

Barbecue and Broadband in Texas

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Andrew Michael Cohill, Ph.D.

I'd like to tell you this morning why broadband is just like barbecue in Texas.

It is important to have more than one barbecue provider in town.

- You don't want that barbecue provider to be the telephone company.
- A single large barbecue chain tends to offer a one size fits all menu that does not reflect local needs.
- A single large chain probably sends most of the barbecue revenue collected from the community out of state.
- A single large chain can prevent local and regional rib joints from even getting started.

It's better to be able to choose among three or four barbecue joints.

- Competition tends to improve the quality of the barbecue and reduce prices.
- Competition tends to create more varied menus and broader choices of food.

To create more competition among rib joints, you have to work on the demand side by teaching people about the importance of high quality, affordable barbecue.

- It's an education process more than a cooking problem.
- If you wanted more barbecue places, You would not go out and just buy a lot of pots and pans and hope that somebody picks them up and uses them. Instead you would teach people how to cook.

It is important to make modest community investments in barbecue.

- If you only had one barbecue joint in town and the quality of the food was only fair, you might get some folks together and develop a plan to attract

more rib joints by building a shell restaurant and leasing it out to a barbecue provider.

More barbecue joints helps economic development.

- Local and regional barbecue restaurants create jobs and keep most of the investment and taxes in the community, rather than shipping the community's dinner out money to some company three states away.

Remembering our history

Public investment in telecommunications seems like a novel idea today. The United States has enjoyed a century of continuously expanding telecommunications services, and in all that time, few communities have had to think much about telecommunications. In fact, for many communities, it was and still is a source of income. In return for permitting our telecommunications companies (telephone and cable companies) to operate in a regulated environment free of competition, we have taxed them.

The federal Telecommunications Deregulation Act of 1996 has changed all that, irrevocably. Congress and the President decided that communities and citizens would benefit from more competition in the local marketplace, just as the landmark 1984 breakup of AT&T created more competition and lower prices for long distance. Yet four years after the Deregulation Act was passed, few communities have seen lower prices for local services, or have any competition at all.

Although the Deregulation Act changed the political and regulatory landscape, this was only a first step to achieving competition in local markets, although it was

clearly the necessary first step—companies had to have the legal right to compete before they could or would make the investment necessary to actually enter local markets dominated by the large telcos.

But in a world accustomed to operating on “Internet time,” with new business ventures forming and reforming literally overnight, why has so little changed in our communities with respect to choice in the telecommunications marketplace? The key issue is related to local infrastructure. The regulated monopoly service providers (the telephone companies and the cable companies) have enjoyed protected status for decades. These companies have been able to invest in infrastructure (local switching and equipment facilities, cable plant, etc) in a risk free business environment with a guaranteed rate of return.

In the new, unregulated environment, local and regional entrepreneurial start-ups not only **do not** enjoy that advantage, they must compete against the established monopolies who have enjoyed that advantage. The Deregulation Act made it legal to compete, but did not (and should not) address the issue of creating a level playing field in the marketplace.

The solution is for communities to invest in minimum amount of telecommunications infrastructure needed to create a level playing field for the private sector, and to do no more than that. This notion often provokes strong reactions from elected leaders, some government officials, and the private sector (notably the incumbent monopoly companies). The most common remark is that there is no precedent for public investment in this area. Other comments include dire warnings about the expansion of government, predictions of higher taxes, and other, sometimes implausible, predictions about the danger of government entering this area.

Yet, there is ample precedent for community investment for the common good. Communities have long invested in all sorts of services when it was deemed essential for the health of the community--the common good. Communities routinely invest in parks, recreation facilities, roads, public libraries, public safety, sanitation, and many other kinds of services--because it has been deemed important for the future of the community. And lest we forget, in the 1920s and 1930s, telephone and electric services were brought to many rural communities through community-owned and government-encouraged coops.

One of the biggest problems facing communities today is that fact that most of these services have been provided for fifty to seventy-five years without much change and without adding any significant new services. In other words, communities have forgotten their own history--especially elected leaders. Our current generation of elected leaders all entered public office long after the last significant community debate on adding new services.

Another argument against public investment comes primarily from the private sector. Some companies seem to wish to argue that the private sector has a natural "right" to provide telecommunications services without having to consider the common good. The argument in support of this view can be boiled down to "well, that's the way it has always been done." But every service now offered in communities at one time was provided by the private sector. Road building, sanitation, clean water, and education were all "provided" by the private sector prior to public investment and management. All these services were taken over by local government after it became clear that public investment was needed for the common good.

