars. "Our competitors tend to do a lot of price promotions that are unbeatable and we can't match those," remarks Rice. "We've kept prices competitive but consistent. Our marketing strength comes from RUC's credibility. Customers remain loyal to us because they believe, rightfully, that RUC has customers' best interest at heart, and they can't get that level of caring from companies whose customer service people are based in another country."

Market like your life depends on it

When it comes to marketing, "you can't be a nice fluffy business person," says Michael Johnston, VP of IT and Broadband for Jackson [TN] Energy Authority (JEA). He has learned through rough experience that "You need to do a gut check. Are you ready to do the things to take a community network operation where it needs to be?"

As was the case with Reedsburg, Jackson (population 76,000) began its drive for community broadband amid controversy generated by incumbents pushing back on the network, which included them suing JEA. Amid this controversy the public utility built local political and word-of-mouth stakeholder support for the network, so it was able to begin selling services the same year it starting building the network, 2004.

JEA launched the network with all marketing guns blazing. Johnston recalls, "We were doing everything: paper, radio, novelties, billboards. We retained a local marketing firm to help. In the beginning our message and the strategy was all about 'come here, come here!' Our marketing message was focused on customer acquisition, hitting heavily on the theme of price, the convenience of one bill and the fact we had an unbelievable fiber-

to-the-home network."

But while JEA enjoys the benefit of being the hometown team when it comes to broadband, Jackson is a fairly large market that eventually required more depth in their marketing approach. Johnston continues, "When people in local government say marketing, they often only think of the pretty stuff - the ads, billboards. Most Chambers of Commerce are all about marketing the community, but this isn't the same kind of marketing that makes a triple-play [voice, cable TV, Internet data] service successful."

Marketing is more than marcon

To drive a real telecom company, the marketing process must entail not only marketing communications, but also creating the right product mix to appeal to prospects while figuring out what's the most profitable product that people will buy. JEA has re-worked their entire service line up over the past few years. They're continuing to change the marketing mix, offering more speeds and more HD channels. They offer some channels free. There are changes to the marketing mix happening all the time.

Customer service, as always, is a major component of the marketing effort. Customers believe JEA offers a much more support than incumbents because JEA leverages the fact they are not a for-profit entity trying to return as much as possible to the investors. They subsequently give customers a greater level and a much greater quality of service. Or example, JEA offers same day service with four-hour window for arrival, and next day service with a two-hour window.

Marketing entails a good amount of business development through building partnerships with a host of private, public and nonprofit sector organizations. When exploring the pursuit of broadband stimulus money to facilitate expanding their network, JEA felt partnerships with several communities was vital for not only winning a grant, but successfully marketing the expanded network helped they win. Closing these kinds of deals requires a consistent marketing message for the partnership itself.

"To make something like this work across a region you may have to deal with nine or ten different utility companies and several town councils, but one at a time," says Johnston. "Your pitch to get them on board is going to come down to presenting quite a few intangible benefits, such as better quality of life and more efficient government services. But when we met with potential partners, we emphasized the part of our plan with the greatest tangible benefit, which was using broadband in healthcare and education."

JEA had to face one aspect of marketing that few think about at the outset of a campaign, which is, how do you prevent too much success? This may seem so counterintuitive as to be insane. But the marketing and the sales plans have to reconcile the fact your marketing could generate so many prospects that, if you sell to all them at one time, the network operations could implode under the weight of un-budgeted customer care requirements.

Success literally has a cost in terms of installation expenses, customer service and technical support that all happens before you start collecting monthly fees from customers. Jackson discovered that, in his words, "we screwed this up." The amount of incoming subscribers was so far above anticipated sales that JEA had to cut back drastically on future growth. They recovered from this and continue to do well in the face of a constant marketing barrage from competitors.

Johnston believes there is so many marketing tasks to master, and the competition is so intense, you have to be tough, creative and agile in your marketing execution. Community broadband is still such a young movement it seems there are only two ways you can accomplish this. “You need to either ‘buy’ telecom marketing expertise by hiring someone who used to work for a Comcast or Verizon, or acquire it through brute force learning, trial and error.”

Whatever doesn’t kill you makes you stronger

In Longmont, CO, they've been running a communication (marketing) broadband campaign full out starting 2010 after they lost their first referendum vote to take back they’re right to build a municipal network. This culminated in the November election in 2013 to approve financing for their network. Shortly after that was the actual launch of their Gigabit service.

Roiniotis stated that they actually started marketing their brand in the 90s when they built a hybrid fiber/coax network throughout the city. Then Colorado Senate Bill 152 passed that prevented municipalities from providing these services either directly or in partnership with a private sector unless a city won a majority of the votes in a referendum election.

