# Building the Gigabit City

## Craig J. Settles

# Contents

# Introduction

Despite what the cover says, this book isn't about building gigabit networks. Seriously, it's true. But don't feel bad. You're not the victim of a bait and switch. This is actually your first, maybe most important, lesson – ignore the hype, meet the need. *Building the Gigabit City* is a valuable tool for community stakeholders who want to do both.

Your community may not need a gigabit network. Yet. What they need, what much of the United States needs, is faster Internet access that enables businesses to communicate faster and more effectively so that a bakery or dress shop in small town Ottumwa, IA can be a player in the national or even international market.

Many communities need Internet access that's fast enough and reliable enough so an emergency room in tiny Powell, WY can create a digital bridge to Boston Mass General's best surgeons for a real-time life-saving video consult. Many U.S. communities need Internet services capable of transforming how our urban kids and adults use technology to learn and improve their economic status.

Though the waters of our political discourse are poisoned by ideologues advancing the false notion that government is the problem, local, state and national governments need Internet speeds that re-shape how the business of government serves the public good.

This book helps you 1) navigate past much of the hype about the power of gigabit networks, 2) understand what highspeed Internet access can and cannot do to improve your community, 3) do effective needs analysis and 4) plan effective broadband strategy. I'm not here to give you all the answers. My goal is to help you ask the right questions to the right people so that your broadband project meets your community's needs.

Probably one of the most important questions you and others in your community should ask is, If not us, who? If not now, when?

Before I move on, I want to acknowledge and thank my partner in this book project, Gigabit Squared. This company is planning to spend up to $200 million, plus leverage other resources and partnerships to help communities bring gigabit Internet access to their constituents.

# Chapter 1. It's Not about Speed, But What You Do with It

La tecnologia sia spesso come una croce sulla quale vengono crocefissi il buon senso e le buone valutazioni. Translation: Technology is often a cross upon which common sense and good judgment are crucified. This opening to my presentation at an IDC Italia conference in 2001 explains the trap project teams, community stakeholders and others must avoid in their broadband initiatives.

Flashback, early .2005. Philadelphia announces that it plans to build a citywide WiFi network, fights a nationally publicized fight with Verizon in the state legislature and wins (Pennsylvania, alas, did not). A few months later, Portland, OR and a handful of cities announce RFPs for a similar network. Then Earthlink announces they're going to build Philly's network for them.

Boom!

The gold rush was on. Mayors couldn't announce RFPs fast enough, all wrapped in the cloak of economic development. Muni WiFi became a media rock star, the Britney Spears of technology. That is, Britney before two marriages, two kids and too much hype that could not be sustained. Common sense and good judgment? Both took a beating.

The tragedy here is that WiFi and other wireless technologies had, and still have, valuable roles to play, and powerful economic development, healthcare and educational benefits to deliver. But muni WiFi's potential and how to harvest it got lost in the hype, and the fact it was the wrong technology for meeting the expectations that were built for it. Btw, the "muni" in muni WiFi was a misnomer because private-sector companies with really bad business plans ran most of these networks.

Let us not repeat history. The gigabit, which a lot of people including those in the industry don't fully understand, is experiencing an incredible burst of popularity.

**Who needs a gigabit?**

At the moment, building gigabit cities from sea to shining sea has become something of a rallying call for politicians and pundits everywhere. These calls are driven in large part by the masterful marketing job Chattanooga and Kansas City (Google) are doing to let the world know nothing spells success like g-i-g-a-b-i-t. Outgoing FCC Chairman Julius Genachowski fanned the flames with his Gigabit Challenge that calls for at least one citywide gigabit network in every state by 2015.

Along with the gigabit champions comes the gigabit critics, a chorus of deniers whose voices often are led by large incumbent telecom and cable companies that know they are hard pressed to deliver a gigabit to more than a handful of communities. So they cry out with scornful voices asking, "Who needs a gigabit? Nobody needs a gigabit!"

Some of that scorn comes from people with their heads buried in the sand. However, gigabit critics do bring up a valid question that should be examined in some detail. Just

who does need a gigabit, anyway? Will 100 megabits per second (Mbps) do the trick, at least for the next couple of years, or can communities get by with 50 Mbps as a digital down payment on a future gigabit network?

And precisely who in the community needs this highspeed bandwidth, individuals, businesses, libraries and hospitals, because guess what? Somebody or enough somebodies have to pay for this speed so an entity or two from within or from outside the community can afford to financially sustain the network through loans, grants, Google bucks or traditional investments.

While we're tackling this question of "who needs a gigabit" are we talking about speed or capacity? I define "speed" as: how many megabits per second an individual wants or needs to upload and download information between the public Internet and the individual's computing device, and "capacity" as how many individuals on a network at one time can move data back and forth at that speed? A colleague of mine, Ed Hemminger uses the analogy of a roadway. "Speed is how fast you can drive, capacity is how many cars can drive on the road before you have a traffic jam."

For your community, determining the need for speed and for capacity is part of the same needs assessment process, but they are necessitate different questions. A town of 500 citizens who are mostly elderly, for example, may determine they need to build a network with 50 Mbps of capacity (these are all hypothetical numbers) because the most speed each senior needs averages 5 Mbps to 10 Mbps. However, for an business park with several hundred high tech and bio tech firms each blazing through the Net at 200 Mbps from 8:00 to late six days a week, they may need a network capacity of 20 gigabits.

One last thing. If you determine constituents need, say, 500 Mbps, do they really care whether that speed comes from wireless radio wave, or a cable that is buried by their front porch? These days, there are wireless ISPs (WISPs) that have technology that can deliver gigabit speeds wirelessly. These are stories, one from Kansas City and one from Cleveland, of WISPs doing just that. Once you put the question that way, how the business case for the network comes together could be different.

**What do you want to do with all that speed?**

True, this book is planning guide for community stakeholders who want to meet Chairman Genachowski's challenge and build a gigabit network for their constituents. However, *Building the Gigabit City* doesn't pre-suppose that every community should have a network running at gigabit speed, or that every network infrastructure built to deliver highspeed Internet access should be fiber.

Shocking, I know. But trust me. Communities need to focus on what it is they want to achieve with super-fast access to the Internet that changes everything from how businesses market their products and governments deliver services, to how we educate our kids or receive medical services. Getting fixated on gigabits and terabytes, fiber vs wireless and all the other techie terminology before putting a solid plan in place potentially is the road to ruin.

One of the first things I tell clients, workshop attendees and others is, don't decide on the

technology until you've done your homework. And if you have already made up your mind but you haven't done all of your homework, un-make it and do that homework. Building the Gigabit City is really a guide for how to do your homework the right way so you make the right business decisions regarding community broadband. Once you've made the right business decisions, technology decisions then should follow.

The second thing I recommend is, pick a set of common terms, and develop a collective understanding of some of the common terms used when promoting, planning building highspeed networks. It is amazing how much trouble and confusion is caused when communities pursue broadband because stakeholders, constituents, politicians and even captains of broadband industry use terms and terminology incorrectly.

Let's start with a definition for one of the most basic of terms in the book – broadband. What the heck is broadband? What's the minimum speed or capacity your service has to deliver for it to be considered broadband? This last one is a super-loaded question, and the source of great heartburn for policymakers and stakeholders everywhere. Here, let me keep it simple. Broadband: Internet speed and capacity that is fast enough for individuals, organizations and communities to do what they need/want to get done.

**We don't need broadband, we need NBA networks**

In January 2011 I wrote the following column for Fierce Wireless that puts the spotlight on the issue of speed and need into perspective by replacing "broadband" with "needs-based access."

**Time to Get Rid of Broadband, Bring on the NBA**

It's bedtime, early January. The house is quiet, little ones are being tucked in for the night.

Princess: *Daddy, what did you do at work today?*

Pop: *Well princess, I helped the Marketing Department pull a fast one. We told the world our aging 3G network is really a robust 4G network.*

Princess: *Daddy, you mean that network that's so slow you have get thousands of hotspots to offload all the iPhone data traffic? You convinced people it's a 100 Mbps super duper broadband network? Wow, that's magic.*

Pop: *Well, uh, not quite honey. Our nice lobbyists convinced ITU that they really didn't mean it when they set the bar for 4G so high. Besides, those marketing people at T-Mobile are marketing their 3G as 4G too.*

Princess: *But Daddy, if little Johnny goes and jumps into the deep pool of deceptive marketing, does that mean you should jump in too?*

Pop: *Hmm, maybe it's time to close your eyes, pumpkin. We'll talk about this when you're older.*

Broadband initially was what we called ISDN, DSL and comparatively fast wireless

access when the market needed more than dial-up or satellite's poor speed and performance. However, the computing needs among businesses, local governments, institutions and power users have been outdistancing these broadband capabilities for the past couple of years, not to mention a dearth of broadband in many parts of America.

Telcos deeply wedded to copper- and cellular-based technologies are 21st Century railroads threatened with obsolescence by communities and providers already delivering fiber networks and faster fixed wireless. Not wanting to suffer the same fate, digital railroad barons now are turning to marketing deception that calls trains "airplanes."

"Broadband" in many respects makes this deception possible because the word has (through politics and big-bucks marketing) become synonymous with "any technology that gives people and businesses access to the Net" regardless of how slow or fast. So bottom line, broadband as a word is fairly meaningless because it can mean anything if you have enough marketing bucks to throw behind your particular translation.

Communities, particularly in underserved areas, can now look forward to a new wave of pitches for snake oil disguised as broadband when they are looking for services measured in tens and hundreds of megabits per second.

Our institutions and communities should start demanding NBA networks--Needs-Based Access--from both the federal government programs supporting broadband deployment and those claiming to be "broadband" providers. Sooner than some incumbents think, average consumers are going to demand the same.

Read the full column here.

If I'm waiting an hour to download a book from the Web, I have Internet access but I don't have broadband. If downloading annual reports while working from home is more painful than watching grass grow, I have Internet access but I definitely don't have broadband.

Trying to define broadband by speed is an elusive dream, a process akin to catching air with your hands. When you're in planning sessions with stakeholders, pestering government agencies for grants, or educating constituents so you can rally them behind the cause, relate the definition of broadband to objectives you want/need to achieve. In the end, when all is said and done, the money's been spent, hours have been toiled, etc., etc., the main thing that matters is whether or not people have the service they need at a reasonable price.

**To sum it up**

If you want to move past all the hype that in the end forces communities to be stuck with far less than what they need, or convinces communities to buy or build technology that doesn't meet their needs, we have to change our worldwide Web view. Broadband is about need, not speed.

By the way, in Chapter 8 I swing back to this topic of why the terms we use and mis-use bytes us in the leg. Allied Fiber CEO Hunter Newby opines about the many ways those

involved with broadband need to get their terms and terminology right.

## Chapter 2. Why Communities Want Faster, Better Broadband

This chapter tackles the question, why should our community bother to get faster, better broadband, even if we have to build the network ourselves? Read the following examples of what communities are achieving with Internet access measured in tens or hundreds of megabits per second, you see the potential that lies beneath the surface if you canvass your stakeholders.

If your community is going to undertake as major a financial and resource-intense project as bringing broadband to town, everyone should feel pretty confident about why they are doing this. Over 350 communities across the U.S. of various sizes that have built highspeed networks that these communities own in total or in partnership with companies and other organizations.

It helps to learn and understand what they have accomplished because this leads your constituents to better understand how and why your particular community should consider this endeavor. Every community is different and your broadband needs are specific to geography, demographics, political conditions and a host of other variables, but effective projects elsewhere can stimulate creative local solutions.

Here are comments from community stakeholders and broadband project leaders I interviewed in 2009 whose communities were leading the charge to produce good things with broadband.

**Dan Gallagher, President and Chairman of OpenCape.** This nonprofit corporation is building a regional "middle mile" broadband network to cover the Cape Cod region of Massachusetts.

**Brian Feist, emergency services director – Cambria County, PA.** The county government trumped the state's anti-muni wireless law to build a countywide network consisting of several licensed and unlicensed wireless technologies that provide 30 Mbps to constituents.

**Brent Graden, Dir of Economic Development (since retired), Prestonburg, KY.** This rural community of 4,800 initially built their Meraki WiFi network to increase shoppers downtown, and now the network is citywide delivering a variety of benefits.

**Terry Huval, Dir of Utilities – Lafayette Utilities System.** This city of 125,000 repelled incumbent telecom attacks to build a fiber network offering 10 mbps symmetrical speed at $28/month, 50 mbps at $58. They now offer a gigabit service for homes and businesses.

**Michael Johnson, VP of IT and Broadband – Jackson (TN) Energy Authority.** The public utility for the Jackson, a city of 75,000, built and operates a fiber network with 16,000 subscribers, 20% of which are businesses.

**Scott Martin, Dir of Commerce and Leisure Services, Sandie Terry, IT Director–**

**Franklin County, VA.** This 721 square mile county of 50,000 people partnered with a local wireless Internet access provider (WISP) to build a countywide WiMAX network.

**Mark Meier, CIO (since retired) – Oklahoma City.** A 550-square mile Tropos WiFi network covers this city that has both typical urban and remote rural sections within its borders.

**Jory Wolf, CIO – Santa Monica, CA.** Wolf's IT department started with no funds and created a citywide fiber network that at one point had built up a $2.5 million capital budget surplus from cost savings to the city, and revenue from service sales to businesses.

**When first deployed, where do you see (expect) the greatest economic impact of broadband networks?**

**Wolf (Santa Monica):** The most significant impact for government and community-based organizations is that broadband lowers the cost of doing business because they're saving a bundle of money on expensive, outmoded communication technology. Operating our network is 35% of what we used to pay for very slow T1 lines and frame relay. We couldn't support video or other high-bandwidth apps such as the traffic advisory system and traffic cameras we have now.

For businesses, their overhead drops significantly when they lease dark fiber from us and get discounted bandwidth services. Hospitals transport high bandwidth videos and data so doctors make critical decisions in just two or three minutes. Hospitals collect money faster.

These benefits happen relatively soon after fiber is turned on. We can deploy faster and more efficiently than carriers. They have approval processes for new services and prices that take around three months. We can piggyback off of public works when they're doing street resurfacing and putting in new sewer lines to reduce construction costs.

**Feist (Cambria County):** We see a twofold economic benefit. Customers are getting cost savings from the traditional service providers along with more reliable service; the government is getting revenue from network services to providers to pay for the system and eventually enhance the network. So far we haven't seen an economic development impact on businesses. Our biggest influx of customers is residential because we're just now getting ISPs with services targeted to larger businesses.

**Johnston (Jackson, TN):** We calculate $8 million in direct benefits coming from the lower prices we give customers compared with other communities. We have new businesses start up, and some such as those in the high tech companies expand. Several industries list fiber as a strong draw for them to locate in Jackson. However, it does take some time to get to these benefits.

Some of the immediate benefits are intangible or unpredictable as more things come online that people want to take advantage of, such as social networking. Who would have known three years ago that YouTube or Facebook would be so popular? You can't predict what's coming down

the road tomorrow that we'll benefit from using. There's a fear that when you get cut off from the next big thing, you miss out.

**Martin/Terry (Franklin County):** Everything we're doing is the reverse of the norm of calculating specific numbers for economic impact, such 400 jobs created, or 100 businesses coming to town. It's difficult for a staff our size to easily track this kind of information. We ask does broadband help college or high school students do well in their studies, does it allow people to purchase home at the lake and work from there?

We look at the many examples these questions uncover and determine that the network is a success. The value of broadband is real to us. Since we built the network we're the fastest growing county in Virginia.

Broadband is a big factor in attracting businesses. We're recruiting data centers that are between half-billion and billion-dollar projects. A new data farm might bring 50 – 60 jobs with $75,000 - $100,000 annual salaries. The buildings built for them are assets, and the equipment used represents significant tax revenue every 18 months when they upgrade and replace the technology.

**Gallagher (Cape Cod):** The Woods Hole Oceanographic Institution here is a research center with an extreme need for broadband. With it they would be eligible for research grants for as much as $100 million. The economic impact of would be huge and felt reasonably soon with new employees. Later they would spin out a lot of new companies.

The network could also improve government services and reduce costs. 15 towns on the Cape each have their own GIS systems, so they're not sharing information. The network that links the towns isn't fast enough to support GIS. The network we envision over the Cape would enable everyone to use one more powerful data system, participate in common projects and 100 times the speed for 25% of the price.