That conversation must now take place again if communities hope to remain viable in the Information Economy. Just as access to interstate highways and other transportation systems drove economic development in the second half of the Twentieth Century, in this century, access to affordable, high bandwidth network services will determine whether communities will prosper.

Defining the network

Let's talk now about what constitutes a community-wide network. Broadly speaking, a community-wide network system has two key components.

The **community network infrastructure** addresses network access--how citizens, businesses, and organizations in the community get connected to the network. The community network infrastructure can include subsystems like duct; fiber and copper cables; wireless systems; co-location facilities; network hubs and routers; and internal building wiring, including the jacks in the wall to which individual computers are connected.

The **community network information services** address what citizens, businesses, and organizations do with the network once they are connected. These services are typically provided to citizens, local government, community groups, and non-profits. Businesses should purchase their services from other businesses to promote local economic development.

These services include Web site hosting; email accounts; mailing lists; online calendars; discussion forums; online directories of people, community groups, and businesses; and other kinds of online services needed by the community.

Communities choose to make modest investments in **network infrastructure** to:

- Establish a community-managed telecommunications infrastructure that creates a level playing field for local and regional access and service providers. This infrastructure would include community telecommunications duct systems, antenna sites, co-location facilities, and very high bandwidth local data exchange services (MSAPs). Some communities may also want to provide dark fiber.
- Create a competitive marketplace that provides telecommunications users in the community a variety of choices in firms, pricing, and services. It is desirable to have a minimum of three to four network access companies providing a full range of services and reasonable prices, with at least two backbone providers that enter the community by separate cable routes.
- Promote the long term economic vitality of the community by ensuring that local businesses and other organizations have high bandwidth telecommunications services at affordable prices. The target bandwidth is 25 megabits/second (dedicated, not shared) for both wired and wireless services. In terms of industry standards, that translates into Gigabit Ethernet to every home and business.
- Encourage economic development initiatives tied to Information Economy business needs, especially the development and support of local entrepreneurs and the development of a skilled workforce.

Communities choose to develop and manage **information services** to:

- Create a professional, high quality online presence for the community that presents the community as an attractive place to live and to work.

- Support citizen access to local e-government and e-governance services.
- Ensure that every citizen and business in the community has the skills and knowledge needed to participate fully in the Information Economy.
- To help nurture and to support a futures-oriented vision for the community with the goal of sustaining the community as a great place to live and to work.
- To give every citizen and civic group in the community an opportunity to have an online presence that is affordable and that protects the privacy of all users.

The development of the network infrastructure and the development of the information services are two activities that can be pursued both independently and in parallel. That is, neither is dependent on the other. However, the information services portion represents the minimum level of activity needed to help the community pursue its long term, futures-oriented vision. Any community of any size, regardless of financial resources, can make a modest and effective effort to develop and sustain community-based information services.

Community telecommunications infrastructure

There are four key parts of a community-managed telecommunications infrastructure. All four are needed to create a viable, competitive, telecommunications marketplace in communities.

- Duct is simply plastic pipe placed underground, along with pull boxes and pedestals (where fiber cable is “pulled” out to provide services to buildings). Most of the cost of installing fiber cable is related to the effort of digging up sidewalks and streets and placing the duct. Communities and local government have decades of experience digging holes in the ground, placing pipes in them, and maintaining those pipes. Duct is particularly easy to install and maintain because it is inexpensive, flexible, and does not leak. The wireless equivalent of duct is land set aside for wireless antennas.
- Dark fiber is simply fiber optic cable that has no electronics at each end of the cable to “light” it. Fiber is very inexpensive; it can be damaged by improper installation, so crews must be trained to handle fiber differently from copper telephone and electric cables. The wireless equivalent of dark fiber is antenna towers and associated equipment facilities near the antennas.
- Co-location facilities provide telecommunications providers with a place to put their equipment. One of the chief advantages incumbent telephone companies have is that they own real estate in virtually every community they serve; this real estate was purchased and paid for many years ago. Any company wishing to provide competitive services in a community must pay market real estates prices (often very expensive for centrally located prime space).
- The MSAP, or Multimedia Services Access Point [1], is a new kind of network function required in a multi-vendor service environment. The MSAP provides a common exchange and switch point for local voice, video, and data services. The current Internet architecture was not designed to provide high capacity services within communities, and in many communities, delivering a piece of email from one side of town to the other

requires hauling that email data hundreds or thousands of miles on major national Internet backbones. MSAPs eliminate those long hauls and reduce costs for consumers and all telecommunications providers connected to the MSAP.