Longmont decided to conduct one in 2009. “We were outspent $240,000 to $0,” says Roiniotis. “But we learned a lot of lessons. In 2009, I think part of the problem was a lot of the public did not totally understand what the benefits of broadband are. You have to build trust in the community.”

The incumbent spent almost twice as much in 2011 election while supporters of the referendum only spent $5000. But the referendum won by an almost 2:1 margin.

Between 2009 and 2011, the city conducted a nonstop education campaign. Neighborhood meetings, town hall meetings, favorable articles in the local newspaper. Roiniotis explained, “We talked about the fact that this is your community-owned broadband network. The money you spent by subscribing to the service, you're investing in your community.” The City had a very strong message and it helped considerably. You have to educate your elected officials and those who may be running. Every politician in that Longmont election went on record supporting the referendum.

It’s all about focus

Success can sometimes be a double edge sword. “The problem with doing aggressive marketing throughout the city it that it builds up expectations that everyone’s connected when in fact is the service isn't available yet in the majority of our community,” warns Roiniotis. As soon as the word gets out on the street that Next Light (the network’s name) is coming to a neighborhood, all you hear is "I want it, I want it now and it's not getting in here fast enough.”

Next Light’s marketing has been very focused. The utility’s contractor goes out and puts up door hangers saying, "Next line is coming.” A personal letter goes to potential subscribers along with a info packet. A newspaper article comes out that talk about the service. They’re likely put some ads in the paper. Next Light uses Facebook or Twitter take the energy of word of mouth and letting that propagate itself throughout the

community.

The utility created a charter membership program they offer as a reward for people who subscribe as soon as an area goes live. “If you subscribe to our service within three months of the ‘go live’ date, you gig symmetrical service for $49.95,” says Roiniotis. “I believe that's the lowest priced gig in the country.”

Next Lights needs to see a 37 percent take rate by the end of the first year to make their financial numbers. In various areas where they’ve launched, the service is experiencing 40, 45 and 50 percent take rates.

Because LP&P had extensive fiber infrastructure already in place and they used efficient construction practices with Calix and other vendors, they can provide great pricing which competitors can’t easily duplicate. LP&P then wields its ultimate marketing weapon, good customer service that even the largest competitors can’t match. For Longmont, this is the broadband trifecta of success.

Tips for marketing your broadband network more effectively

There are several good marketing lessons we can take from Reedsburg, Jackson, Longmont and other communities.

- A good survey executed during the needs assessment will generate the market knowledge you need to create effective strategy. In fact, if you ask each stakeholder group (businesses, schools, medical, etc) the right questions, they’ll tell you just how to market to them.
- Begin building market awareness from the moment you decide to explore a broadband network. Even if you end up delaying your network project, you’ll have a good feel for the potential depth of support when you eventually move forward.
- Do not let critics define your broadband marketing messages. Know the capabilities of broadband to impact your various stakeholder groups before you start, and craft your central message around these outcomes. You can change how you say it, but keep the core message the same so you maximize every marketing dollar spent.
- Be prepared to continuously repel marketing assaults from competitors, but without fighting a price war. Use your smaller organization size to your marketing advantage: be creative, nimble, know your marketing strength (it sometimes isn’t what you think it is) and play to it.
- When you partner for marketing advantage, fully understand your partners’ marketing and other business needs. Without sacrificing your primary objectives for your network, continually try to contribute to their marketing success.

13. Customer Service - Marketing By Another Name

In the David and Goliath world of community broadband, customer service brings down Goliath. Communities are pursuing various strategies to get faster better broadband. Is yours one of those communities that are issuing RFPs for needs assessment studies? If so, you should devote some of this assessment to studying the secret that's driving the success that cities such as Chattanooga, TN, Salisbury, NC and Danville, VA are having?

When you look at the dozens of success stories, particularly those such as Midwest Electric Co-op, Bristol, VA and Sebewaing, MI that faced the gazillion-dollar marketing might of huge telcom and cable companies, you find marketing is the key to their success. But not marketing in the form of slick brochures and funny YouTube ads. Effective customer service is the marcom equalizer that's giving the broadband David's the upper hand over incumbent Goliaths.

In the previous chapter, I highlighted how Reedsburg faced two industry behemoths, Verizon and Charter Communications. Outsiders probably thought the Reedsburg Utility Commission's (RUC) fiber network was doomed from the start, but the public utility understood early what would be the keystone to their marketing success.

Your network call center is the embodiment and reinforcement of the community ownership theme that community leaders and the broadband project team initiate. The customer service person whom subscribers reach is their neighbor, a member of their church, often a parent of their kids' soccer teammates, but most importantly, someone who's local, sitting maybe 10 or 15 minutes away. Does this mean you build a call center, hire local folks with great personalities and "poof," your work is done? Far from it.