**Graden (Prestonburg):** We made wireless the central part of an integrated package of activities to revitalize business in our downtown. Our wireless network, combined with 3% loans and development efforts for buildings that weren't being used, made downtown friendly for businesses. Wireless created incentives for people to come downtown.

Within three months of launching the network, 22 businesses moved in with 40–45 new jobs. This creates a cyclical effect with more people coming into downtown, which attracts more businesses. Tax revenue from here in the first year of the program went up $111,000, mostly through new business growth. This in turn allowed us to buy an aerial fire truck, which has kept property owners and government insurance rates from rising.

**Meier (Oklahoma City):** The existence of the WiFi network allowed us to do things not otherwise possible. We created 42 locations with research quality weather stations to collect all kinds of weather data since we have such a high number of tornados. The University of Oklahoma has projected a $50 - $100 million economic impact over 10 years because of the 'Mecca effect' as scientists, weather forecasters, organizations and conferences from all over the world visit. These people will be staying in hotels, eating at restaurants, taking tours and so on.

There are a whole lot of small benefits too. We increased participation in city events since staff sells tickets with mobile devices and wireless cash registers. Inspectors give instant licensing approvals, which save several days of construction time for projects. But WiFi did not create this. WiFi created the opportunity and eventually these benefits happen. Fiber is completely different. Wireless probably won't supplant it as the preferred technology because the expectations for fiber are greater.

**Beard (Morrow County):** Our farmers started benefiting as soon as the network was completed. They use data that's available while in their vehicles in the fields to track market conditions and make decisions to buy or sell commodities immediately to maximize their profits. They also check the weather to increase or decrease irrigation flow.

When farmers find signs of distress or bugs, they take pictures and send them to a university to get input on how to deal with the problem and minimize damage. The network enables them to check crops' shipping status or determine which grain elevators to send them to, plus use RFID to track equipment and better manage equipment maintenance. Farmers quickly became more competitive nationally and internationally.

**2. How do you see broadband networks impacting healthcare delivery and telemedicine?**

**Beard (Morrow County):** A big challenge to providing healthcare is finding health professionals who want to live here. Telemedicine initiatives are already here to help this, but we want to expand them. We currently have a health alert wireless network in limited area that's designed to provide support to health professionals during pandemic outbreaks, but next level we want to take this to widespread general patient care. Our consortium buildout will enable the same level of service no matter where you are in the county.

In some areas we can monitor patients, and nurses can put WiFi mobile access points in vehicles so they can make house calls. Linking back to office, they can file paperwork electronically so they see more patients each day and reduce gas consumption.

**Feist (Cambria County):** Some of the other partners we spoke to when we originally built the network are in healthcare. We are building data radio links to outlying medical centers. We have doctors' offices affiliated with main hospitals and they want a highspeed connection to send large data files. With our fiber pathway from the NOC [network operating center] and wireless capabilities, we can offer healthcare facilities substantial audio and visual services. It's up to them as to how far they want to take it.

**Wolf (Santa Monica):** While patients are en route to a hospital someone can be scheduling surgery facilities in different hospitals and putting people and resources in place waiting for final decision on where the patient will end up. We could use wireless to transport data from the ambulance. People would get through the ER faster if not go directly to their ultimate treatment area of the hospital.

The network 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 to exchange files and digital images. In a similar way, clinics can compete with big hospitals for business, plus run business operations more effectively.

**Huval (Lafayette):** Telemedicine advances will improve services such as critical care for patients in our smaller hospitals. 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 have can create a video link with best heart physician or specialized hospital 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.

**Meier (Oklahoma City):** I can see voice and video applications running inside ambulances and linked to hospitals to help medical responders start early on treatment. I think it has enough value to give a return on investment. But it's not spectacular. If you say we're going to have "docs in a box" [video conferencing between patients and doctors], that has viability. It's being done today in rural areas, though not in major cities which we don't see as the target area. It makes sense trying to push this out to more rural areas. However, I'm not sure the medical community is ready to support it.

**Johnston (Jackson, TN):** It can do amazing things to change how people receive healthcare. Unfortunately we don't see potential capability meeting reality. The medical community isn't at that place right this minute. Some of my largest customers are hospitals because they need more bandwidth. Yet many doctors or their business managers aren't ready. No one's gone to them or patients to sell them on the idea.

There's also a lack of adequate products as well as data security concerns. Somehow the insurance companies need to set up automated procedures that influence doctors to adopt new technology, and medical boards need to endorse the technology.

**Gallagher (Cape Cod):** We have a lot of retirees, people who are home alone and there's a rehab hospital here. This is a great opportunity to exploit. If we build a network in conjunction with the healthcare community, which is on board with our planning, they can develop apps to serve these constituents. I've seen applications for remote medical care such as monitoring when pills taken.

Though it's actually a short distance to Boston, to drive there can take three hours. Relative to the time of some medical procedures, this is very time consuming. One day you could have a surgeon in Boston operate on patients here using robotic systems. If you don't have broadband, you won't be able to participate in these advances.

**Graden (Prestonburg):** We have folks in our county who live in pretty remote areas we call hallows, some without water, and a lot on disability. They haven't seen a doctor in years, particularly specialists, because it's so much trouble and expense to get to one. When the weather's bad they're completely cut off.

We intend to expand our wireless out to the hollows so people can use video conferencing to talk to a doctor or medical specialist, and have at least a cursory visual examination. It's not ideal, but much more helpful than no care. I also expect medical people can visit some of these areas and be able to use laptops and wireless to search

databases, consult with other physicians and introduce patients to helpful online resources.

Here is my presentation delivered at the 6th Annual Northwoods Research Forum in Wisconsin that spells out four of the main drivers for communities that want/need highspeed Internet to deliver (starts at 24-minute mark):

• Economic development

• Education transformation

• Evolve local government

• Improve healthcare delivery

This presentation gives you the heart of the business case for broadband since applications and services in these four areas can produce benefits that justify your investment. In other words, if you treat community broadband as a business, which you must to financially sustain your network, these four areas should generate sizable revenues, grants, investments, etc. Equally as important, using broadband effectively to produce these outcomes should also benefit the public good.

## Chapter 3. Communities Should Own the Business of Broadband

Creating a business to operate a broadband network is a financial and operational challenge. However, this is not what I'm talking about when I say communities have to own the "business of broadband." This column on the technology news site GigaOm explains what the business of broadband is, and why it's important that communities own it.

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 reap significant broadband benefits.

(Read the full article)

There are a number of options for how the physical broadband infrastructure can be financed, built and operated, which we will explore in following chapters. But the key issue here is that the community must take charge. They must understand what is needed besides the physical infrastructure to impact communities, and be willing to create or facilitate the necessary programs and partnerships.

"Your community can have a gigabit future if you want it badly enough," stated Google Vice President for Access Services Milo Medin. "Don't wait for us. Don't complain to Washington. Start owning the issue of broadband in your community today. You have to own how broadband improves in your community. You have to take action, make changes, be creative. Do not be satisfied with mediocrity. Don't let your citizens be satisfied with mediocrity "

**Lack of competition, lack of options drive community ownership**

Looking at the specific issue of broadband infrastructure, meaning the physical network, the primary reason communities take the lead in getting faster, better broadband for their business, residential and other constituents is the lack of competition. Large telecom and cable companies continually and aggressively blow smoke in our collective ear about "robust" competition when in fact in many communities completion is too weak to matter, or nonexistent.

In 2010, together with a data services company called ID Insight, we complied and released a report titled "The State of Broadband Competition in America." We used critical, but not private, data pulled from Internet transactions to determine service providers' market share for each of the 50 states and Washington, D.C. Then we did some statistical work to create a standard by which we could measure and rank the level of competitiveness between states.

The large incumbents and their legions of lobbyists will bury a discussion in pages of numbers and academic proclamations from economists about what constitutes

competition. ID insight and I took a straightforward approach without the smoke and mirrors. To us, an assessment of marketshare seems to cut to the chase. I mean, when you have entire states in which 75% – 95% of your Internet access services comes from just two providers, the landscape looks pretty bleak for "robust" competition.

Despite some incumbents' recent statements that consumers have plenty of broadband choices, many of you know from personal experience this isn't the case. Just because there are a lot of companies offering Internet access services, that doesn't mean these providers have the resources and market share to influence speed, quality of service or price. Some may claim that our report was biased because we only looked at 10 competitors in each state. But here's the ugly state of affairs.

A couple of incumbent-related organizations will claim there are as many as 70 or 80 providers of "high-speed" service or Internet access in some states. If you take the top ten providers of *broadband* (everything but dial up since that's not broadband), the remaining actual providers combined barely make up 3 – 4 percent of the market. In quite a few states, such as Rhode Island, just the top three providers alone own 80% – 90% market share. When you look at data at the county or city level, excluding major metropolitan areas, the picture gets skewed towards even less, not more, competition.

You can read the full report here. You also can read some of the reviews written at the time: Ars technica, GigaOM and Blandin on Broadband.

Another valuable perspective on the issue of competition in the broadband arena comes via this column that points out the fact that, not only do large incumbents go to extreme to kill competition, they use mountains of your tax money to do it. "A 2011 Institute on Taxation and Economic Policy study shows AT&T, Comcast and Verizon collected nearly $29 billion in tax subsidies from 2008 through 2010. The FCC's 2012 report on Universal Service Fund subsidies shows more than $2.5 billion in federal payments to AT&T and Verizon." Read the full column.

**Assessing competitiveness in your community**

Every community has to determine if they have service providers that deliver Internet access at sufficient speeds, capacity and quality to address the needs defined by the individuals and businesses in those communities. If broadband is deemed insufficient, determine if the problem is not having enough competitors to impact prices and the quality of service. Then the community has to determine if owning the business of broadband makes sense.

Here are several considerations in assessing the level of the competition in your community, and your response to that finding.

Understand the boundaries of your market

We looked at market share at the state level, which has its value, particularly for statewide broadband planning. But you're likely more concerned about details at the city or county level, and this is good since data here can vary significantly from state statistics.

I suggest you also look at data for a cluster of three or four counties, if practical. Since you're thinking of community broadband as a business, be clear on where opportunities for subscribers exist or doesn't exist. Sometimes it makes sense to join ranks with other communities. They may have an equal or greater need that could increase a network's financial sustainability. A provider may be in another area of the county that's a good potential partner in your city or town. You never know until you look.

## Use data to determine allies and competitors

As you see which providers have varying degrees of strength at the county level, be shrewd about who's a potential competitor to your broadband efforts and who's a possible ally. Don't think the largest incumbents in your area won't be competitors because your community currently doesn't have enough customers to justify incumbents' marketing efforts. They're exactly the ones who will come roaring in like storm troopers just as you're ready to launch your network, if not sooner.

Conversely, the smaller competitors in the 15-to-20 percent range of market share or less could be valuable allies. The local telco in the community can be an effective partner or a regional WISP if the community underwrites the cost of building fiber that provides data backhauling for these providers. These smaller companies want to grow and also fend off competitors. Make this dynamic work for you.

## Agree on a standard

Some of the first feedback we got as news about our report hit the streets was questions about whether our method was correct for determining whether an area was competitive. We used established statistical analysis, but people are bound to have metrics and factors they believe are important for determining competitiveness. Whatever you decide to be a standard, try to anchor it in sound science or at least sound observation, and do get consensus on definitions so everyone is talking apples and apples.

A reliable standard might be something you define based on answers to a question similar to "what's the minimum amount of speed we need for all or most of our constituents to do "x," in which x = the two most important applications or network uses defined in the needs assessment. For example, "x" could be "use the latest K-12 educational software from home," and "send digital files such as x-rays and MRIs to the Mayo Clinic for video consults."

A scenario might play out this way. Iowa has established goals to run certain educational applications as well as incorporate a style of teaching called "flipped classrooms" in which students receive class lectures at home online via YouTube, and have discussions in the classroom. The school district for my client Ottumwa, IA might tell us that every home needs 20 Mbps symmetrical (meaning upload AND download speed).

## Determine a response based on the standard you establish

The broadband project team might say that if there's no company in town that can provide 20 Mbps symmetrical or none that can do so at affordable rates, there isn't sufficient broadband competition. There could be a dozen providers in the area, but if

none have the speed you need, you don't have competition. If there is one provider that offers 20 Mbps but charges $1000/month because there's no other game in town, your community does not have sufficient competition to keep prices at the cheaper rates found elsewhere.

Whether or not your community can sustain a second provider that is strong enough to compete is a separate discussion. The point is, this particular hypothetical exercise determined a community to be an uncompetitive market based on a standard that average constituents likely can understand and agree upon. Constituents can then decide that they want to try to entice competitors, ala Google Fiber, or use one of the earlier described business models to create a competitor.

## Don't get distracted by un-related details

We easily could have gone off and lived in the weeds of numerous stats and assumptions that possibly impact competitiveness. DON'T DO IT! If market share is how you want to frame the discussion, identify main elements such as terrain, age, income and marketing budget that may have affected market share in your area. Stay focused on those, but don't spaz on the minor stuff you may never be able to prove. The same applies if you discuss competition in terms speeds and capacity for meeting specific needs. Don't sweat the unrelated details.

# Chapter 4. Community Broadband Is a Free Market Win

"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.

Contrary to the hue and cry from incumbents, public-owned broadband is very much a free-market play. In 2009, I wrote the following in a blog post that highlights this position.

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 providers want to sell, they have every right to look elsewhere or make it themselves. Many small governments and then 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 to the telecom companies our right to hold our elected officials accountable to the will of the people. *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 of telcos 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, an act made more repugnant by the telcos' refusal to provide the services they try to sabotage.

Two years later in the following column for Government Technology, I built out the case in earnest that community broadband is the end product of free market forces at work.

### Treat Communities as Markets for Broadband

The broadband discussion suffers from a case of mistaken identity 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.

Many communities large and small, urban and rural have watched the industry define

"market" almost exclusively as being incumbent telcos, service providers and vendors. "Market" in their world is code for "companies."

You often hear them 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.

The giant telcos' definition of market is smothering the very national broadband goals official D.C. says it wants. It's time for communities to step up and embrace the word in its true form.

**Communities are the market and the market force**

A little while ago Don Means, Co-Founder of consulting firm Digital Village Associates, and I were discussing broadband issues. At one point he asked, "what happens when you view communities not as political subdivisions but as markets? You find better solutions that meet actual market demand."

Instead of accepting "what's good for free markets (a.k.a. big teleco) is good for broadband," communities unhappy with broadband should adopt the following position Don and I both champion:

1. Our community is a free market.

2. As a market, our businesses, local governments, institutions and individuals collectively spend significant dollars on communication services.

3. Despite our spending as a market, we have un-met broadband needs and unfulfilled dreams.

4. Subsequently, we will use our purchasing power and political clout to get the broadband we need and want through private- and/or public sector solutions of our choosing.

5. Key to the success of our community-driven free market strategy is our ability to encourage, facilitate or create competitors in our market, which we will do.

This philosophy also guides Communities United for Broadband, a group I co-founded to provide valuable resources for communities' broadband champions.

Let me make this real for you. Last year a city commissioner called from a small town in Florida. About10,000 constituents pay about $100/month for voice and data services to the only provider in town. That's $1 million a month. The town decided that, for much less they could get as good or better service. They're on a mission to do just that by building the network infrastructure and getting private sector providers to sell services. I expect they'll be successful.

You must come to grips with how much money your community collectively spends (or could spend) for Internet access and voice services. People know how much they pay individually, which seems like peanuts in the big picture, but often don't do the math for the community at large.

Once you survey your constituents and realize how much they're already spending, you and others start to see the possibilities. Just 10,000 people represent a cool $12 million/year in the case I cited. Consider too the amount that could be spent by your currently un-served constituents. With the various broadband technologies available, $12 million starts to get the attention of organizations that can help you. With those kinds of numbers, creative juices start flowing and new avenues to funding broadband become viable.

Treating your community as a market, shifting $12 million/year from your current provider makes you a market force that possibly can induce the public utility to be a provider. Their business infrastructure is already conducive to running a broadband network, and $12 million is a decent cash infusion to support this new opportunity. A local WISP selling fixed broadband at 20 Mbps – 30 Mbps can see a good business for itself in a $12 million market.

Possibilities multiply as you calculate potential revenue from local businesses and organizations that aren't using broadband currently, but would if they could get service capable of supporting their needs. Then there's additional revenue for premium services these constituents would buy if they could move hundreds of megabits, even gigabits, of data.