Customer service is a state of mind that manifests itself in the actions of the broadband service provider. The Jackson [TN] Energy Authority (JEA) leverages the fact they are a not-for-profit entity returning as much as possible to the investors (the community), and subsequently give customers a greater level of support and higher quality of service than competitors.

Jackson's more famous neighbor, EPB in Chattanooga, built fiber into its smart grid to reduce downtime of its electricity service by: 1) proactively identifying and fixing technology problems before business customers even realize there is a problem; and 2) enabling field technicians to respond faster fixing problems. EPB carried over this proactive, work-smarter philosophy of customer service to its broadband business.

Customer service is a state of mind

To make it a state of mind, "communities need to define 'customer service' more broadly in terms of the overall experience," states Mike Roddy, COO of NuTEQ Solutions. "Define how every contact with customers is handled to create a sense of personal interaction - the sale, installation, identifying network troubles and resolutions, gathering general feedback. It is very difficult for the largest incumbent operators to create a personalized feeling in every community, particularly when each community has different expectations. Incumbents traditionally started out in a pseudo-monopoly

environment in which there was no perceived need to go the extra mile in relationship building."

Because there are so many ways to touch subscribers, there may be the temptation to handle these interactions using technology similar to bank ATMs, grocery store self-checkout and self-check-in at an airport. But at some level these are impersonal and we drift back toward the human intervention managed by technology such as interactive voice response (IVR) systems. However, improving the IVR functionality with "please listen carefully as our options have changed" is not "choice" and is not improving the experience.

Employing new customer care technology does not mean dropping the traditional call center, but rather, complementing it. The reality is that customers have different needs. Some are high-touch while others are "no touch." Employing a customer care strategy that caters to different, ever-changing needs yields a better more satisfying customer experience. Technology is available that employs several SMS-text interventions to address common customer issues, and can immediately initiate direct supervisor-subscriber interaction depending on customer responses. Happier customers are more profitable customers.

Customer service technology gives community broadband marketing edge

Large competitors throw millions of dollars at trying to destroy even small towns' network business, yet these public entities survive and thrive because great customer service creates insanely strong customer loyalty.

Building market strength through efficient, speedy, reliable service depends heavily on technology. The tech that goes into broadband infrastructure plays a huge role in the quality of your customer service, as does the tech you use to execute and manage customer service tasks. Non-techies as well as tech staff need to understand this 30,000-foot view on the subject.

The more you know your constituents' needs, and build infrastructure to meet those needs, the better your proactive customer service will be. For example, if several hospitals and medical centers want to exchange hundreds of MRIs, x-rays and electronic records daily, build network capacity to address this and future needs so you minimize complaint calls about network speed. Don't fixate on the speed an individual or organization needs, but the network's capacity to enable a multitude of subscribers to get these speeds while accessing the network at the same time.

One of the best forms of proactive customer service is technology that flags or predicts problems before subscribers are aware they exist. EPB, the public utility that owns Chattanooga's network, incorporates such technology into the fiber infrastructure that drives theirs smart grid.

"This extensive distribution automation system identifies and reacts to conditions in real time to re-route power around damage areas," states EPB head of Corporate Communications Danna Bailey. "We installed roughly 1200 intelligent switches that work in teams to isolate damage and route power around it, greatly reducing the duration and impact of power outages." This capability is a huge draw that helps convince businesses of all sizes to move to Chattanooga and subscribe to EPB's Internet services.

Another element of the buildout phase that contributes to better customer service are well-written agreements with the multiple vendors whose hardware and software comprise your infrastructure. The last thing you want are customers calling you with service questions or requests, and four vendors stand around pointing fingers at each other yelling, "that's not my problem." All your agreements need to have clauses that bind vendors to ensuring that their products work together, and that all vendors are required to work on the resolving any problems that occur. A well-structured pilot project should test how well vendors' products and tech support crews work together.

On the software side of things in particular, be sure to build into your network features that integrate various customer service operations and network operations. Many are the trials and tribulations of long, painful phone calls with incumbents' customer service reps that fail to resolve errors in billing, ordering new services or just trying to cancel service.

Tech's job doesn't end with network launch

For customer service that gives you a marketing edge over competitors, the business admin side of your broadband project team must work in closely with the techies to map out procedures for handling these business and network operations. Then determine what applications you'll use to acquire and track new subscribers, handle billing and collection, add or drop services and manage related network operations. Finally, determine how these apps will work in unison with each other.

Once the network launches, you will need technology that further manages customer service activities. Here is where the marketing duel between your community network and competitors engage in earnest. How well you use technology to manage truck rolls for installation and resolving tech support issues, market new service packages, monitor customer satisfaction, resolve billing issues, etc. is how you maintain a marketing edge.

As you choose this technology, keep in mind that community broadband is being deployed to compete by differentiating from "business as usual," not simply repeating today's customer experience. Clearly the incumbent is not meeting expectations. You want to deploy new, convenient technology is not only less costly but also more user-friendly. Happier, satisfied customers routinely pay more and churn less - improving your network's ROI.

One particular technology that's gaining appeal is using SMS text messaging. Not that every consumer will utilize this capability, but with a growing population of text-savvy consumers, the economics of answering questions or alerting customers of new services with automated texts rather than a phone call is compelling. Catering to subscribers' preferences says "I recognize that you don't always want/need to talk to a company rep to answer your questions." Time is precious, hold time is not.

Always look for added value from the technology you choose. Besides offering powerful texting capabilities, a good customer application can trigger a survey to the customer's mobile phone with a few quick questions following a contact with your staff on a service issue. Customer responses control the flow of the survey. Was the tech rep on time? Is everything working? Would you recommend us to a friend? If any of these questions yield a negative result, the software will notify a supervisor or GM for immediate intervention. The result is that the customer says "WOW! That was unique! I feel

valued."

Finally, who defines an excellent customer experience? The customer does. And to know what consumers want in an ever-changing world, you have to ask. You have to measure. Rely on a flexible customer survey tool to gather consumer feedback in real time. The right technology has other inherent capabilities like the ability to capture a prospect list of customers as your team's planning, forecasting, and construction take place. This information can improve the forecasting process and allow the operator to adapt their business plan to changes in costs, competitive pressures, and demand for service.

Creation orientation intensifies impact of customer service

We should talk about the business communications prep that's also needed. I've said repeatedly that this work starts long before the network launches.

To turn customer service into a righteously awesome marketing tool, you need a creation orientation rather than a problem-solving orientation. Much of broadband is driven by the latter. "We have a problem - broadband sucks." "We don't have enough money." "The cable guy is always late." "Subscribers are on hold for an eternity." Broadband project teams learn quickly that customer service is an endless exercise in conflict resolution. It's difficult to be proactive in this type of environment plus you miss many of the marketing benefits customer service could produce.

Conversely, using a creation orientation enables you to make something that bigger, better, more awesome than what has gone before. Applied to the discipline of customer service, rather than focus on building a faster "problem-solving" operation, how about creating an organization-wide culture of service that's frequently ahead of customers' wants and needs? Subscribers look forward to working with you rather than dreading - or not receiving - the call.

First order of business is to create and coordinate as many ways of communicating with subscribers as possible. If you drill into your entire staff's minds that any opportunity to communicate with the customer is an opportunity to provide some sort of service, you're reasonably assured of tapping into a myriad of communication vehicles.

Newsletters, printed and online versions, public meetings, e-mail, text messages and the old marketing standby - printed flyers - are some of the conventional channels that give you an opportunity to deliver messages and gather feedback. There should be a plan to participate in every special event big and small (county fairs, expositions, as well as the run of the mill standard meetings such as town halls and city council. During the slow periods in the year, create your own meetings to tackle broadband issues.

Social media is the way of the future in communication, but not all social media is alike. Recruit some college kids to help you understand how to act and interact in each network: Twitter, Facebook, Redit, Pinterest and on and on. Again, you're establishing a way of distributing info and gathering valuable market feedback. Then there are the communication channels you may not even view as such. Truck rolls to fix problems, invoices, turning on services all are opportunities to interact with subscribers.

Applying the creation orientation

The needs assessment is key in determining how to build a network that minimizes problems and complaints because the process yields data you can use to better predict short- and long-term usage of the network. But from a creation orientation, you should also use that data to create services and service plans that meets as well as anticipates needs. The communications channels I've listed (surveys, town halls, workshops, etc.) are how you deliver the details on needed services, and gather feedback that shapes future services.

In practical terms, the same way that magazines and other media maintain schedules of topics their content will address, broadband operators need to maintain a "schedule" of current and proposed services that will be pushed out through these channels. If your network team comes up with a new way to optimize network performance in the home, everything from the newsletter to invoices and a promo booth at a county fair should have this information.

The net result? Customers increase loyalty because they see these types of announcements as great proactive services. If on-going research reveals that hospitals and doctors are main users of the network, use various channels to communicate specific ways medical professionals can maximize the network, thus delivering more proactive services.

Obviously a lot of work has to go into the planning to so best leverage communication technology such as text messaging that promotes your customer service offerings and implements customer service tasks. "You must consider the technology's impact on the costs, efficiency of delivery and brand perception associated with these tasks," states Roddy. "And of course, you have to assess text messaging's impact on your market image: are you easy to do business with, does it contribute to you staying price competitive, does it enable you to offer greater value than your competitor."