Don't forget the buying power of local government to replace old communication technology with new broadband. Or the new businesses and organizations you can attract to your community. Once your community realizes and quantifies its current and potential spending power, you have negotiating power just as your local government does when it buys other technology and services.

Seeing this collective broadband buying power opens the mind to various business and financing models. You can take the path Ontario County, NY did to own its fiber infrastructure and sell services on an open network that fosters competition. You (the community via local government or local investors) can even own the network outright and provide services. Did you know Santa Monica, CA went this route and built a city-owned fiber network that generated over $2 million in capital they used to expand both wired and wireless broadband?

Did you also know there are over 80 community-run broadband networks across the U.S. in Utah, Pennsylvania, Tennessee and many other states? Most are doing quite well while only a couple appear to be floundering against incumbent-driven challenges or internal issue. More are on the way thanks to the broadband stimulus and inspiration from Google's gigabit network project.

The private sector has a role to play, but that role is serving the needs of the market. Right now it's the reverse. Communities need to take charge. Realize your market power.

Harness your market forces. Forge market-driven partnerships with providers and vendors that deliver what your constituents demand.

As Paul Larsen, Community and Economic Development Director at Brigham City (UT) Corporation states, "as long as broadband infrastructure is owned by companies that also provide services and have a vested interest in the failure of their competitors, there will be problems. A better way is to let incumbents go their merry way, [while you] support a system of publicly owned, open-access networks that provide platforms for competitive providers to offer their services without resistance from the network owner, and without the need for regulation to provide the desired outcome."

Many communities' individual and business constituents collectively have the money (or conduits to funds), the creativity and the will to facilitate – if not outright own – their best broadband solutions. If you say you want better broadband and to reach un-served communities, aggressively pursue policies and plans that favor markets over the marketers.

*This column ran January 7, 2011. Currently there are over 160 public-owned communitywide networks.*

## Chapter 5. The many ways communities can own their broadband infrastructure

Here are nine business models in which communities own the actual broadband infrastructure. By community, I mean, local government, constituents who unite to create organizations to own the infrastructure, local businesses, local co-ops or telephone companies. Basically, any individuals, entities or combination thereof who are members of a community and supported as such in that community's broadband efforts.

Only two of these options actually involve local governments owning, marketing and operating both the infrastructure and the Internet services. That said, currently over 163 communitywide fiber or cable networks are publically owned. 35 of these networks offer gigabit service. Another 179 communities have public-owned networks covering part of their respective areas. And the number public networks starting up is increasing, almost every week it seems. I don't believe the numbers of public private partnerships are even being calculated yet given how many are being formed.

19 states have laws restricting local government ownership of broadband networks that sell services to homes and businesses. California does not restrict municipal ownership, but is currently a tug of war in the California Public Utilities Commission to expand the entities that are eligible to receive state grants for building broadband to include municipalities.

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 19 states, there are other business model options to consider that likely can move you past the restriction.

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.

I'll conclude this chapter with a few thoughts on how to fund some of these business models. Communities can fund these networks through use of a city or county's capital budget, seeking conventional grant funding, bond measures or one of several investment strategies.

**1. City or county owns the network**

Santa Monica's gigabit network was built and is operated by the City's IT Department. Initially funded by $750,000 in savings by replacing the City's aged data and voice communication systems, the IT team built a $2.5 million cash surplus in savings as well as revenues from selling network services to businesses. Today, the City prefers to no longer sell services direct to businesses, but has nearly 200 providers offering services of all types over its open access fiber network. However, it reserves the option to sell services directly to businesses again, and has no interest in selling residential services.

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 and Wilson, NC both have small IT departments but have effectively marketed and operated the network for over seven years.

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.

This option also can lead to politicization of the network and putting the network further at risk. The Burlington, VT municipal-owned network has been beset with several crippling problems that are considered to be the end result of a failure in effective political oversight.

**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 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 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.

**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, though both are nonprofits. 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 nonprofits. 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. Shortly I will address co-ops that are created to provide utility services that are branching into broadband.

**5. Community recruits existing nonprofit to build network**

There are well over 400 community foundations in the United States. The Steuben County [IN] Community Foundation demonstrates that these can be one of the most effective options for community broadband. The foundation via its enabling organization funded a $3 million 75-mile dark fiber network throughout the county, and sells network access to businesses for $225/month. 35% of the fee covers network operations, and 65% goes into a fund to support local economic development projects.

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, doesn't 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 end product of two electric co-ops that teamed up to build a $42 million, 1,000-mile middle- and last-mile network. Finished in September, the network already has 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 value of a good partnership in which the public and private sectors own a "piece of the action" and a good contract protects everyone's interests in that 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. In Fort Wayne, IN, the city and Verizon entered into an "understanding" that was promoted as a partnership to bring FiOS to town. When Verizon sold its fiber business to Frontier, Frontier came in and raised prices. The city had no say in the matter.

**8. Community business people form broadband company**

Four guys in Emporia, KS who had previously worked in the telecom industry decided to start a private company to build an open access broadband network for their town of 30,000 that incumbents won't serve. To fund it, the founders put in $500,000 of their own money, and got SEC accreditation to sell stock at a minimum of $50,000 per investment. They raised $6.8 million from local individuals, farmers and other businesses. This will build the network to cover half the community, and with an expected 50% subscriber take rate fund the rest of the network buildout.

This option is pretty strong for communities that have residents with solid telecom or technology skills and good business sense. It is likely a partnership with three or four people who have different but complementary talents will get a bigger project moving forward faster, and also be more attractive to investors than sole proprietors. The latter is effective too, but sole proprietors are often found heading telcos or wireless ISPs that build networks for smaller and sparsely populated towns.

The strength of local businesspeople starting companies to run broadband projects is that they can bring strong business disciplines to what is essentially a new business venture. The founders inspire confidence and can attract investors who otherwise would not get

involved with a broadband project. Their loyalty to the community is likely stronger, which translates into better service for the community than from owners of out of town telecoms or ISPs. On the other hand, if the founders prove to be incompetent and there's no other provider in the area, the community has little leverage to try to turn the business around. And if the founders sell the business, the community has even less leverage.

**9. Communities find a mini-Google**

There is actually a ninth option for a successful broadband business model, something of a combination of the public private partnership and having local business people create a broadband company.

People often ask what Google gets out of building these networks in Kansas City, Austin, TX and Provo, UT. Rather than "What does Google get?" smart communities need to ask, "Are there other companies whose businesses would benefit from faster, better broadband? Companies that benefit to the point where investing in community networks make sound business sense? Maybe some of these potential "mini-Googles" are local.

San Leandro, Calif. has its hometown Google, of sorts. Similar to Google, OSIsoft is a tech company in town whose CEO is building fiber infrastructure to bring gigabit service to a town that definitely wants and needs broadband. OSIsoft benefits tremendously from its CEO delivering a gigabit to its neighbors as well as to the company.

A couple of years ago OSIsoft was in a bind. The $250 million company had been a member of the San Leandro community for over 30 years. Dr. Patrick Kennedy, OSIsoft's founder and CEO, as well as many of his 800 employees live in the city. But the company needed a few hundred megabits faster broadband than the incumbents were willing to deliver to the town, and without it OSIsoft would have to move.

Dr. Kennedy and city government officials formed a public private partnership and got creative. As the result of an earlier transportation project, the city had available conduit around the town that it offered to the initiative. Bay Area Rapid Transit (BART), which has two stations in town, had extra dark fiber that it made available. Kennedy hired a contractor to pull 288 strands of fiber through the conduit, 28 of which were given to the City for its use.

The end result of this effort was an 11-mile fiber ring around San Leandro that OSIsoft and other local businesses are using. San Leandro Dark Fiber LLC is the company Dr. Kennedy created to build out the infrastructure. Lit San Leandro is another company created to install the switch and routing facilities that light up the network for business subscribers. Cross Links System is a local ISP selected to provide Internet access and other services to businesses. The City currently is formulating plans for leveraging its share of the fiber to impact local economic development. Residential constituents currently are not served, but they likely will be considered during the economic development planning.

However, 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.

Read the full story of San Leandro and OSIsoft. *You can pick up* some additional valuable information *in this interview with Dr. Kennedy on Gigabit Nation.*

## Chapter 6. Pulling Back the Covers on Nonprofit Business Models

This chapter looks in more detail at three options for communities to own their broadband networks: nonprofit organizations created to run broadband, co-ops and community foundations. 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.

**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 that is itself a nonprofit. They both have tax-free status. 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 greater perception of ownership that subscribers have than when they just subscribe to a nonprofit's service. 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 telecom attorney Jim Baller, a nationally recognized expert in legal issues that impact broadband. “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.

***Arrowhead Electric Co-op Inc.***

Arrowhead Electric Co-op decided to jump into the broadband arena after a Minnesota statewide study conducted in 2007 to assess broadband connectivity. The county ranked dead last among the state’s 87 counties. Cook County, where Arrowhead is located, sits in the northeast corner of the state surrounded by Canada, Lake Superior and thousands of acres of federal government-owned forests and wilderness. This county presents challenges to broadband deployment, and the incumbent provider CenturyLink wasn’t interested in helping solve them.

Arrowhead began in 1953 and supplies electric services to the county’s 5,500 residents and the businesses, many of which are targeted to the tourist trade. Everyone who receives service is a member of the co-op. Members receive capital credits (profit sharing), vote for the Board of Directors and ultimately are responsible for the co-op’s management.

Although the fit between an electric co-op’s business operations and a broadband provider’s is not as seamless as a telephone co-op, there are still enough similarities to make selling broadband a good decision. “Electric co-ops have systems in place to market to, sign up and manage potential subscribers, plus we have efficient customer service and service delivery operations,” states Arrowhead CEO Jeanne Muntean.

Arrowhead and Cook County applied for and won a $17 million stimulus award to build a broadband network. Muntean continues, “We have a construction contract with MasTec, a company that builds fiber network infrastructures. They are attaching fiber to our overhead poles, and digging to lay fiber where we have our underground electric systems. This saves significant time and money. Arrowhead will manage the network operations and deliver Internet access services.”

The county expects the network to increase the number of telecommuters. “46% of our members are people from out of town who own second homes here,” states Muntean. “They typically are business executives and managers, and we’d like to see them spend more time here and bring more dollars into the local economy. Broadband is a necessity

for that to happen. We also get a lot of tourists visit every year and we plan to use broadband to lure them to stay longer every time."

***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 soon realized that their biggest challenge was money. Several large electric co-ops had tried unsuccessfully to deploy broadband by setting up telecom subsidiaries. Old Dominion itself was too big to execute this effectively, and the region was too expansive. "We couldn't cover the debt service for such a large project and get that money back through subscriptions," Hudgins says.

Hudgins requested $6 million from the Tobacco Commission that was disbursing money won by the state in a legal settlement, but they demanded he find a matching grant. Traditional money sources were a poor bet because providing broadband in rural areas as high risk.

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

**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 bordering on fraud being perpetrated across the country 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. Read this article and this one to understand why 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.

# Chapter 7. Moving Forward on Broadband

This chapter is about getting you and your fellow travelers on this broadband adventure off and running. You and they can focus on some of these points or all of them. There is no mandate to follow these tasks in the sequence presented. Mainly this is a very short chapter to get you focused on what needs to be done so you don't sit around talking in endless meetings and never get anywhere.

**Eight steps for getting off the dime and actively planning**

**1. Develop the vision and the goals**

There can be no success without first having a vision around which you rally support, write effective plans and create benchmarks to measure your success. The vision has to be practical so it's easily understood, but it must be bold. The opportunity that communities saw with Google's first offer to bring a 1-gigabit network to some lucky city or town did wonders for helping shape many communities' worldview. At least 1,100 communities' constituents were able to envision the moon, the stars, the universe.

Now that Google has (as of this writing) bestowed its largess on three communities – Kansas City, MO and KS, Austin, TX and Provo, UT – many communities beyond those 1,100 that applied for Google Fiber are now seeing the gigabit light. The vision exercise I'll describe later is about refining a broad and un-shaped notion that you want a gigabit network into a vision that is specific to your community. From here you can then set goals for making the vision a real network that best fits your community based on its needs.

Equally as important as the vision are the goals you set. Without a clear view of how to get from here to there, your work will be an exercise in futility. Goal setting is the process that unites your local forces and resources, while the goals themselves are what let people know where "there" is so they plan better how to get effective broadband.

**3. Identify the stakeholders**

There are as many ways to form effective partnerships between constituencies, governments, businesses, nonprofits and so on as there are communities. This step is vital because with a lot of creative, focused thinking that comes with having the right stakeholders at the table, there are various paths to achieve the broadband you want.

**4. Create an effective project team**

This is part art, part science and another critical step once you decide to pull the trigger and move forward to develop and implement a broadband plan. With the right people in place on the team, you can perform minor (and occasionally major) miracles.

**5. Conduct an effective needs assessment**

For years, I have emphasized the need to get this right. This process could almost be a

book in it's own right. Pay attention when we get to this part of the show. You can never know too much about your constituents and their needs, but you have to have a cut off point where you take action based on the feedback you gather. Since needs assessment is an ongoing process, as you go through the steps leading up to the go-no go decision, try to put processes in place so you can continue to gather feedback without having to reinvent the wheel every time you do.

**6. Build consensus early, often and always**

It's easy to say building consensus is important in broadband planning. But doing so can be an incredibly trying experience in practice. Then, if you start talking about more than one city or town working together, time to hire former Middle East peace negotiators to help. You want to give this task a lot of attention.

**7. Plan for the politics**

As long as there are lobbyists and there is money (but I repeat myself), many community networks are going to face some sort of fight, even in states where there are no anti-muni broadband laws. And if that's not enough, there's often a slew of local ordinances (e.g. right of way rules) waiting to trip people up. You have to be ready. This can require a special kind of consensus building.

**8. Assess funding options**

Few things cause heartburn like getting all revved up to move on some sort of broadband effort and then figuring out that this is going to be a steeper hill to climb than expected. You may have your faith shaken and some stakeholders may lose faith altogether. However, know that there are more options than people may think possible. It requires some serious out-of-the-box thinking, and folks in the community have to commit to finding and exploring those options.

Here's a good interview with a roundtable discussion of broadband movers and shakers who look at what it will take to get the U.S. to meet FCC Chairman Genachowski's Gigabit Cities Challenge. They have a lot of valuable insights to for various types of stakeholders to consider as you get going.

**Jim Baller**, President of Baller-Herbst Law Group, is a well-known telecom attorney and community broadband advocate who presents legal and policy issues that need to be overcome or leveraged.

**Masha Zager**, Editor of Broadband Communities Magazine, brings a good 30,000-foot view of both private sector and community efforts so far in the pursuit of highspeed Internet access.

**Christopher Mitchell**, Dir., Telecommunications as Commons Initiative at the Institute for Local Self-Reliance, tracks gigabit cities across the U.S. and knows what challenges face communities pursuing this goal.

Arkansas Senator **Linda Chesterfield** brings a state legislative perspective since so many

laws and funding programs affecting broadband come from state houses.

**Gary Evans**, CEO of Hiawatha Broadband Communications, has years of experience in private public partnerships and engaging the private sector beyond the traditional incumbents to get broadband where it needs to be.

# Chapter 8. Develop the Vision

In my high-tech marketing/PR heyday, I swore by a book titled "How to Get Your Point Across in 30 Seconds or Less" by Milo Frank. In just over 120 pages of easy reading you get a blueprint for crafting and delivering a persuasive 90-word (30-second) statement that tells people what you want and why. Those pursuing broadband projects of any sort would benefit greatly by reading this book.

The preceding paragraph is an example of using the 30-second rule to present the case for reading Milo's book. The process of creating a vision statement is really creating a 30-second ad about what you want to accomplish with your broadband project that produces noteworthy benefits for your community's constituents. It's educational and motivation all at once.

Read the following generic vision statement to understand what I mean when I recommend applying the 30-second rule to a broadband initiative. It's only 76 words.

Our community is building a broadband fiber and wireless infrastructure to be the centerpiece of a campaign to transform our local companies into national and global businesses that increase job creation 15 percent annually for five years. This infrastructure also will drive partnerships with private and nonprofit organizations to develop our future workforce while enhancing the income-earning capabilities of our current workforce. Everyone participating in this project is contributing to the prosperity and growth of our community.

Some of you may be able to take this statement, modify it a little and be on your way. But you may want to learn about the process that enables you to create a vision that is specific to your community.

Why does this particular exercise matter? The inability to succinctly and effectively state the mission of your broadband project could severely limit your project's ability to get off the ground, or the chances of reaching its goals if it does move forward. Also, the process of creating an accurate, motivating vision statement is how you define effective broadband strategic goals. The art of distilling a complex technology and the facets of its deployment down to 90 words or less is the foundation to the success of many Silicon Valley and tech industry legends.

I spoke with consultants who worked with stimulus grant applicants, and they feel people who couldn't write a good vision statement and executive summary probably didn't have all the information needed to develop a good plan. There were project teams and stakeholders who seemed not to fully understand the benefits of broadband, so they intended (hoped) to sort that out later if they had received a grant. For those trying to secure budget funding or commercial financing for your project, you likely don't have this luxury. You have to do the legwork upfront.

**Know what you want**

Mr. Frank's book presents several steps to creating your 30-second message, but one in particular is critical to making your case for a broadband implementation: know what you want.

If you don't know or can't coherently articulate an answer to the burning question "what do you want," or more importantly, what constituents (your market) want, chances are your project faces an uphill battle to get funded, or to be successful if it is. Who has the clearer vision, the project team that intends "to deploy a sustainable, licensed microwave Middle Mile to WiMAX wireless broadband last mile network to provide broadband services in an area comprised of six counties…"? Or the team that wants to "bring fiber optic service to over 47,000 homes, 7,000 businesses and 200 anchor institutions in nine underserved Indiana rural communities [and] create an expected 270 plus new jobs?" These two statements are from Executive Summaries for two broadband stimulus grants.

Your goal may be to build a network and convince a lot of people in the community to the use broadband, or perhaps you have a somewhat limited objective such as creating public computer centers across town and setting up local libraries with Internet access. In either case, the main hooks in a vision statement are: what do you want to do with broadband, what do you want to accomplish, and how will people's lives subsequently be better?

This issue of knowing what you want covers all aspects of broadband, and extends to everyone influencing broadband locally or nationally. What is it that the government, underserved communities or private sector companies want to accomplish that requires broadband, whether it delivers gigabit fiber speeds or 25 Mbps of wireless access.

The exercise of probing, pondering and distilling the answers to the question "what do they want and how will they benefit when they get it" is covered in the chapters on needs assessments. Vendors and service providers are not immune to the need to have a good vision statement for each community they serve. Creating effective broadband networks comes down to getting in sync with what prospects need or want, or helping those prospects figure out what they want. Conversely, communities can't get broadband networks into their areas without some sort of private sector involvement, but life will be difficult if no one's sure what the private sector players want from the relationship besides money.

Moving from the complexities of technology, community interests and politics to a simple but powerful vision is rarely quick and is often difficult, yet the payback is huge. As I said earlier, once you do the critical thinking about a project that leads you to write an effective vision statement, you are more likely to plan and implement an effective broadband project.

**To know what they want, you have to ask**

If your community is to be successful at owning the business of broadband, local stakeholders, private sector companies, potential subscribers and others have to extend their focus building a physical infrastructure. When you read media coverage of highspeed Internet, and city councils' proclamations that is equivalent to gas, water,

electricity and so on, you get the clear impression that community broadband is just about cables, radio transmitters and access. “Once we have access, [pick one] the local economy, education, our hospitals public safety, etc. will improve.”

However, the network’s value and financial sustainability do not rest solely with the access, but also with the applications and services the access enables. Therefore, to get to the vision statement, the needs assessment process also must answer the question, what do constituents do with broadband once we finish building it? What do they want to achieve and how will they do it?

If you presume to know what constituents want or need to do with the network, you’ll often be wrong. As a result, the network may not be built with enough capacity or the right technology. It may not be properly marketed once it’s built or it could fall victim to any number of other shortcomings that limit your success. In diverse communities, the various constituent groups need different content, services and applications.

The wants of individual subscribers seem to evolve or totally change every 6 to 12 months and depend a lot on consumer trends. With institutional customers, they tend to lock into a relatively small set of applications they want to use (e.g. data warehousing, mobile workforce management, video conferencing). Their data trafficking and quality of service needs may be very demanding, but they tend to remain constant for one or two years, maybe longer.

Within the confines of budget you need to build the network with attention to how it’s going to be used five years from now as well. You want to cast a wide net for gathering feedback with lots of feet on the street, plenty of constituent meetings and a few town hall events.

Whichever feedback-gathering methods you settle on should be determined by the nature of your community and the constituents involved with the project, and the methods should be flexible. But all the while, you broadband project team and stakeholders want to be shaping and re-shaping the vision.

**To share the vision, you must speak the same language**

It is amazing that you can bring five or six industry “insiders” together to talk about broadband and get a dozen different explanations for the same word. If we can’t get those in the know to agree on terms and terminology, how do you expect to create a vision that dozens or hundreds of people with little tech knowledge can understand and share with others?

This following column by Hunter Newby, CEO of Allied Fiber addresses the language barrier you must overcome if you want the choir and the congregation singing from the same hymnal.

**Fiber, Broadband, the Net - What Does it All Mean?**

It is difficult to have a meaningful and productive discussion between any two or more people if those people all speak a different language. In any business dealing, let alone a

casual conversation, if one person for example only speaks English and the other only Chinese then not a whole lot will be accomplished. At least in this situation it is clear that one side does not understand the other. In the world of communications infrastructure, ironically, people are speaking the same language, but in many cases they have different definitions of the words they are using. This leads to mass confusion and bad decisions that ultimately can cause serious problems.

In order for mistakes to be avoided it is critical that everyone be on the same page. The difficulty in this is that it is not possible to test everyone's telecom dictionary knowledge before a conversation begins. Therefore it is important to validate certain points as the dialogue progresses.

There are many over-used and widely misunderstood terms today including: wireless backhaul, Net, capacity, fiber and broadband. To some, wireless backhaul means the transport of voice/data from mobile phones and devices, but to others it can mean using microwave technology for the actual transport link itself. In some cases microwave transport is used to backhaul mobile data traffic. The term wireless therefore has both a mobile and microwave meaning, but in the stream of a conversation it is easily lost in translation.

The Net in net neutrality is understood by most people in the U.S. to refer to Internet, so they believe that net neutrality is about Internet neutrality. The Net actually refers to the word network, which has its own definition, but is basically related to the physical and data link layers and not layer 3 – the Internet protocol layer. Network neutrality is something completely different than imposing regulations on individual websites, but since so few people understand this we now find ourselves faced with Internet regulations when in fact the regulations should be on fair access to the Internet instead. This difference in terminology has caused, is causing and will cause serious issues.

Fiber is another term that is often used and difficult to define properly in the course of a conversation or presentation without running the risk of being labeled as long-winded, or verbose. The truth is that dark fiber is quite different than lit and, or managed fiber. Those that wish to light their own networks and want dark fiber cannot purchase fiber that is already lit. Lit fiber is not really fiber, it is a circuit.

Industry experts are even using well-known acronyms in conversations that sound exactly like something most people already know, but they are using them to describe something else entirely. A good example of this is POTS, which just about everyone in telecom knows as the acro-word for the plain old telephone system. But when certain optical equipment vendors are speaking of their products they now say POT-S, which to them means packet optical transport system, but sounds in conversation exactly like the other POTS. Just imagine how most people react when they hear in a presentation that POTS is going to save the communications infrastructure.

Probably the most problematic of all is the confusion caused by the word broadband. The definition of broadband is so loose that it can be argued to have no real definition at all. Unless the person speaking of it takes the time to explain it in great detail, or the listener asks several qualifying questions, it is easy to take away a misconception and just as easy

to mislead for the purpose of a deception.

Broadband in most minds is analogous with speed. Speed is analogous with fast. In certain places in the U.S., broadband speed is being defined as 128kbps, which just about everyone functioning online today would say is not even remotely close to anything considered fast. In this case, broadband speed is an oxymoron.

A word to the wise, know what the words being spoken and heard mean and you will be the wiser for it. Sometimes the journey to a common understanding is more enlightening than the end result. Know enough never to assume and always verify and, ultimately, bad decisions and mistakes can be averted.

*This column ran on INTERNET TELEPHONY September 2011. I highly recommend you read some of* Hunter's other columns *to help get your stakeholders on the same page.*

**To sum it up**

It is important to remember that your vision will go through many iterations before you eventually come up with you believe is the final version. You can have a vision in place when the network launches, but the community may need to revisit it in a year or two. Or at least challenge stakeholders' assumptions again as a way of verifying that the vision still makes sense.

For inspiration, I leave you at this point with what I consider one of the greatest vision statements of modern times. President John F. Kennedy said this to Congress in 1961: "I believe that this nation should commit itself to achieving the goal before this decade is out of landing a man on the moon and returning him safely to the earth." In July of 1969, the first man walked on the moon and returned safely to the earth. This simple mission statement that produced awesome results is only 31 words.

# Chapter 9. Identify Your Stakeholders

It's time to begin rounding up your various stakeholders and gathering feedback to sort out what these folks need in terms of broadband and other programs to support constituents in their efforts to use the technology to produce the desired benefits. To get a good flavor of how a strong stakeholder relationship can play out, and what it takes to form and maintain such relationships, listen to this interview with Seattle Acting CTO Erin Devoto and Ed Lazowska, Seattle's U of Washington pointman on the project.

They explain the details of the deal and how their respective organizations as well as various other city stakeholders will benefit. Lazowska also is the Bill & Melinda Gates Chair at U of W. Gigabit Squared is a key partner that made their project viable.

**Local Governments— top of the stakeholder lineup**

Local governments (elected officials, public administrators and their staffs) are one of the main groups you want represented on your stakeholder team. They are or should have a role in the planning and development wherever in the community broadband is deployed. They are the community, meaning they represent all of the constituents of a community: businesses, schools, nonprofits, workers, retirees, everyone in all constituencies.

To varying degrees, you find within local government ranks individuals who can open doors to the constituency groups whose support you need for an effective broadband network. These individuals have clout to make resources available that you'll need for the network, such as telephone poles and water towers for hanging wireless network radios and dark fiber cable. They often have contacts to the leaders within stakeholder groups who you want to play a major role in network business planning.

Local, and to a large extend state, governments are the source of dozens of rules and regulations that the project team and private-sector entities have to navigate, avoid, comply with and leverage in order to finish the buildout and maximize the technology. Local government also can play a big role in streamlining or eliminating some of those rules and regs that threaten your progress.

Equally important, administrators and staff have knowledge about resources such as dark fiber infrastructure, right of ways and vertical assets upon which you can hang broadband infrastructure in a strategy that saves a lot of money in broadband costs. Want to know the lay of the land geographically, demographically, economically and otherwise? Bring government stakeholders into the loop.

Local governments typically have pressing communication and business operations needs that community-run networks can meet better than the giant telecom companies can. This makes government a strong potential customer on the network, adding significantly to the financial sustainability of the network. This Gigabit Nation one-on-one radio interview with Christopher Mitchell, a Director with the Institute for Local Self Reliance offers a valuable breakdown of the various ways local governments are valuable stakeholders.

As I discussed earlier, there is a strong case for local government literally owning the business of broadband, though I believe an increasing number of communities are leaning towards having the government-owned utility running the network rather than City Hall. If not the full owner of the infrastructure and delivering services, local government is one stakeholders that is definitely a contender for key partner in the network effort, as the hundreds of public private partnerships prove out.

I talked to a service provider once who was pretty proud of the fact he could make broadband available in an area without having to work through local government. But he couldn't figure out how to increase his revenue. One solution: partner with those governments stakeholders he'd been avoiding who represent big-dollar Internet service contracts.

When you read details on successful community networks, note how many have the city or county government as a principle customer, operator and/or partner with a private sector companies. As you line up your stakeholders, definitely put the government on your "Must Have" list. And at least strongly consider the possiblity for public-owned network projects.

**Anchor institutions: valuable stakeholders and potential subscribers**

The Bill & Melinda Gates Foundation sent analysis data to the FCC a couple of years ago postulating that $5–$10 billion could install fiber networks in most of the anchor institutions in the U.S. (hospitals, medical facilities, schools). At the local level, these institutions should be your stakeholders and could be strong network infrastructure partners as well.

Wire into these institutions first, particularly if the have existing infrastructure assets that can integrate with yours, and great things will happen as the institutions help you reap broadband's promised benefits. In one fell swoop you resolve four critical issues: gathering critical feedback about constituents' broadband needs, financially sustaining the network, fostering economic development and generating widespread broadband adoption.

Gathering feedback

I begin most of my needs assessments with one-on-one meetings with representatives from local hospitals, the school district, the colleges and so forth. Having in-depth discussions with these institutions helps you paint a picture in broad strokes of constituents' broadband needs. These institutions also can make it easy to conduct surveys of constituents.

Financial sustainability

These institutions are an integral part of the whole broadband business, not just little islands of fiber or wireless access that are forgotten about later. For one thing, money for building the network has to come from somewhere. To make some of that money, communities do best by integrating their institutions' highspeed infrastructure into one network if possible as part of a single financial strategy.

If your ultimate objective is to create a communitywide broadband network, then these institutions have to become anchor tenants that pay for network services. In many underserved rural and urban areas, low population density and/or low income make it difficult to get enough individual subscribers to pay for a network's operating expenses (OpEx,) even if the network is built mainly on grant money.

Look at successful networks already in place in communities such as Lafayette, LN. Anchor tenants, including local government, collectively produce much of the revenue. Each one is willing to spend premium amounts to replace older, slower and usually more expensive communication technologies, and capitalize on new technologies. If you can get main institutions to help you finance broadband buildouts and programs, they become full partners in the network, which makes it easier for them to justify becoming anchor tenants.

## Economic development

As your anchor institutions become wired and wireless, they become a catalyst to drive economic development. Santa Monica proved that once a local government and a few high-visibility anchors are contributing to the network's revenue, it's less expensive to extend that network to your largest 10–12 businesses and make them anchor tenants as well. Word of mouth sells services to other businesses that in turn begin contributing to the local economy.

This tactic builds on itself. As institutions and the biggest companies get connected, this attracts new businesses looking to move or expand offices. These large business subscription revenues help network costs stay reasonable so smaller businesses can afford to tap into the network. Each anchor tenant and institution potentially can build a wireless hub that attracts shoppers and tourists, which impacts those neighborhoods' economic picture. Not all communities draw big companies with hundreds of jobs. However, in small towns, businesses with as few as five or six employees can double those numbers and make a significant impact on the local economy.

To shed some light on opportunities and challenges in helping small businesses in your community maximize the network you're planning to build, listen to this panel discussion with three people who have lots of experience in this area. David Salway – Program Director, NY State Broadband Program, Gary Evans – Senior Consultant, Former President and CEO, Hiawatha Broadband Communications and Phillip Clark – Founder, PAXIO bring public and private sector perspectives to the discussion.

## Broadband adoption

Keep in mind from the outset that anchor institutions, particularly when you include libraries in the mix, address one of the more vexing challenges of broadband – getting individuals to subscribe. It can cost hundreds of dollars to win and keep an individual as a subscriber, so months pass before each individual becomes profitable. Many people have no interest at all in getting on the Internet.

Rather than bust your rump and your budget chasing after individual subscribers, leverage the anchor institutions. If each institution provides content, services and

applications that enable their constituents to benefit without having to fight traffic, stand in line or sit for hours with a phone locked to their ears, individuals will subscribe to the network.

As part of the strategy for broadband adoption, be thorough in gathering data about institutions' constituents and what they need, and be creative in structuring relationships with the institutions. Libraries especially hold promise in this area because they already are a central point within communities for people who want to use the Net to do research or hunt for jobs. Don Means is a national advocate and consultant who effectively preaches the gospel of libraries as a cornerstone to good broadband strategy. This Gigabit Nation interview with Don lays out his message well.

This short video of my presentation at a Missouri broadband summit spells out how to leverage stakeholder relationships to enhance your broadband marketing efforts.

**Utilities - public and private – are a good bet**

Another stakeholder is the utility company, though public utilities tend to be better suited for this role than private ones because the former tend to be inclined to work in the best interests of local communities. Years before the 2009 broadband stimulus, public utilities from towns as small as Adel, GA (population 5,300) and much bigger cities such as Tacoma, WA (population 196,000) built broadband networks. Today more utilities are moving to play important community broadband roles.