To determine if SMS text messages will complement your planned customer care platform, ask yourself the following questions. Do you receive routine calls from customers asking for account balance, payment due dates, payment confirmation, or outage status? Is there an easier, less costly way to deliver this information phone calls and snail mail? Would customers value proactive account notices (balance due, payment received, etc.)? Would more customers use electronic billing if you delivered account information through SMS?

Do you routinely survey your customers? What is the response rate? If you had real-time access to survey results, could you make timely decisions and improve customer satisfaction? Are any of your competitors using SMS to communicate with their customers?

All of you technology decisions and communication strategies should based on feedback and research in the marketplace. For example, a recent ChaCha mobile survey showed that 52% of customers preferred texting for customer communications with a service provider, and 80% believed a text message could help them avoid issues like late fees.

Customer service tactics to boost broadband marketing

The previous pages described how to prepare to create a level of customer service that

translates into strong marketing that helps you withstand competitors' onslaughts as well as increase revenue for you. I want to wrap up by giving you some recommendations for customer service activities after you launch.

Manage expectation of services

You can't build the network all at once. Once you announce it, quite a few people all over town will want service available as soon as the service goes live. However, as one project manager stated, "Somebody has to be last." How well you convey that message and how equitable constituents perceive the rollout establishes a subliminal positive or negative image for the customer service.

You can't market "Customer Service is Job 1" yet have credibility unless your business actions from the start reflect that message. Google in Kansas City had fighting a negative image their service in low-income areas because of the company's focus on building out to areas that have money first gave the perception it doesn't care about poor neighborhoods.

There's another element of managing expectations effectively. Once the network starts to roll into the various neighborhoods, there is going to be a seriously pent-up demand for broadband, which is kind of a good news/bad news situation. The good news is that you'll sign up a lot of subscribers right out of the gate. The bad news is that if you haven't prepared enough of the right resources (installers, help desk staff, tech service people, etc.), you won't be able to meet this demand. This too can put a cloud over your customer service team, and you'll have to fight an uphill battle to establish an image of being a customer service-driven organization.

Leverage factors that lead to good service

Everyone involved with the management, operations, repair and marketing of a community broadband network, as well as the customer and technical service, are subscribers' neighbors, so they care about subscribers more. The complete service and repair apparatus is physically in the community, so response to customer calls is faster and more convenient. New services are constantly in development. Even with their billions of dollars, giant competitors can't easily trump these advantages. Promote these advantages aggressively.

<u>Cross train everyone</u>

Consider prepping various employees within your organization to be able to provide information outside of their individual specialty that enhances your customer service-centric focus. For example, installers and field service people, particularly those serving business subscribers, should carry mobile device with access to information to help your subscribers get additional value from your network. Sales reps similarly should have access to common tech issues and solutions that they can address basic issues on the sales call rather than funneling subscribers to your tech support center.

<u>Be ready for "proactive" customer service</u>

In the business world, good sales reps have a couple of marketing promo pieces that a

customer or prospect they're calling on can pass along to someone who may one day become a customer. A similar concept may make sense in the customer service area. Sales reps and field techs can drop off documents that you create to offer "10 Tips for a Trouble-free Installation," "Linking Home Devices in Your Gig World," and "Maximizing Your Business Online. Stock these near the cashiers where customers pay their bills.

It's one thing to keep some feedback forms in your office lobby. But nothing says "service" like actively engaging customers in advisory teams to work with feedback and each other to design/enhance service procedures, new support programs and training programs to help subscribers get more from their technology. This level of customer involvement is incredibly potent for staying ahead of their needs and also increasing the quality of customer service you deliver.

Run effective text messaging campaign

When text messaging is done correctly, customer expectations are met and in most cases exceeded with customer satisfaction rising in turn. Proactively delivering customer specific information to even a moderate percentage of your customers also will yield significant operational and financial.

The Mobile Marketing Association tightly regulates the delivery of messages to mobile devices, so be sure you check in with their Web site to make sure your campaign conforms with their guidelines. "Mobile-minded customers must 'opt-in' to your SMS service, for example, prior to being sent any operational messages," states Roddy. "Sending unwanted content is an invitation for unwanted attention." Make sure all of your written documents to customers remain compliant and up-to-date with industry standard requirements.

Be sure your IT staff's text messaging app appropriately integrates with your back office systems even if you have multiple vendors. Managing APIs of the various applications you buy or build to integrate your customer service with other parts of the business operations is critical to success. Be sure your vendors address this issue well.

Your text messaging vendor should be your network business partner whose interests are aligned with yours, and vice versa. This includes, ideally, a pricing schedule that is built on success.

14. Building Political and Constituent Consensus

Consensus building is something you need to plan to do from the first moment you broach the subject of broadband. There likely are some challenging moments ahead. The larger the proposed project, the more constituent groups there are with different needs and agendas. The topics around which you must build consensus can shift between this month and next.