Smart grids are the technology evolution in the utilities industry that is boosting utilities' popularity as broadband partners. Initially, wireless devices sat on meters that collected subscribers' data and allowed workers driving down the road to transfer the data to on-board computers, and then to servers when workers returned to the office. This evolved into automated meter infrastructure (AMI). AMI without human intervention captures data from residential and community "smart" meters as frequently as needed, and lets you slice and dice this data as granularly as you wish and enables communication from the office to the meters.

These smart meters have now advanced in their capabilities so the amount of data they can send and receive is enormous. The grid that captures all of this data flow and also is responsible for managing electricity services for a utility's customers. These capabilities help utilities cut costs, increase revenue and run better business operations. As the smart meter concept is absorbed into smart gird capabilities, both the geography and number of customers expands tremendously.

With the grand visions that are unfolding for smart grids, such as moving "green" energy from distant windmill farms to local customers and failsafe provisioning of power in cases when the national power grid fails, the data communication needs intensify. That means relying on fiber (the ideal) or super-fast fixed wireless.

A community's fiber network can provide the backhaul to a regional utility network for aggregated customer data. Or a utility can build its own fiber backhaul and determine how to make that fiber available for local government and other institutions for their use. It gets tricky trying to entice private utilities to integrate their smart grid with broadband

networks that serve the general public because of the utilities' paranoia of security breeches, plus their profit-motives can trump the community's desire to serve the public good.

Nevertheless, communities should still try to include both private and public as a stakeholders. Utilities benefit by tapping into the network to offload some of their overhead costs, improve many aspects of their business operations and potentially add a revenue stream to the utility. The utilities, in turn, offer benefits to the project because they have the customer marketing, acquisition and service processes and technology in place to bring to the deal.

Though there are a lot of technology and logistical details that have to be worked out for a partnership of any sort between communities and smart grid builders, there are clearly significant potential benefits that can justify the effort.

**To sum it up**

Stakeholder relationships and partnerships are critical to the planning, operational and financial well being of your broadband project. Communities will assemble a different combination of public and private sector individuals and organizations to play these roles. Early on in your efforts to launch broadband, begin your stakeholder search. In reality, though, this is an on-going process because you should always be looking for those who can advance the cause.

What I've presented is not the total list of possible stakeholders, but they are starting points and food for thought. At the outset, it may not be clear where or who all the stakeholders are and what they'll have to offer, but keep your doors open and leave the light on for them to always feel welcome.

## Chapter 10. 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 staff that becomes the 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 together. 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 really 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.

## Chapter 11. The Needs Assessment – Centerpiece of strategy planning

Broadband needs assessments may be better recognized by calling the process by its most common name, market research. In the business world, you don't release a technology product until the company has done an extensive amount of phone calls, surveys, testing demos, competitive analysis and old fashion crystal ball gazing.

**Guidelines for effective needs assessments**

The specific tactics of how to conduct an effective needs assessment are many, but I'm going to give you here a sampling of what you should consider when planning your assessment. Regardless of how many assessment tactics you employ, there are several core elements that do not change. In the execution of each major task try to:

- educate the audience about at least some of the basics of broadband and what it means to constituents;
- educate constituents about some of the success stories from other communities, and many of the benefits they are receiving;
- determine how they view their current broadband options;
- determine what they currently can't do with broadband that they would like to do; and
- what would they like to do with broadband in three-to-five years.

The needs assessment should begins with some preliminary individual interviews of key stakeholders who have a vested interest in the success of a broadband network, including and but exclusively:

- managers of city and county economic development agencies;
- heads of chambers of commerce or other business associations such as the Rotary Club;
- leaders of several of the larger companies in the area;
- commercial real estate agents;
- one or two elected local officials for cities and counties in the area;
- a senior 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 and local colleges.

After the initial conversations, consider conducting full- or half-day stakeholder workshops that bring together a different set of representatives from stakeholder groups. For example, have representatives from businesses and economic development agencies in one workshop, governments departments and community leaders in a second, and

schools, nonprofits and medical professionals in the third. Add other representatives as appropriate. The number of workshops and attendees depends on variables within each community, but you want to be sure groups aren't so large that the workshops becoming unwieldy.

The emphasis of the workshops 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) motivating constituents to support and eventually subscribe to the network.

One thing to keep top of mind is that you want to have a "creation orientation" rather than a problem-solving approach to your workshops. Robert McNeil is a consultant who organized and conducted the series of focus groups and town hall meetings that were part of the Philadelphia Mayor's 1994 broadband needs assessment effort. McNeil's creation orientation drove the feedback gathering and planning process.

"The problem solving orientation is typical when people deal with government," McNeil said in a 1995 book interview. "Instead of trying to bring something new into being, you're trying to make something annoying disappear. 'Make my taxes go away.' 'Make this or that problem go away.'" There's often not a lot of positive energy in these types of meetings. When you try to create, you bring something new into being. There's a lot of positive energy you can build around "wouldn't it be cool if…?" brainstorming sessions. You get this incredible vision out there with lots of people contributing to it because they can be a part of the dream."

In each workshop, give participants 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. Conclude the workshop with participants describing what they would like to create and subsequently accomplish using broadband.

If you want to get a little extra bang for your buck, give workshop attendees a "homework" assignment to go back to their respective constituencies to discuss what they learned, and to ask for additional feedback and ideas. Reconvene as many of the stakeholders as possible (or designated stand-ins) within 10-to-14 days for a summary session. During this session, each stakeholder group gives a 10-minute re-cap of the best ideas generated since the workshop, describe the top potential benefit of each idea and indicate whether they feel the community should pursue a broadband project.

**Cast the net wider for gathering feedback**

In the next step of the assessment, gather data and direct feedback from a variety of sources to determine in greater detail:

- what broadband resources (Internet infrastructure and services) are in place as well as resources such as sewer ducts and telephone poles that can facilitate broadband infrastructure deployment;

- if the existing resources adequately meet the current needs of various constituent groups;
- current and future needs of those constituents who are likely to use broadband in ways that produce the outcomes identified in the previous tasks;
- 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 for your community; and
- which agencies and nonprofits potentially can facilitate network funding, broadband adoption and moving communities towards a digital economy.

Knowing how much people are willing to spend for broadband is another important question. However, this is a much more difficult question to get answers for, and may be better done at a later time in a "Round II" of the assessment to prepare for a full-on financial planning exercise. Also, there can be a significant gap between how much people say they are willing to pay for future services versus how much they will pay when actually offered specific services. This is one reason I say the needs assessment process is on-going.

I have found that an economical and effective way to gather this data is to design online surveys for individuals and businesses that they respectively complete on the Web or via e-mail within a specified time period. Lately I have been supplementing the survey data with a Web application I commissioned that "self maps" survey respondents' locations to create a crowdsourced broadband coverage and needs map [initial sample of map for Ottumwa, IA].

To include feedback from constituents without broadband, you will need to recruit public institutions such as libraries, government offices and even some of your business establishments to provide computer access for individuals to drop in and use. Local media can play a role in gathering this data as well because there is news value in the data to be collected, plus they can capture interesting information about their readers. You can supplement online surveys with telephone surveys to businesses in areas where there are not a sufficient number to do any serious statistical analysis.

Champaign, Urbana and Savoy, IL witnessed what probably was one of the most aggressive data collection efforts for broadband in the U.S. Their project team recruited a volunteer army of 24 hearty souls in November 2011 that went from survey design to door-to-door canvassing of 2000 people in just three weeks. The survey was part of the needs assessment for the Urbana-Champaign Big Broadband network buildout.

This is a must-hear interview! LaEisha Meaderds, Program Coordinator, Dr. Maryalice Wu, Director of the ATLAS survey research service, and Shavion Scott, Program Specialist, with the Graduate School of Library and Information Science used additional

feedback-gathering tactics, but the canvassing project rocks.

The value of this data, especially the self-mapping data, is that it's about real speeds constituents are receiving, not the advertised speeds provided by incumbents. This data is up to date, and what's more, you are asking people to report on the value of the broadband speeds they are receiving in the context of what constituents want to do with highspeed access.

There is often a big gap between the Internet access speeds telecom and cable companies advertise and what subscribers are actually able to get. More importantly, whether constituents are being served or un- or underserved should be determined by whether or not broadband is sufficient for businesses, hospitals, schools, students at home, etc. to do what they need to do online.

Also valuable in this quest for independent broadband coverage data are services such as Broadband Scout (http://idinsight.com/solutions/broadband-scout/) that provide third-party data to validate broadband coverage claimed by service provider. Combined with a self-mapping application, an independent data service enables communities to create several layers of accurate useful maps.

**Developing your technology inventory**

A good needs assessment includes creating an inventory of what broadband and other technologies are in place that the community can incorporate into its broadband strategy. The constituent surveys are part of this process in that among they should be asked what service provider they use. If you conduct detailed telephone or in-person surveys similar to what

Every state, as a result of the broadband stimulus, received money to create broadband coverage and speed maps. They subsequently have polled providers to get this data. Project teams should likewise poll providers in their local area to ask about current and future services as well as any plans providers have to offer enhanced services in the near future.

Interview city and county IT staffs and then combine their data with that collected from providers and constituents to document availability, costs, maximum speeds, average speeds, prices, etc. The IT staffs also should supplement the inventory with information about physical and other resources local government, institutions, large businesses and others have that can facilitate broadband deployment. This includes items such as right of ways, vertical structures on which wireless access points and fiber cables can be mounted, and existing or planned public works projects that can facilitate installing conduit, a main component of broadband infrastructure.

As much as is possible, the inventory should contain an overview of viable broadband technology and services in place elsewhere in the U.S., but currently may not be available locally. Along with that, an assessment of what broadband technologies may be on the horizon that may play a part in the eventual community infrastructure.

At the 2013 Schools, Health & Libraries Broadband Coalition conference, I moderated a

panel that look at the broadband mapping and how we can gain so much additional data beyond just who has or doesn't have Internet access. Angela Bailey, Director - NC Broadband Division, North Carolina Department of Commerce, Bob Gehrer, Director - State Broadband Mapping Program, NY State Division of Homeland Security and Emergency Services, and Jennie Stapp, Montana State Librarian have a great discussion. This included advising on what to do with the grant money for state mapping runs out in 2014. Listen to the panelists comment here.

If your community is forward thinking, you may want to consider how to adopt your state's broadband mapping activities into your local efforts. Perhaps at least at a local level there can be some resources committed to keep mapping an on-going activity so developing you inventory is not a one-time activity.

**To sum it up**

The needs assessment process is pretty involved when done properly. As with many other steps in the planning of your broadband network, needs assessment is an on-going exercise. So as you move forward, always be on the lookout for information-gathering processes you can automate so they can be carried on in the future with less intervention by you.

# Chapter 12. Building Consensus Early, Often and Always

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.

**Sometimes building consensus starts from 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 dial up. 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.

Jeff Arnold, Deputy Director of Legislative Affairs for the National Association of Counties (NACo) and a member of its Telecommunications and Technology Committee until he passed in August 2012, believed you need someone assertive who commands a lot of respect taking the activist leadership role. However, who will start the ball rolling is uncertain. "I think what ends up happening is that the community actually starts the process," Arnold told me in an interview in 2009. "A citizen or group of citizens insists that 'we need broadband.' Either that county's administrator or a member of the Board of Commissioners has to step up to the plate and reiterate this is something we really want. It's all about someone understanding broadband and what it could mean, and being able to articulate this in specific terms."

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.

On Minnesota's Broadband Task Force, it was challenging coming to consensus on several key issues, including broadband speed goals and a goal to make Minnesota #5 in the nation in broadband access. How do you achieve similar results? "Several things are important," states O'Connor. "First and foremost, it helps tremendously if people know what consensus decision-making is and how it's done. There are rules, tips and techniques to do this that people in your group need to know, and they need to understand why it's important. [Here's a link provided by O'Connor to help you in this effort—http://en.wikipedia.org/wiki/Consensus_decision-making]

"It's also important that at least a few members believe in consensus and will nudge the group toward it when the going gets tough and people start to backslide into the old habit of just voting and getting on with the meeting. It's imperative that the Chair be one of the 'nudgers.' Without the support of the person running the meetings, it's almost impossible to keep a consensus process going. We were extremely fortunate to have a very effective Chair who pushed us over the rough spots."

**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 up to be viewed as leaders in a cause that has such significance. They buy in and they actively work bringing in other businesses as cheerleaders and customers.

There are obvious marketing tactics that can educate your business community about broadband so you get their buy in. However, business owners also need to understand their customers. If they are moving to broadband then business owners need to go that way as well. Robert Bright, a Philadelphia business owner observes, "When my clients say 'we're going to make all payments electronically now,' then I'm going to have to figure out how to do business like that. So there has to be some level of owner responsibility to get on board with broadband depending on whether or not they're serious about their business and their customers."

When building consensus among individual residents, it is particularly important that your team approach this process without a lot of preconceived notions. "In some other neighborhoods where a lot of the women stay at home, online Martha Stewart recipes might be the thing to motivate subscribers," observes Patricia DeCarlo, Executive Director of Philadelphia's Norris Square Civic Association. "But that would be in those neighborhood. There were initial thoughts from the City that people could sit in the park here in Norris Square with laptops, which is a very middle class yuppie thing to do. Our folks do not have little laptops that they can take to the park. As broadband becomes more real, people become more vocal about what they need to do to make it better. 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.

**Consensus building with service providers**

Most communities I've talked to over the years start the quest for better broadband by going to the incumbent provider to try to work out a deal. Usually that fails when the incumbent is one of the large telcos or cable companies. However, small local and regional providers can be more receptive to a public-private partner relationship.

For a public private partnership to work, there can be a frequent need for consensus building because both organizations are fundamentally different in how they operate. Below are two Top 10 lists of tips for maximizing these partnerships that were prepared by Gary Evans, former President and CEO of Hiawatha Broadband. Check out this interview with Gary in which he spells out the details.

The Top 10 Tips for Public Sector Partners

10. There is no substitute for vision: knowing why you are doing a project, what you hope to accomplish, and who you will benefit. If this is done well, the project will succeed. Municipal telecom networks are not for the feint of heart, so make sure you have the fortitude to persevere.

9. If you're building a network simply to accomplish lower prices for residents, don't do it. The big folks have advantages that you don't and they will use them in every way possible.

8. If you are planning to build your network in the hope the masses will subscribe, think again. Do your homework. Identify your current providers' weaknesses and build a plan to exploit them. If that can't be done, don't waste your time

7. If you have found no weaknesses, look again. Hint: take a look at the service equation, remembering you too are a monopoly. That is reason No. 1 to find a private sector partner.

6. Recognize that there are key differences between public and private sector finance. Reason No. 2 to find a private-sector partner is to help you operate as a competitive for-profit business.

5. As you develop your business plan, seek help. This is Reason No. 3 to partner. The competitive telecom world is a good deal different than the world of government.

4. Prepare a list of non-negotiables…those things that the project must have, must do and cannot waver from. This work upfront can spare a lot of agony after things are operating.

3. Work with your partner to develop those few things that will measure the success of the project. No fewer than three, no more than seven…the indicators that will tell you things are sweet…or sour. Measure them as often as possible…at least weekly. Build on the sweet and deal quickly to mitigate the sour.

2. Communicate, communicate, communicate…and never stop doing so. Early on it's important that you know your potential partner well and are convinced you have not just made a choice…but the right choice. After the selection is made, you must stay in touch to keep both parties on the same page.

1. Don't make a deal until you are convinced that you have found exactly the right partner…one upon which your head and gut agree. And when you have found that right partner, get the hell out of the way and let them run. In other words, no micro-management. But for goodness sakes, communicate with each other every day…maybe more than once a day.

Top 10 Tips for Private Sector Partner

10. Test the vision…is it solid, does it reflect good thinking and does it match the views of the residents?

9. Do an exhaustive examination of the business plan, comparing it to your experiences. If it does not, say so, along with what needs to be done to bring it into synch.

8. Test the fortitude of the governing body to persevere in light of the challenges that are sure to emerge.

7. Is there a public leader, a charismatic figure who can help to push the project to fruition and success…a person who is trusted and admired?

6. Test the focus: are the public and community leaders committed to the network for the right reasons? Do they understand what is likely to happen? Do they have the courage to stand up to it?

5. Sit down with the city finance director and find out how prepared she or he is to meet your needs for financial information that is timely and comprised of all necessary elements. Be understanding; these are two different environments.

4. Have ready your list of non-negotiables…the things that you absolutely must have to do an effective job. Compare them with government's list and reach agreement on each item on each list.

3. Provide helpful suggestions on those things that you believe will best indicate to all parties how the business is doing: Subscriber counts by service, total revenue and average revenue per unit (ARPU), bottom-line compared to budget, gross margin, number of return visits to newly installed customers, disconnects, customer feedback.

2. Communicate, communicate, communicate…and never stop doing so. Remember, your partner is new to your environment. Take every opportunity to enhance understanding of what you are doing and why.

1. Recognize the early signs of trouble (communications turning bad, rules that continue to change, everyone wants to steer the ship) and deal with them expediently.

**To sum it up**

If we want to relate the art of building consensus to business practices, this is word-of-mouth marketing. One thing that nearly 20 years of marketing consulting for high-tech companies taught me is that the power of word of mouth is awesome in its impact, and it's also fairly inexpensive to execute. If you want consensus building to work for you, plan to use all the social media to augment whatever traditional marketing tactics you use to build word of mouth among constituents that do not have access to the Internet.

# Chapter 13. Overcoming Political Adversity

This chapter serves a dual purpose. If can help you build political consensus that helps you move broadband forward in your community. And it can help you meet and hopefully overcome political opposition should any arise that tries to derail your broadband efforts.

The likelihood of facing political obstacles differs depending on where you are and what type of network business model you use. In some cases you won't be able to get giant telcos interested in bringing broadband to your area, yet they'll immediately become an obstruction problem as soon as others want to do it.

In some cases, they'll fight you in the state legislature, but as we saw November 2009 in Longmont, CO, the incumbents also will fight savagely against municipal broadband at the city level. Comcast spent over $300,000 to kill a referendum to allow Longmont to study the possibility of making broadband services available to citizens. The city of 86,000 citizens won after spending only $5,000, but it was a major distraction.

Public-private partnerships have come front and center in community broadband discussions as a way to head off state legislative action. Often in these arrangements, municipal or county governments drive the project and private sector companies have varying degrees of involvement. However, in some states local governments cannot even participate in partnerships with private companies.

**Winning friends and allies in the state legislature**

Do not automatically consider the state legislature the enemy of community broadband. For one thing, even if your state has severe restrictions on municipal broadband, there are business models in which the community owns the network through options besides local government. Also, not all legislators have an instinctive dislike of community networks. Since there is value in having legislators be more supportive of broadband, it is worthwhile to try to woo them as much as is practical.

When it comes to technology-related bills and issues, elected representatives at all levels who don't understand the features or the business and social impacts of the technology rely on others to give them that information. Typically, industry lobbyists are the ones who cart in the font of knowledge from which these politicos drink, and needless to say, there aren't going to be pretty pictures of large incumbents' community competitors.

Control the discussion and impact the bills written in your state by influencing what representatives learn about broadband. How you execute this education campaign is dictated by the local circumstances and personalities of your respective legislative bodies. But it is imperative for you to run such a campaign.

Communities should to unite to execute an education campaign specifically targeted to your representatives that not only presents key arguments in favor of broadband, but also delivers technology-made-simple 1-to-2-page documents. These can be the same ones

recommended for use in your community consensus building efforts.

Even if your state legislature isn't threatening to prohibit community broadband, you have to worry about laws that inadvertently can hinder your initiative. The way to minimize these potential minefields is to build a rapport early on between your project team and the two or three representatives who likely would be the main people driving technology bills through a particular body–city council, state legislature, etc. They are often the people most knowledgeable about technology whom other representatives rely on to determine how to vote.

Developing a "trusted advisor" relationship with these individuals keeps you in the loop so you can be proactive rather than reactive while enabling you to gain some level of counterbalance to lobbyists' activities. You want a seat at the table, or at least an ear at the door, when these late-night bills are being drafted.

Make no mistake, though. There are counties and states where the politicos driving anti muni broadband legislation are firmly in the pockets of incumbents who pay their campaign tabs. There are several towns and counties in North Carolina that have proven successes with community broadband networks, but no amount of education was able to prevent their state legislators from killing every other town's ability to build these networks.

Go as far as you can in trying to get people to see the light, but be prepared to fall back on rallying the masses and the business community to assert your desires through the election and legislative process.

**Achieving victory on the political battlefield**


[Graphic design courtesy Golden Shovel Agency, available for your use]

If you must do battle, understand that your two opponents likely are: 1) the incumbents fighting what they fear as a critical threat to the weak spot of their business, and 2) a political philosophy that enshrines the concept of free market forces above almost everything else including community-run networks. These opponents require different strategies to counteract them.

Incumbents can be a particularly intractable problem because fear makes them difficult to reason with and forces you into these life-or-death struggles such as we have seen in many states including Georgia early in 2013. Philosophy-driven state legislators aren't much fun either, but at least cities have a philosophical counter punch that can be quite effective.

The strength of incumbents in their legislative attacks on community broadband rests on money and knowledge since politicians always want money, and never have time to learn all the details about everything they need to know. "We certainly see the 'money' factor," stated Jeff Arnold of NACo. "The political reality is that incumbents that provision broadband have spent a lot of money with politicians in terms of campaign contributions."

The money issue is why communities might want to initially deploy municipal broadband as a government business operations tool, and then build a strong support base of business people by bringing them onto the network. A few thousand angry citizens can produce results, but sometimes it's easier for several mayors and county commissioners to rally a few dozen key business people to apply heavy pressure as needed. For some

reason, there are legislators who seem to respond a little better to a phone call from a millionaire or two than calls from the average citizen.

In the ideal world, having a vocal coalition of both community activists and businesses applying the pressure is best. If you have done a good job of recruiting your mayor, city council and county commissioners to be active cheerleaders, they can bring that energy to the state house for needed extra political muscle.

So, how do you rally the business community around broadband to defend in the legislature? Point to three hot-button issues that should grab businesses' attention.

Unless a company has the clout to whittle an exception from city council, most businesses pay local government taxes and fees. Point out that any smart business wants those tax dollars maximized to get the greatest efficiency in services that the government delivers, which should be one of the goals of the network. Everything from building inspections to paperwork processing and traffic control around their places of work can be improved with community broadband.

Second, public safety issues are business issues. What would happen if business owners' plant, office buildings or homes suffered preventable losses because their city is hindered from improving its communication infrastructure and operating procedures? As hurricanes Katrina, Rita and most recently Sandy painfully illustrated, wireless text messaging might be the only communication lifeline business and employees have after a natural or other disaster wipes out much of the wireline infrastructure. Make community broadband and public safety inseparable in business owners' minds.

Third, most responsible business managers would rather spend $370 per month for gigabit access (what Chattanooga businesses pay) rather than several thousand dollars for slower speeds. Local governments driving partnerships in which a new breed of ISP leverages the latest technology to deliver a superior service at a better price gives businesses a better business technology option that directly impacts their bottom line. The goal, then, is to recruit local businesses early to be an ally if the community anticipates a need to cultivate legislative allies.

**When the opponent is philosophy**

In the philosophical battle you have a political faction that says local government should never be competing with the private sector. The incumbent telcos play this card a lot, though I believe they do this as a means to an end rather than from any adherence to political ideology. You need to bring out your trump card. Ken Fellman, former Mayor of Arvada, CO and Immediate Past President of National Association of Telecommunications Officers and Advisors, spells it out this way.

"The state or Federal government shouldn't be telling local governments what to do. It's easy for us in local governments to argue this point and a difficult position for conservative legislators to argue against because, while they like to be pro-business, most conservative philosophy argues for local control. Whether it's a town of 500 people, or a city of millions, if citizens examine the issue and say 'we are willing to spend our tax dollars, we're willing to vote for a tax increase or issue bonds because we think

municipal broadband is a good idea in our little town, then who are you at the state capitol to tell us we can't do that?' We thought you supported local control? Isn't that what you're party's all about? This argument resonates."

The decision to deploy municipal broadband is no different than when that same community decides they should issue a bond to build a new road or new baseball fields. Or they want to spend money for bigger pipes in their water system to get more capacity to address the increase in population. What legislature is going to tell a public utility they can't build a new electric power grid?

"In order to fight this battle, look for coalitions because this battle isn't all liberal Democrats versus conservative Republicans," Fellman states. "When you get into these debates, a lot of times it's the rural areas that aren't covered and they're the ones who will benefit the most, at least initially, by putting in a broadband system. A lot of those areas are represented by conservatives who may likely look at the debate and say, 'this isn't just business versus government, it's about local control.'"

Arnold offers an additional tact to turn the gods of market forces in your favor. "In most cases, the citizens want what they want when they want it. People are beginning to understand broadband more and more. Broadband acceptance is moving quickly because anyone who's ever experienced it doesn't want to go back. There's an interest among those underserved communities to get any kind of broadband. If this is true in your county, discuss the market demand and show how municipal broadband makes sense because it's the cheapest and fastest alternative."

Once you build support based on market demand, you've elevated the discussion so people with different philosophies can come to the table and talk about how to get more broadband and more competition into your communities. In some cases that will be the government itself providing services, in others it will be the city seeking private sector partners. You may find that the government/business partnership option is what enables you to find middle ground with the private sector advocates, and you can move forward.

As proof that Arnold is right about using a jujitsu move of sorts by fighting legislative battles on high ground of economic realities. Georgia scored a major victory, rallying a bi-partisan coalition of Georgia state legislators to defeat the anti-muni broadband bill that would have left the state a broadband backwater. 94 Democrats and Republicans united to kill House Bill 282, which would have prevented municipalities from building networks anywhere incumbents offered at least 3 Mbps.

"With this vote," states Catherine Rice, President of the SouthEast Association of Telecommunications Officers & Advisors, "Georgia has drawn a line in the sand, stating for the rest of the country that no one in the United States should be denied high speed broadband. The bipartisan majority that voted down House Bill 282 also demonstrates that having access to gigabit infrastructure is NOT a partisan issue, it is an infrastructure issue."

That, plus it became an economic development issue. The only thing that seemed to counterbalance the lure of big telecom dollars to vote against the best interests of

legislators' constituents is the political power and personal satisfaction of saving their economically frayed constituencies. This interview about Thomasville, GA's use of public broadband to help eliminate property taxes became a key talking point when Georgia mayors met with legislators all across the state. Play the economic development card and play it with gusto in your state every time incumbents and their legislative allies threaten your right to local self-determination! The card is only getting stronger as more success stories emerge.

Here is a valuable story to read in the Daily Yonder about how these tactics play out in real life. Community groups in Wisconsin fought a successful battle against state legislators who were trying to pass a bill to kill public-owned networks. Several individuals with lots of experience working with legislators on behalf of community broadband efforts offer practical advice you can put to work quickly.

**To sum it up**

Broadband project teams should seriously consider recruiting a political action team. Often elected officials are prevented from certain lobbying activities, but everyone else in the community is relatively free to educate, communicate and motivate. Even if your state does not have anti-muni network laws, there are numerous positive actions you can pursue

# Chapter 14. Bringing It All Together

So far, we have looked many of the fundamental steps and considerations necessary to gather the information you need to make initial plans to move broadband forward. At this point of the process, it would be good to weave some of the elements of your work together to determine how to prepare the for next steps, including extensive financial analysis and engineering design.

I'm going to use my engagement with the Ottumwa Economic Development Corporation (OEDC) in Ottumwa, IA to give you an overview of how a community might apply some of the lessons here for their broadband project. Since OEDC and others are still reviewing the final report on their needs assessment process, some of the details I present will not be detailed. But you and your team will still learn a good number of insights.

**Hitting the ground running**

Prior to my arrival, David Barajas, Executive Director of OEDC, had been gathering information about broadband for at least a year, and planting seeds with various stakeholders that broadband could play a key role in improving the local economy. Ottumwa is a town of 25,000 people in southeast Iowa and in many ways is a typical small town in middle America that has between 300 and 500 businesses, mostly small enterprises. Cargill Meat Solutions and John Deere are the two biggest employers, together employing around 3450 people.

Everyone involved with the needs assessment project was good about not jumping to conclusions about specifically which broadband services were needed, or what business model was preferable. However, the issues they wanted to address were clear and consistent among most of the stakeholders:

- based on anecdotal evidence, many individuals and business owners in Ottumwa were unhappy with their Internet access services;
- Ottumwa wasn't a dying town economically, but it wasn't a bustling boom town either, and constituents felt there is a need to spark the economy in some way;
- stakeholders understand broadband basics and generally believed that the technology could have a significant positive economic impact on Ottumwa;
- while many stakeholders feel broadband can impact education and healthcare delivery, economic development is the primary thing area they want broadband to impact;
- everyone wanted to have their assumptions validated, or not, and a clear path to bringing broadband to town if doing so made sense ;
- although stakeholders had the impression fiber was the technology they needed, they were still open to hearing what their options are;
- no one seemed wedded to any particular business model nor rejected any options

outright, but there was quietly spoken doubt that the city government would want to operate a network alone; and

- whichever specific business model would be selected, stakeholders were leaning towards selecting a model that would give the community direct management over a network infrastructure.

The initial round of one-on-one interviews with stakeholders went well. They and I exchanged valuable information. Communities that work with consultants should encourage stakeholders to be open in their comments and blunt with their assessments so objective outsiders can detect issues that help or hinder a community from adequately running the business of broadband. Yes, the needs assessment is about determining what technology and business model are needed. But someone also must pay attention to how the different stakeholders work together.

Chattanooga, TN owes much of its broadband success to the various stakeholder groups such as the Chamber, business associations, City Hall and the public utility (EPB) running the network work well together at making community projects successful. During a needs assessment process, the broadband project team should pay attention to where the natural alliances between stakeholders exist, and where work must be done to forge good working relationships.

As the Ottumwa stakeholder meetings progressed and were covered by local media, enthusiasm among constituents for broadband slowly started building because they saw specific action taking place. It also became clearer which specific needs currently are not being met, and more importantly, there were indications of which groups of constituents are likely to be the first customers. You can often tell in these types of meetings who are going to be key allies.

Two other sets of meetings that were important were briefings of the local media, and sit-down sessions with each of the service providers in the area. The media briefings were key because the Ottumwa newspaper and TV station educated many constituents about what broadband is, and how it potentially can affect the community. This primed the pump for the surveys that would come later.

The meetings with providers gave everyone an opportunity to find common ground. Iowa doesn't have an outright restriction on muni-run networks, but municipalities must get approval by a referendum before local government can run a telecommunications business. There were signs of partnerships could develop.

**Narrowing the focus**

The stakeholder meetings in Ottumwa uncovered several issues that would later bring into focus what the short-term and long-term mission for broadband in the town. The first is that Ottumwa faces a typical small-town challenge. The community college graduates students who are quickly picked up by companies in the robotics and laser optics industries, but they end up moving to the east or west coast where those jobs are. Ottumwa needs a broadband solution that generates strong ties and jobs in those specific industries.

The second issue is that the schools and hospitals are served well by a fiber network built by the state of Iowa many years ago. The problem is, many students cannot continue to work on education software and Internet resources at home because of the poor coverage and/or quality of Internet access service. Similarly, doctors and medical staff who want to work from home cannot because of these service shortcomings.

Combined with survey results showing a sizeable percentage of citizens want to work or run businesses from home, these observations indicate that just wiring institutions and businesses with broadband will not sufficiently impact economic development. Broadband to the home also needs to be part of the solution.

The stakeholder workshops reinforced the constituent education that was happening in the media, and was particularly helpful giving non-tech people a working understanding of what broadband is, as well as more details what their business model options are. We conducted a couple of town hall meetings that brought average constituents out to engage in the conversation. The surveys enabled everyone involved in the assessment to add some depth and validation to our initial observations.

As we progressed through these activities, consensus started to form around a short-term broadband project that would have the significant impact of proving to the community the long-term value of broadband. People also started coming together on the business model Steuben County, IN implemented in which their community foundation built and now operates a fiber network, sells network access to local businesses and invites private service providers to deliver services to those businesses.

Final decisions still need to be made by a number of stakeholders regarding the recommendations for moving forward, but by the time I delivered the final report there was a lot of excitement about the potential of the business model. The initial broadband project also has to be fine-tuned. At this stage, the financial strategy planning begins in earnest, potential partners are being assessed to help address residential constituents and an action plan is being developed.

Several key meetings during the process went a long way towards solidifying the political consensus. A meeting with the Republican state senator and the Democratic state representative who represents Ottumwa strengthened the bipartisan nature of the broadband effort and Ottumwa's ties with the state house. A meeting with the Mayor and several tech-savvy city council members, followed by a public presentation to the full city council produced valuable goodwill from the city political establishment. And a meeting the elected county representative produced the same at the county level.