The needs assessment is not just about collecting data, but also using every interaction with stakeholders and constituents to also build consensus. Initially you may need to build consensus on what broadband could mean in terms of benefits individuals, businesses, organizations and others receive. Then the need can shift to forming consensus around which business model to use, and which technologies. And on it goes, a constant ebb and flow of consensus building that continues well after the network launches.

With consensus building, what you say matters

In an earlier chapter I explained that you need a vision statement that most of the community can unite behind in order to have a successful broadband project. In order to move to that vision, the needs assessment gathers data that defines over time what the vision should be. But the choice of words you and the project team use to describe "why community broadband is good" is key to how well constituents understand the project's impact on the needs they are articulating.

First, whatever you mission is, state it consistently. If your municipality is going to improve government operations first with broadband and then tackle social issues, be clear about it and why you're doing things this way. Forget lofty statements. You're not writing the next Declaration of Independence. Rely on simple and to the point, such as "We're going to use wireless broadband to create a more efficient, responsive government." Clarity breeds consensus.

Second, find a tech-competent person who can talk about technology so people with low tech-comprehension skills understand broadband's value. Have him or her write one-page overviews of the various components of broadband networks and the applications you plan to deploy. Constituents who are pretty smart and wholeheartedly support broadband conceptually nevertheless can be confused by the tech basics when they first learn them.

Third, as you start leaning towards selecting a particular business model that makes sense, put the word out on the street. Since this is where roadblocks to consensus can pop up in a big way, don't do a lot of waffling. If your project team has no intention of running the broadband service business because early on the mayor vetoed this idea, state it. If they feel a public private partnership in which the city or county owns the infrastructure and service providers will sell and support the services, lay it out there. Haven't decided yet which business model makes sense until you talk to constituents? Then that's your public statement during the needs assessment.

Be as clear as you can about these types of details as soon as is practical. Keeping

discussions focused minimizes misconceptions.

Fourth, make sure you have the facts about how broadband can impact your specific community that help you create a sense of local urgency to make this project work as. A lot of times we read in the media that the reason communities need to have better broadband options is because of the U.S.' low quality of broadband compared to the rest of the industrial world. But regardless of the validity of national stats or general trends in broadband, constituents are not likely to come to consensus on broadband until issues are related to their immediate needs.

Fifth, similarly be prepared to help people understand how the economics, deployment logistics, technological capabilities, etc. of your project offer advantages over alternative (or lack of alternative) Internet access options for constituents. Pocketbook issues bring people together. They need to see how all the mundane and often boring issues associated with getting better broadband helps their personal economics.

Politics. There's always politics!

Wherever your community happens to be, building a community broadband network is a political endeavor. This doesn't mean it's a negative process. But building one of these networks definitely means people from your project team and stakeholders are going to have to interact with local politicians of all parties, city staff, county officials and maybe a state legislator or two.

At the very least, you'll need to navigate a gauntlet of political bureaucracy as you deal with inspectors, permits, city council meetings, government agencies, and scores of correspondences even if the political establishment supports you. On the flipside, you may have to deal with a very pro-incumbent, anti-public network sentiment from one or more of your mayor/city council/city manager audience. However you look at it, a chapter in your strategy book must be devoted to building consensus with the political forces you will encounter.

The city of Sandy, OR has been in the broadband the business since 2001 when they couldn't get the local ISP to provide City hall with DSL. Sandy is one of the fortunate communities that has had strong political mojo since the early days of their network, call SandyNet.

I had Jeremy Peitzold, City Council President for City of Sandy and Joe Knapp, the IT Director for the City Sandy as a guest on my Gigabit Nation radio show to talk about how they keep their mojo working. It helps that from the beginning, the mayor and city council have supported the network, so the main consensus work is keeping the political side and the staff side of the house on the same page.

Peitzold explained that "every two years half of the City Council is elected. The council does major goal setting at this time, including goals for SandyNet, and then budgets are set. Staff then has to determine how these goals are to be met and if need be, adjust the budget accordingly for the Council to ultimately approve."

From the staff perspective, this arrangement is good, says as Knapp. "In addition to the goal-setting process, our people have to report monthly on their progress, and Council gives us some advice on how to proceed. It is critical to have that level of

communication. Everyone is guided by the telecommunications master plan. In it, SandyNet's board looks 20 years into the future forecasts what we want to accomplish, what technologies we might expect, and predict uses we will have for the network."

For years I have vigorously advocated for strong leadership mayors in these community broadband efforts. In 2004 the mayor of Philadelphia has a known technology fiend, carrying two or three PDAs long before it became fashionable. In Sandy, "The mayor has been very supportive of SandyNet pretty much from the beginning of his time in office," says Knapp. "He has been a customer at both his home and business of our various services. As the network champion Jeremy has really led the charge. But the mayor has been right on board as he saw Jeremy's vision and shared it."