Obviously there are many other details to be refined and revealed. But this narrative presents a small snapshot of how the mechanics of a needs analysis project could unfold for a typical community. When the report and recommendations for Ottumwa are approved and ready for public consumption, I will update this chapter.

**To sum it up**

The tactics and strategies presented in Building the Gigabit City are based on observations from hundreds of communities since 2005. However, to make these

recommendations real, you and your stakeholders should spend time visiting with communities similar to yours in size and demographics that have addressed broadband needs similar to yours.

Nothing brings clarity to issues the same as walking through a community with stakeholders, seeing what they see, speaking with constituents who are using community broadband and talking about future plans. To understand broadband planning success, you have to go where communities have built and operate successful networks.

# Chapter 15. Paying for the Network

In previous chapters I discussed how to use the needs assessment process to identify stakeholders and partners who can help define broadband needs, build consensus among constituents and set the stage for marketing to potential subscribers. This process also must seek out answers to the question, "how do we pay for this network?"

It's through your needs assessment that you identify and recruit stakeholder organizations that bring revenue and subscribers to the network. Two main selection criteria should be: 1) who can make your network more appealing to federal agencies, financial services companies and other institutions that can bring financing to build the network, and 2) which stakeholders can help you financially sustain the network once it's built.

An emphasis on financial sustainability absolutely should not eclipse low-income constituents as key stakeholders who have an equal place at the table. As I mention frequently, by ensuring your network's financial wellbeing you ensure its ability to benefit un-served and underserved constituents.

The Department of Homeland Security is a good candidate for grants if your stakeholders include public safety agencies. After the buildout, business community stakeholders may top your list of partners that can draw support from associations such as the Chamber, which in turn can attract smaller business that need a lot of broadband and will pay for premium (but fairly priced) services.

Two powerful county government partners are public safety and public works agencies. Meeting their needs expands your grant options to additional federal agencies such as the Departments of Justice, Energy and transportation. Public works projects allow you to reduce the cost of broadband infrastructure build-outs. Every Department of Transportation road, bridge and public building project, for example, is an opportunity to install broadband infrastructure at a reduced cost.

K-12 schools, colleges and universities are valuable stakeholders. They have a huge need for broadband, which opens them to various foundation and government grant opportunities. Higher learning institutions that are able to access many megs or gigs of Internet speed are eligible for large research grants that bring huge economic benefits to your community, plus increase services colleges can subscribe to on the network.

Finally, your pursuit of key partnerships should include the vendors and service providers that make network infrastructure and services possible. However, public/private partnerships need to be better structured than those arrangements highly touted years ago during the days of muni wireless hype. For one thing, no one this time expects private sector companies to carry the whole financial load while the municipality gets free services.

"You have to be sure providers can make money," observed former Franklin County, VA, IT Director Sandie Terry. "Our wireless Internet service provider has just a two-year return on investment because they're receiving space on vertical assets such as

government buildings in exchange for charging local government lower rates." Everyone coming to the table – and I encourage lots of partnering with local or regional telcos and WISPs – needs to be out-of-the-box thinkers when it comes to structuring mutually beneficial partnerships.

**Finding investors for alterative funding models**

If you can't think outside the box, you may as well skip to the next chapter. Or maybe just give up altogether on the idea of community broadband. For everyone else, here's where out-of-the-box thinking can help move your broadband financial plan forward.

One way to fund the network, even in economically trying times, and also shut down much of the outrageous opposition incumbents throw in front of community broadband projects is for communities to become, literally, stockholders in the network. The way the Green Bay Packers do it. They raised $70 million in five weeks, from December 2011 to January 2012. The worst time of year during one of the worse recessions in history.

Love or hate the team, the city of Green Bay totally kicks butt when it comes to displaying their prowess as community owners of a vital economic asset. Communities across the U.S. that want better broadband can learn from them – and replicate their success, though maybe on a smaller dollar scale and over a longer timeline. But in the end, they should have the kind of highspeed broadband that improves economic development, healthcare delivery, education and several other vital functions that benefit individuals and local businesses.

In a column I wrote for GigaOm, I lay out who's turning potential subscribers into investors, how they're doing it and how using this strategy enables communities to afford to build their networks, but also results in better managed network businesses.

**What the Green Bay Packers Can Teach Us about Broadband**

In Vermont, 23 town governments created ECFiber, an LLC nonprofit corporation. No tax dollars went into ECFiber. Instead, ECFiber offered tax-exempt 15-year $2,500 promissory notes that effectively earn 6 percent interest. The approximately 50,000 people in these towns raised over $900,000 in 2011 to begin an initial buildout covering 26 miles. To finish the network and bring connections to people's doorsteps, ECFiber is doing additional fundraising rounds. In a recent effort, the town of Barnard, Vt. with 386 households generated $350,000 to continue building out the network in their town. With funds for covering two-thirds of Barnard accounted for, they expect to raise enough to complete the job.

In rural Lancashire in the north west of England eight parishes united to form Broadband for the Rural North, Ltd (B4RN), a not-for-profit community co-op. Similar to Green Bay, the co-op sells stock in B4RN, though these shares earn immediate tax breaks, and potentially will pay back investors and the communities.

Sharon Stroh is Director of Business Development of iMAN, an enabling organization for the existing Steuben [IN] County Foundation and the main driver of their community dark fiber network. Stroh described iMAN's direct contribution to the local economy on

Gigabit Nation. After the buildout, 65 percent of subscribers' connection fees ($225/month) will go to providing funds for economic development projects. B4RN created a charitable group that plans to use network profits to buy broadband services for low-income constituents.

Get more details and tips in my GigaOm article.

**Additional funding options**

Occasionally some business publication article or other reports traditional financial institutions don't want anything to do with broadband because there are still collective memories about the big fiber optics gold rush that went bust in the 90s. However, communities should explore this option to see if a good idea blossoms.

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. So four local guys with backgrounds in the telecom industry decided to find investors with clearer vision.

Steve Sauder, Bobbie Agler, Rick Tidwell, and Stormy Supiran created Valu-Net, LLC.

They believed that gigabits are the future and local-grown broadband is the best way to get there. Valu-Net's engineering study determined they needed $12 -14 million to build a fiber network for the entire town. However, similar to ECFiber's strategy, 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. The process intimidates many communities, but it can be worth the effort. In addition to being in a strong position to pursue investors, community networks that receive their state's CLEC stamp are eligible for certain federal monies such as the FCC's $4 billion fund being re-tooled to better support broadband.

The founders put up $500,000 themselves. Valu-Net then pursued a small number of large-sum investors because investor relations is easier to manage. Investors had to be accredited by meeting certain SEC requirements such as validation they have a net worth that allows them to lose this particular investment without going bankrupt. Most of their initial investors lived in or right around Emporia. Valu-Net asked for an initial investment of at least $50,000. Investors could choose between Series A Preferred Stock or Series B.

With Series A, investors receive 12% interest accrued and compounded. Series B investors receive 8% per year annually.

"We raised $6.8 million and shut off investments before we became oversubscribed," comments Tidwell. The founders own 35% of the company while investors have rest. "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.

"Our hope is that the network becomes an economic development tool. However, we don't see it bringing in big companies with 100 high tech jobs at a time, but small businesses or branch offices that bring in six-to-ten jobs. These are good jobs with good pay. We'd rather have five or ten of those kinds of businesses because these are going to grow."

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.

**Economic development fundraising, a different way to attract invest**

National Community Development Services, Inc. (NCDS) specializes in boosting the economic health of communities through a process they term economic development fundraising. The concept is simple, really. Rather than look for customers to buy services or charitable donors to contribute to a network, build a financial sustainability strategy based on a campaign to recruit investors for the network.

One main difference between this approach and Value-Net's is that any community entity can be the owner of the network, thus giving the network greater standing as a community asset, plus less chance of out-of-town companies taking over. The largest stakeholders in a community's wellbeing are logical potential investors in that mission, even if they are not customers on the network.

A typical scenario might be to create a co-op or other nonprofit entity. The City of Fredericton, New Brunswick, Canada, for example, created a budget to build and operate a high-end fiber network. They brought together the heads of 12 of the larger commercial and educational organizations from the community and proposed that each of them and the city invest a fairly proportioned amount into the co-op. The co-op then retained contractors and hired personnel to build and operate the network. The investors received broadband services as a benefit while profits from revenues went back into network services that benefit the community, including free citywide wireless.

"Most successful fundraising campaigns for community and economic development initiatives usually adhere to four core principles," states NCDS CEO Tom DiFiore.

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.

DiFiore continues, "I would also add that market testing the initiative through a feasibility analysis to determine the community's likely level of support is absolutely critical."

Since an economic fundraising campaign for investors should bring in some organizations that for one reason or another may not become customers of the network, and possibly wealthy individuals as well, pay attention to the messaging you use. "I would guess that most people, even smart business people, don't really understand all of the economic benefits and impacts that a robust broadband infrastructure can bring to a community," states DiFiore. "Help prospects connect the dots between broadband and community growth and prosperity, then translate this to their own business. When they see the connection, they'll understand the need to invest to make sure it happens."

NCDS raised millions of dollars for small, rural communities with populations as small as 10,000. The people and organizations with the biggest potential to benefit from the network should carry a significant portion of the load, with smaller stakeholders providing fair and proportionate levels of support. In Fredericton, with a population of 51,000, has over 30 investors of all sizes in the co-op.

"In a large metro area, you might have as few as 80–100 investors supporting a $20 million economic development initiative," says DiFiore, "with the lead investor giving two or three million dollars and the top 10 after that giving $9 or $10 million collectively. A small county may launch a $2 million initiative with a lead investor at two or three hundred thousand dollars and the next ten giving around $900,000 collectively."

Tom DiFiore gives a great interview on Gigabit Nation that provides more details on economic fundraising.

**Prepaid subscriptions, and other creative strategies**

The Utah Telecommunication Open Infrastructure Agency (UTOPIA) has a different angle to getting subscribers to invest in buildouts. UTOPIA is a league of 16 cities that started building a municipal fiber network in 2002 and offered Internet access services wholesale to ISPs who retailed them to constituents.

By 2008, the project was fighting problems, including the fact that the average revenue per user (arpu) wasn't enough to support the business. Despite the popularity of the wholesale model, the fly in the ointment was that ISPs paid fees to UTOPIA based on how many customers were served. In this model, if the number of customers needed for a city to make money is greater than the number ISPs are willing/able to take on, the city has little leverage to get ISPs to increase customers.

Todd Marriott became CEO in 2008 and completely changed the arrangement. Starting with Brigham City, "if residents were interested we'd bill them one fee of $3,000/home to connect to the network. We offered financing if they agreed to have a lien put on their houses. Over 31% of residents subscribed, with 25% of these households paying the $3,000 up front."

Going one step further, UTOPIA started using a Contractual Utilities Enhancement (CUE) that creates a Subordinated Note of Interest. The Note enables a city to bill subscribers for expanding the network to their doorstep without requiring a lien. They pay $22/month for the buildout, and another $24 for network operations costs. Comcast puts a similar charge in their bills. ISPs offer Internet services directly to subscribers.

Marriott says "this revised fee structure allowed us to become profitable while we installed a gig to every home. We're working on new financing models that allow homes to connect for a shorter period of time. We did our homework well, so there were no legal challenges. We did, however, have some PR issues."

The Comcast/Qwest PR front group Utah Taxpayers Association tried to incite negative media coverage, but of the first nearly 6,000 people who signed up for UTOPIA's service, only 17 complained on record that the person who signed them up didn't provide enough details. Another 30 said they hadn't understood the details. In the meantime, Brigham City has garnered recognition as one of the most connected cities in the U.S.

Todd Marriot provides Gigabit Nation's audience [begins min. 120] with many details not only on how to establish a prepaid subscription strategy, but also on ways communities should considering altering their approach to funding broadband initiatives.

Probably pushing the envelope the furthest in new approaches to raising money for broadband projects comes from a company called Neighbor.ly. Through Neighbor.ly, local governments, private-public partnerships, and civic-minded institutions can submit projects online for funding. Visitors to the site -- both individuals and businesses -- can donate to projects at different levels. Founders say Neighbor.ly won't replace taxes or other funding mechanisms but will act as another source of revenue for particular initiatives.

Neighbor.ly takes steps to protect contributor's money: project organizations enter into a legal agreement requiring funds to be used only for the indicated projects, and if an initiative is not fully funded or it doesn't get go-ahead, donors are given refunds. Like other crowdfunding sites, Neighbor.ly keeps a small percentage of contributions to cover operational costs.

Founded in Kansas City, MO around the time of Google's announcement they were

bringing a fiber network to town, Neighbor.ly is using their location to refine how they help communities get better broadband. The online encourages and supports projects for both infrastructure buildouts and broadband adoption. You can get the details on their business strategy from this Gigabit Nation interview.

Greg Richardson, a veteran of community broadband project since 2004, is on the verge of releasing a new crowdfunding company. Having known Greg since began working in this space, I look forward to interviewing him on my show as soon as his venture launches.

**To sum it up**

Money for broadband doesn't grow on trees. However, I contend that there are more ways to fund broadband than people realize. I'll tackle this topic in more detail in another writing project. For one thing, you can help fund broadband using the reverse logic of reducing costs for broadband buildouts. ECFiber, for one, build out at a cost per mile that's one-third of what large telcos would spend.

In another cost control twist, rather than try to build one massive network for all 23 towns at once, ECFiber raises enough money to build out sections of a town and light up service to generate revenue as well as build demand from other towns. It's a slow process, but EC Fiber doesn't financially over extend itself. Eventually it hopes to leverage its success to entice financial institutions to make traditional investments to build at a faster pace.

The bottom line is that project teams and local stakeholders need to get out more and see the world of successful community broadband projects. There are over 300 real-world successes you can learn from and adapt to address your particular needs.

## Chapter 16. Driving economic outcomes with broadband

I'm going to close Building the Gigabit City with a detailed look at broadband's impact on economic development. This is a big driver for many communities' broadband projects. Economic development is a pressing need that just about everyone in a community can understand and rally behind.

Producing economic development outcomes is how your network becomes profitable even when a corporate quarter-over-quarter P & L spreadsheet would make traditional bean counters nervous as wicked witches at a waterfall. Before you sell even a single subscription, it's likely launching a broadband project is going to influence the local economy, if no more than convincing some existing businesses to stick around a little longer.

***The many faces of broadband and economic development***

In 2012, the Kaufman Foundation in Kansas City, MO retained me to chronicle the economic development successes of eight communities that used broadband in different ways to turn around or boost their local economies. These are stories of communities of different sizes and demographics using creative and practical tactics.

Before reading the results from a national survey of local and state government officials and administrators, service providers, consultants and others involved with community broadband, check out some of these stories and pick out lessons applicable to you. Then look at some of the numbers that can help shape your needs analysis, rally stakeholders and motivate people to move forward on broadband.

**1.** The World Wide Wait is Over In Pulaski, TN

One of the on-going discussions regarding broadband and economic development is, do we focus more resources initially on trying to attract new business, or on improving the businesses we already have. The media tends to give more coverage to attracting new companies, probably because a company bringing 1,000 new jobs is big news. … continue reading »

**2.** One Community's Garbage Is Another One's Broadband Adoption Program

Riverside, CA started building its citywide wireless network in 2006, and it went live in 2007. It began providing computers to low-income families before the network buildout when residents only had dial-up service as a free option. … continue reading »

**3.** My Old Kentucky Home Page Delivers Economic Benefits

A lot of the articles you read on broadband and economic development give the impression that fiber is the only broadband technology that matters. While it is true that a lot of the highspeed horsepower for online computing tasks such as videoconferencing, moving huge data files and voice calls over the Internet (VoIP) comes from fiber, wireless still has a vital role to play. … continue reading »

**4.** Danville, Va. Rises From the Tobacco Ashes, Embraces Fiber Network

In a story typical of the southeast United States, much of the economy in Virginia was agriculture driven, with the tobacco industry being a main employer. As tobacco farming died out in the state, towns shrunk with the withering employment opportunities. Those in the population who remained faced serious challenges using their skillsets in other industries. … continue reading »

**5.** The Beach is Nice, but the Network is Driving Business in Santa Monica

Seeing an opportunity to save money and also drive economic development, the City of Santa Monica, California pushed through adoption of high-speed fiber and wireless networks as a way to reduce the city's communications cost. But they later found broadband was a great tool to helping commercial property owners fill empty spaces and create a tenant prospect backlog. … continue reading »

**6.** Fun and Games Drive Small Business Broadband Adoption in Vermont

In this post, learn how the Vermont Council on Rural Development used a fun and rewarding contest to encourage local businesses to get online. … continue reading »

**7.** Chattanooga's Gig Network Creates Economic Development Pressure Cooker for Success

Chattanooga, Tennessee uses its new fiber network to power a smart grid and for traditional economic development. However, the 48Hour Launch program by one local business incubator also holds a lot of potential to boost the city's tech entrepreneur ranks. … continue

**8.** With Broadband, Better Perspective Leads to Better Vision

This post examines Three Lakes, Wisconsin's ability to make big things happen by thinking small. Even with a limited population base and modest access speeds, a well-planned broadband network can yield great results. … continue reading »

**The Gigabit City and Economic Development – a survey**

Since 2006, in partnership with IEDC, I have surveyed U. S. economic development professionals to learn how they believe broadband impacts local economies. In 2013 I partnered with Broadband Communities Magazine to assist me expand my survey to local government staff, service providers, consultants and others.

The primary purpose of expanding the scope of the survey is to bring additional perspectives into the discussion of broadband and economic development. This latest survey focuses on six of the same economic outcomes addressed in the survey of IEDC members:

• attracting new businesses to a community

• making existing current businesses more profitable

• reviving depressed business districts

• increasing home-based businesses

• reviving depressed communities

• improving personal economic development

In addition, my survey of Broadband Communities Magazine readers gathers feedback on competition, Federal broadband policy, service providers' business philosophy and government broadband regulation. As with previous surveys, I provide assessments of survey responses, and conclude with recommendations for those involved with bringing faster better broadband to communities.

Readers of this report should not view it as quantitative research, but rather as a qualitative snapshot in time of what those involved with broadband projects find or expect to be true. We are still too early in the community broadband game for there to be enough data on how broadband does or does not impact local economies to produce the deep analysis that many wish to have.

That said, the information contained in this report does provide communities with a starting point for understanding what economic outcomes broadband influences. They can use this data to jumpstart or refine local broadband needs assessments, surveys of business and residential constituents and broadband strategy planning.

**The current state of broadband**

All the respondents that did not identify themselves as working for a broadband service provider of some sort were directed to the set of questions designed to develop a profile of the state of broadband in these respondents respective communities. Several of these questions allowed respondents to reply with multiple answers, reflecting the fact that many live in communities with several broadband options.

The survey asked respondents to identify their current wired broadband options. The results here seem to be what one would expect considering the magazine's content is heavily targeted to people involved with public (e.g. government-owned) or community-owned broadband networks.

Though it may not come as a surprise to many people, 41% of survey respondents who work in local government or for government-owned utilities report that their communities are served by duopolies: one strong telecom company and one strong cable provider. Even if there are other competitors, their market presents and service offerings are not strong enough to keep prices affordable or to force faster broadband speeds and better service quality.

Nearly 16% of these respondents say that theirs is, in practice, a monopoly-controlled market. 14.5% say that their community or public-owned network provides enough competition to keep prices down and speeds up, and a significant portion (8.4%) indicate that their networks are the only broadband option constituents have.

When asked about future plans, about 25% of respondents said their communities plan to start building fiber networks in the next 6-18 months. It is interesting to note that in the 2012 survey of IEDC members, only 4.3% said their communities would begin building a network in six months, but almost 17% of government and utilities respondents said their communities would start in six months. 13% say they see building a network at some unknown future date, while 19% of IEDC respondents feel the same. These responses from both groups indicate there are a sizeable number of communities might be willing to move forward if someone can make a stronger business case than what has been make before.

In addition to plans to build a community or public network, respondents were asked if they have developed an economic development plan that includes tactics for using broadband to product economic outcomes. Just over 47% of respondents either have a plan or are writing a plan now that incorporates broadband tactics. This is the same percentage as IEDC members surveyed in 2011 (the question was not on the IEDC survey in 2012).

**Broadband's impact on economic development**

This section addresses broadband's impact on six economic outcomes. They are meant to be neither an exhaustive list nor an academic exercise in economics. Several of these are commonly referenced outcomes that the media, community broadband project teams, economic development practitioners and others cite frequently. Two are outcomes that I believe do not get the attention they merit.

Overall, year after year, survey respondents report that wired networks produce a greater impact on economic outcomes than wireless networks, even as the particular outcomes have changed over the years. The information is straightforward and for the most part doesn't challenge logic (**Figure 1**). For example, fiber's direct impact on attracting new businesses to a community draws the largest percentage of agreement from respondents, and few people feel the impact is difficult to measure.

| | 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 |

It is interesting that relatively few respondents believe broadband has a direct impact on revising depressed business districts or depressed communities (27% and 26% respectively), though similar percentages see fiber having an indirect impact on these. Looking at the numbers of respondents who believe it is too soon to be definitive about fiber's role in either outcome, it is likely that the issues are too complex for easily drawing lines between cause and affect.

The surprises are that such low percentages of respondents see broadband directly or indirectly impacting local businesses and on low-income individuals' ability to improve their personal economic development. Given the attention in the media on broadband as an economic development tool, one would expect higher numbers here. In the IEDC survey, 52% of economic development professionals believe that fiber directly improves existing local companies' businesses, versus 36% of the magazine's readers.

| | 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 |

Wireless overall is rated as having less of an impact on all six economic outcomes than fiber (**Figure 2**). Furthermore, a higher percentage of respondents believe it is difficult to measure the economic impact of wireless on these outcomes than measuring fiber's impact. I would contend however, that these results might be different if more respondents were aware that wireless technology is advancing rapidly so it can offer up to a gig of broadband speed. To this point, **Figure 3** looks at broadband's impact on these economic outcomes from the perspective of speed, not infrastructure technology.

| | 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 |

Since the National Broadband Plan's release in 2010, survey responses have been consistent regarding the economic value of the Plan's definition of broadband – 4 Mbps download and 1 Mbps upload speed. Fewer than 10% believe broadband at this speed will impact each of the six outcomes. Broadband Communities Magazine readers maintain this consistency.

The highest percentages of readers believe 100 – 120 Mbps is the minimum required except for all outcomes except attracting new businesses to a community, for which the highest percentage (42%) believe at least 1 gigabit per second is required. This too is consistent with IEDC members. An almost even number of respondents believe 100 – 120 Mbps and a gig are 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 networks that are being marketed as "leading edge" telecommunications technology.

After asking respondents for their thoughts on the impact speed rather than specific broadband infrastructure can have on economic outcomes, we wanted to swing back to infrastructure again to see how respondents feel about integrating wired and wireless. Some in the community broadband space prefer this integration rather than advocating exclusively for one technology or the other.

For as much as the discussion of whether communities should use wired or should they use wireless can take on the fervor of holy wars, we find that 18% of respondents believe that wireless needs to go everywhere that fiber goes. A larger percentage (25%) only plan to use wireless for creating hotspots that are fed by the fiber for data backhaul. It is encouraging to see the sizeable portion of respondents who see the value of using fiber for backhauling cell tower data traffic. This gives network owners additional potential revenue streams, and a way for community-run networks to mitigate some of the pushback they typically get from large telcos by partnering with them instead.

**Broadband's impact further explored**

As mentioned earlier, this survey examines several aspects of broadband and economic development that don't seem to get enough attention in the media or by pundits and policymakers. For example, the lion's share of media coverage as well as comments from policymakers and politicians about broadband's economic impact on individuals focused on using the net as a job search tool. Even survey respondents did not rate individual economic development high compared to other economic outcomes.

However, when respondents provided feedback on broadband's impact on a list of specific activities that can improve the economic status of individuals in all income strata, this points to significant benefits broadband can deliver. "Searching for a job" received the lowest percentage (7%) of respondents rating this as the best broadband can do for individuals. This has received a similar low ranking since this outcome was first posed in 2011.

33% of Broadband Communities Magazine readers feel the leading benefit broadband can deliver to individuals is to help them improve job skills and professional benefits. This has been the leading outcome in surveys since 2010. Helping individuals adapt to new industries and reaching higher education are viewed favorably by nearly equal percentages of respondents.

This is the first survey in which one of the outcomes for this particular question is to enable individuals to work from home for their employers. Often this is presented in the media as a productivity enhancer for employees and a convenience for employees and employers alike. However, we put it to respondents as an option that can impact individuals' ability to generate wealth to see what they thought. 25% of respondents agreed that telecommuting indeed has economic value for employees.

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 respondents believe broadband can deliver. In pursuing such a narrowly focused mission, policymakers, government officials and community stakeholders would risk implementing underperforming solutions that produce disappointing results for constituents.

Digging down yet one more layer, respondents were asked 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 also a fair assumption that individuals' entrepreneurial efforts would be cultivated in business incubators, work-share spaces and traditional office spaces.

We found that 48% believe 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. This access, in order to be useful, has to be quality service in individuals' home and workspace, and be fast enough to run business applications.

We also separated and drilled down into the topic of home-based businesses. Specifically, the intent was to gauge broadband's potential to be used as a tool to harness these businesses into a local economic force that community leaders identify, educate, motivate and coordinate through broadband.

This economic development strategy has even greater support, likely due to respondents seeing this as an evolution from programs to enlist individuals into the ranks of entrepreneurs, to uniting home-based entrepreneurs throughout the community. 50% have strong faith in this strategy in addition to the 13% who have seen this strategy effectively executed. This also is a strategy that a sizeable number of respondents believe will only be successful if there are effective programs to support the strategy. It is not enough to just make broadband available, communities also must enlist partners to deliver a number of business support services.

A new slice of knowledge this survey captured is feedback on the economic impact of broadband tactics that facilitate telemedicine and healthcare delivery. The leading 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.

The second most popular expected outcome is that more businesses will be attracted to the area. The 22% of respondents selecting this outcome realize that once local hospitals, medical facilities and doctors are linked via highspeed connections to medical resources around the U.S. and the world, the quality of local healthcare rises. Smart economic development agencies then can tout leading-edge medical services as another reason for businesses to move or expand in their communities.

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 retaining and attracting 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 other outcomes highlighted here are difficult to achieve.

Looking at the various economic outcomes for individuals, it is helpful to learn if there are broadband providers offering adequate and affordable services that can produce these outcomes. Pulling out the experiences of respondents from local government and government-owned utilities, 13% having community networks up for the task. Reflecting hope and despair in their respective situations, nearly 32% of respondents are in communities that have taken charge of the issue and are building networks to meet the need, but 25% feel they are unlikely to have such networks.

One important issue that communities must address is what type of business model should they use to run the network for maximum benefit. There is no one-size-fits-all as each community is different. The most preferred model (31.4%) is the public private partnership in which BOTH parties own and operate the network. Relationships described in which the private sector or the community have a dominant financial stake and final decision-making role by themselves are neither good nor bad. However, communities need to be clear what constitutes a fair partnership in which the public good is in balance with private profit generation.

Total private ownership by the network is second in preference by a whisker (31%). There is a strong preference (18%) for a partnership role in which the community owns the physical broadband infrastructure and private-sector companies provide services over that infrastructure. This is most consistent with the public/private role in which communities own highways, streets, airports and the like, and private-sector as well as other organizations have access to these infrastructures. 11% of respondents prefer to have the local government or a public utility own and operate the broadband business.

One of the most important questions communities face is how do they plan to pay for the network. Survey respondents were given a list of several funding options and asked what is the likelihood their communities would support the respective options. Most of these options are viewed to have a 50/50 possibility of garnering local support, though using tax dollars to fund a network is a very unpopular option. Needless to say that many variables would affect how any of these options would flesh out for a particular neighborhood, but these results provide good food for thought.

**To sum it up**

You likely want to review the full report, which you can find at http://roisforyou.wordpress.com/. You can view all the graphs and charts, as well as read additional information and results from the survey. In addition, stakeholders also will find the report "Moving the Needle Forward on Broadband and Economic Development." This is my August 2012 survey just of economic development professionals. Together these reports give you a well-rounded picture of what those in the know are saying about broadband's impact on local communities.

# Conclusion and a Word from NTIA

As I write each new book about community broadband, my Conclusion section continues to get smaller. Mostly because there isn't really an end to what you can say, or what we learn, that can help communities and stakeholders do their job of planning, deploying or operating these community broadband assets.

I will always be creating and assessing information from a variety of sources. There are many issues left to be addressed, such as how to finance networks, address legal issues and marketing these networks once your community decides to move forward. But for now, absorb what you've learned in Building the Gigabit City and start putting that knowledge to work.

At the 2013 SHLB conference, I was overjoyed to hear that NTIA (one of the two agencies that executed the broadband stimulus program) just developed a guide to help grant awardees and anyone else implement broadband adoption programs. Hot diggity! One less writing project for me for a while, and you get great information for moving forward on adoption as your network is being built. Here is a sample from the content.

HOW-TO: SELECT PROGRAM ELEMENTS

Implementation of successful broadband adoption programs incorporates several key elements, and deciding which ones to include depends on the goals of the program, barriers to adoption in the community, and the needs and preferences of the population that will be served

These key elements include:

AWARENESS & OUTREACH:

Conducting awareness and outreach activities is vital to successfully engaging stakeholders. Effectively communicate information about the program and use communications activities to meet the program's goals. Effective marketing and awareness campaigns tailor the messages, themes, and delivery channels to their target audience.

Visit page 15 for more resources and examples.

HOME COMPUTER & BROADBAND SERVICE:

The costs of computer ownership and home broadband service can be prohibitive for some community members. Successful broadband adoption projects use multiple strategies, such as discounts and incentives, to make owning a computer and using a broadband connection less expensive and less confusing.

Visit page 23 for more resources and examples.

TRAINING: PLANNING & DELIVERY:

The most successful broadband adoption programs provide some form of digital literacy training. Including training as a tactic is not required, but the majority of the barriers to adoption can be addressed through some sort of training. Training is most effective when it is tailored to address the specific needs of the target audience.

Visit page 31 for more resources and examples.

TRAINING: CURRICULUM & RELEVANT CONTENT:

Broadband adoption programs often involve selecting or developing some form of digital literacy curriculum. Depending on the target audience, the curricula could focus on basic skills (e.g., keyboarding or using a mouse) or more advanced skills (e.g., evaluating online information or creating digital media such as movies or music). Curricula and digital literacy tools should build skills that enable students to improve their lives.

Visit page 41 for more resources and examples

The examples included in this Toolkit note the population and barrier(s) that the featured examples address. As program organizers develop an implementation plan, they can build on these examples to design program activities.

I encourage you to download this document and distribute it to the people who will have broadband adoption responsibilities - http://www2.ntia.doc.gov/files/toolkit_042913.pdf.

While I'm recommending reading material, let me add Nat'l Broadband Plan Director Blair Levin's and Former FCC Chairman Reed Hundt's book, The Politics of Abundance: How Technology Can Fix the Budget, Revive the American Dream, and Establish Obama's Legacy. You can listen to a couple of excerpts, but the gist of it is, the Federal government should move post haste to put all government services online to make them faster and more efficient to administer.

# Backgrounds

**Author - Craig J. Settles**

For over 25 years Craig Settles' workshops, consulting services and books have helped organizations worldwide use technology to cut costs, improve business operations and increase revenue. Author of the book "Fighting the Next Good Fight: Bringing True Broadband to Your Community," as well as blogs and many in-depth analysis reports, Mr. Settles is a prominent thought leader on executing appropriate broadband strategies. He currently hosts Gigabit Nation, a weekly Internet radio talk show, and is Co-Director of Communities United for Broadband, a national grass roots effort to assist communities launch their networks.

You can reach Mr. Settles at craig@cjspeaks.com or on Twitter (CJSettles). Follow his work on his blog, Fighting the Next Good Fight or his Web site www.cjspeaks.com.

**Partner – Gigabit Squared**

Gigabit Squared is a digital economic development corporation specializing in the planning, implementation and roll-out of IT-enabled infrastructure. We help communities and network providers across the globe develop, capitalize, implement and leverage sustainable infrastructure investments for civic and economic transformation. Public-private partnerships (P3), collaboration and co-investment in large-scale infrastructure programs drive remarkable results and financial returns. The Gigabit Squared team has been responsible for developing and acquiring large-scale infrastructure projects through government, quasi-government, private, and non-profit sources. Visit us online to learn more at www.gigabitsquared.com.