It helps tremendously that Peitzold is a network engineer by trade, plus he has been involved with the SandyNet project for 11 years and served since 2011 as its Chairman of the Board. Over the years the other members of City Council have looked to Peitzold's take on issues related to the network. It obviously helps to have someone with similar experience be a member of your governing body. But in lieu of that, elected officials should create a team of technology and business experts committed to the success of your network to have an influence in network decisions.

Trust is an important part of the consensus equation. "Probably the biggest thing for me that I know Council trust me," says Knapp. "It is critical that when you hire people, you must set goals and then trust them to meet those goals. The Council on a number of occasions listened to some definitely different ideas, but they let the staff try out those ideas. They don't constantly micromanage. They were patient and encouraging of the progress we are making." Peitzold adds, "With a network project, either you make it or break it with the person that you hire to lead it. You're asking your council to have faith in the technology as much as you have faith in the people."

As the leadership in both the administrative and elected branches of local government increasingly comes from a generation who have used the Internet most of their lives, it should be easier to build consensus with the political establishment. These folks have an understanding and comfort level with the Internet. Regardless of their political persuasion, these leaders understand the many ways in which having these networks change a community.

As for leaders who are not so Internet-focused, numerous state and national conferences exist that provide effective training. Get as many of your political leaders as possible to attend. Knowledge is power when you're building consensus. Whether you're dealing with elected officials locally, at the state level, or the halls of Congress, educating them is a winning strategy. Getting them to attend conferences gives you a leg up on winning them over to community broadband. They can see what other communities are doing and talk with their peers who have successful networks.

As more Oregon communities get revved up for community broadband, there is little worry about consensus with state legislators. Twelve or thirteen years ago there was an attempt to stop muni ISPs similar to what other states have done, but fortunately at that time Oregon had the foresight to say "no" to the restrictive legislation.

"My message is to other states is that it's a plain bad idea, states Knapp. "A broadband

solution doesn't have to be a municipal network, but it certainly could be a municipal project. Our citizens have ample opportunity every other week in an open meeting with Council to say whether or not they are happy, and if they continue to be unhappy those officials won't get reelected. That local accountability is huge, in my opinion."

Building consensus starts at the top

The main person to initiate and sustain the opening push to recruit supporters for the broadband initiative may not be the same person to head the steering committee or the project team. It could be anyone who has a vision plus an aptitude and interest in learning how broadband can benefit communities.

"It doesn't matter if that person is with the education system or economic development, but they have to be someone the community can trust," states Don Speer, Executive Director of the Pulaski-Giles County Economic Development Council and main driving force behind the City of Pulaski's fiber network. "I remember in '94 talking to people about what was going to happen with Internet access when we were just trying to get dialup. Something like this has never been done before, and people looked at me like I was crazy." Speer was relentless and his message was consistent, so people in the community gradually got behind the project.

Once that local broadband champion is identified or self-identifies, they most likely are going to start consensus building at the top of the food chain.

Technology initiatives can fall short of their potential benefits when top executives or administrators lack of vision and can't (won't) provide direction. Without enthusiastic buy-in and consensus on broadband at this level, successes will be limited and communities won't reap the full potential that broadband offers. Conversely, many of the broadband networks producing impressive results are doing so specifically because they have that top-level support within the key stakeholder organizations.

In many small towns and some cities the mayor may be the major catalyst for building consensus. Or the mayor together with two or three other people could drive the process from the start. Within county governments, the person driving the consensus-building varies as much as the types of governing structures. Some counties have an administrator who operates similar to a city mayor, while others have Boards of Commissioners varying in size from three to more than 25 members. These could be elected or appointed officials.

As for stakeholder organizations such as hospitals, the school district or the chamber of commerce, the general dynamics of recruiting a champion to build consensus among their respective constituents are the same as with government organizations. Someone at or near the top of the organization has to see the benefit of broadband for their organization specifically and for their constituents. The leadership may go out to do consensus building, or designate some staff to do it. In the ideal situation, both the top brass and designated staff are getting constituents on the same page.

Consensus building among constituents

Beyond the workshops and surveys, spend time meeting with a lot of constituent groups to get their initial buy-in, to recruit them to relay the vision to their peers and neighbors,

and to keep them updated. There is a risk here trying to establish the project team's vision while helping constituencies refine their respective visions of what broadband means to them.

The grand objective must align with these divergent objectives or the network will fall short of its potential. For an implementation of technology as vital as broadband, many constituents won't give you a second chance to prove yourself if you don't get it right the first time. You can build it, but people don't have to come.

Business broadband subscribers hold the keys to financial success of the network. Along with governments, strong commercial participation forms the foundation of the network for sustainability. Once businesses become subscribers, they're likely customers for life as long as you provide great speed and great customer service. Your strategy for building consensus is to focus on this central group and its relationship to the community's economic development. It gets business owners pumped to be leaders in a cause that has such significance. They buy in and they actively work bringing in other businesses as cheerleaders and customers.

When building consensus among individual residents, it is particularly important that your team approach this process without a lot of preconceived notions. Listen to them. Otherwise you're just wasting people's time.

If the communities your network proposes to serve have diverse constituent groups with varying and sometimes competing needs, interests and goals, the project team or steering committee by default needs to be similarly diverse. This is the best way to bring the perspectives and feedback to the table to ensure that what you propose to your citizens are the tech solutions that they will support. With this diversity on the committee, however, you add more layers of difficulty getting everyone to support a document as complex as a business plan.

General guidelines for constituent consensus building

When all is said and done, as the network is finally deployed, generating communitywide broadband adoption is going to be a neighborhood-by-neighborhood effort.

The biggest threat to the success of community relations campaigns supporting broadband is inaction. Some people will talk or study an issue to death. At some point all of the various decision makers have to shut up and push the "Start" button on building public support. There's never going to be the perfect technology, political climate, business environment or product price.

Make sure you have a good system in place to quickly identify, recruit and mobilize neighborhood and business champions for the project as you build consensus. Assign people to where they are needed most. The bigger the municipality or county and the greater the challenge, the more champions you need out there bringing the various constituencies into the cause.

From her prior experiences working with broadband projects and issues, Program Officer at the Bill & Melinda Gates Foundation Karen Archer Perry offers several guidelines for maximizing your efforts at building consensus at the constituent level.

Meet people one-on-one. The first step in community engagement is actually to engage

people one-on-one and in small groups to tell them about the upcoming service, answer their questions and solicit details about their needs and the needs of their clients and neighbors. People's ability to get over the technology hurdle and adopt something new requires a personalized view of what they need and how it will help them.

Clearly written collateral material is a must. Pay close attention to creating well-designed Frequently Asked Questions (FAQ's) pieces, brochures, maps of potential service areas, and other information that will allow people to understand how they will access the network. If people read good information that's localized for their community, their interest level and support for the initiative will increase significantly.

Broadband is not a one-size-fits-all offer. What people want to do with the technology dictates everything from end user and customer premise equipment that boosts access coverage to what customers are willing to pay for it. You as well as the vendors and service providers you partner with must know and be able to explain what technology options best fit customers' particular needs.

Identify early adopters. Nothing sells better than a local reference. Use initial constituent meetings to identify early adopters who see the value in broadband and who want to champion the project widely in their community. They are the ambassadors for broadband. Look for diversity in initial contacts: people from area businesses, church groups, and different cultural groups that will share their enthusiasm with neighbors and associates.

Make the network tangible with launch events or demonstrations. If you are not already surfing at high speed, it's difficult to imagine what it means to have the world of information at your fingertips over the airwaves. Design a demonstration or launch event that showcases both the technology and the content. These must go beyond answering questions about technology, service and pricing. Constituents must get hands-on learning experiences to see what is available to those seeking information, services, education and entertainment, and the speed at which it will be accessible.

Plan mini events. While a large launch event or demonstration is a great way to introduce the new service, small activities are good for on-going efforts to reach people and build support. Consider attending chamber of commerce meetings, back-to-school nights, community meetings or even doing something on a street corner that shows off wireless broadband service as the network buildout progresses.

Capitalize on interest with a local portal. If you have the resources, create a basic community Web portal that links to neighborhood and business groups, and includes local news or events. This enables people to get a more personalized feel for what broadband means to them.

Stay connected. Circle back occasionally and check in with these constituents during the build-out process, particularly the early adopters. Continue to share information with them as well as learn from them how to improve your plans and reach more people.

About the Author

For over 25 years Craig Settles' workshops, consulting services and books have helped public, private and nonprofit organizations worldwide use technology to cut costs, improve business operations and increase revenue.

His community broadband experience, analysis and strategy development skills establish Mr. Settles as a thought leader on using public networks to transform education and healthcare delivery, improve local economies, and increase government efficiency. His industry reports and books, including *Building the Gigabit City*, add to his industry position.

Mr. Settles began doing community broadband consulting in 2005. His public-sector client list includes Ottumwa, IA, Benicia, CA, Glendale, CA and the State of California, with Calix, Ciena and AT&T among those on his private sector client list. In addition, he has testified for the FCC and on Capital Hill. Mr. Settles hosts the radio talk show Gigabit Nation, and is Director of Communities United for Broadband, a national grass roots effort to assist communities launching their networks.

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