Note that duct placement is affected by right of way issues, and right of way clearly has to be managed by the community. In many communities today, as new duct and cable plant is installed, town councils and county boards of supervisors are routinely granting right of way on a first come, first serve basis without considering the impact on the community as the right of way gets filled up. When there were only a few right of way users in the community (the electric company, the phone company, the cable company, etc) these companies had a vested interest in cooperating to make sure that they used right of way responsibly, and local government had few worries. But as more companies want to install cable plant and antenna towers in communities, right of way management becomes critical. Some issues include:

- Ensuring that rights of way don't become overcrowded to the point of preventing new companies and services from entering the marketplace.
- Ensuring that right of way users pay their fair share of right of way maintenance, including the cost of town and county planning and engineering.
- Ensuring that every company that puts cable and duct in public rights of way provides accurate GIS data to the appropriate authorities on where that cable plant is located. Remarkably, some companies have argued that they have the right to use public right of way but do not have to tell the community where they have installed cable plant.

The roles of the community network

There are five key roles played by community networks.

- Develop a community-owned telecommunications infrastructure to support the Information Economy. This region is not getting the high bandwidth infrastructure it needs to compete in the Information Economy. Regions must begin to invest in a community owned telecommunications infrastructure.
- Create and maintain public spaces in cyberspace. We need commercial-free space in cyberspace just as we need public, commercial-free space in our physical communities. In fact, communities have a long tradition of funding parks, libraries, rec centers, and other public spaces. Community networks provide the same kinds of public spaces in cyberspace, and make a major contribution to an engaged and informed citizenry committed to a common vision.
- Provide training and skills development needed in the Information Economy. Simply buying some network equipment and hoping good things happen is not enough. Local leaders, school teachers, librarians, business people, young people, and ordinary citizens all need help. Community networks can play a key role in offering short courses and seminars, and act as a clearinghouse for other institutions offering technology training.
- Support community economic development initiatives focused on the Information Economy. Communities need to adopt a more diversified economic development strategy that recognizes 90% of the job creation in this country comes from small business. Unfortunately traditional ED initiatives are often just chasing the elusive car manufacturing plant. The jobs of the future look nothing like the jobs or businesses we have today. In

Blacksburg, we have a successful Web designer who three years ago was making \$6/hour reading water meters part time. Today this single mother makes \$25/hour designing Web sites. That kind of micro-business is the economic development of the future. And community networks will play a critical role in transforming work and business.

- Community-based information technology consulting and information resource. Community networks can play an important role by providing local government, schools, and non-profits with high quality technical support, system administration, and information services like email. It makes no sense at all to have a half dozen public organizations in the community all trying to run a mail server. E-government is an essential part of the Information Economy, and well-funded community network efforts can actually reduce the cost of local government by aggregating information and network services. Local government investment in community networks can, over time, actually save tax dollars for other purposes like economic development.

First steps

Create a clear vision of the future for the community

There is no quicker way to waste the community's time and money than to spend money on telecommunications without having a clear, future-oriented vision of where the community wants to be in the future. This vision should integrate telecommunications needs into a broader set of futures that includes quality of life issues, economic development, education, recreation, environmental issues, and planning and zoning goals.

Stable funding

When surveying community network efforts across the country over the past fifteen years, it seems clear that stable funding is a critical success factor.

Community networks must be designed to have stable, sustainable funding over the long term. Some community networks are beginning to successfully support themselves in part from fees for services and assistance. But that takes several years to develop because it is a new kind of non-profit service in the community.

Community networks are much less expensive to fund and support than many other community services like public safety, fire protection, clean water, and sanitation. A community network project should have at least three years of stable funding, with the bulk of the support coming from within the community, not external funding sources. Community networks that rely primarily on external grants and one time funding opportunities rarely succeed over the long term.

There is great interest in stocks and stock investment—one funding strategy might be to create a non-profit corporation that sells stock for \$1 per share to community members. It might be the first time some residents have owned stock, and it would be a high technology investment within the community. Larger organizations and businesses in the community could buy larger blocks of stock to help fund initial efforts. In the United States, the telephone and electric coops have successfully used this model for more than seventy years.

Stable leadership

- Identify a local champion – Every project will need a local champion. This person must be able to bring people together for key meetings, must be able to speak with authority about community needs and opportunities, and must be able to bring groups to a consensus. The local champion must also be comfortable with technology and a daily user of the Internet.

- Recruit a project director – The project director must be provided with both the authority and the responsibility to execute plans. The project director should be extremely comfortable with technology, but does not need to be a network engineer or programmer to lead the effort. The project director should be very comfortable speaking to groups, should have the ability to speak clearly and plainly about technology, should be good at helping groups create consensus, and should be good at resolving conflict.
- Avoid committee-itis. Committees have important roles soliciting and organizing community ideas, interviewing prospective volunteers and matching their interests with available work, and assisting with consensus-building. But tasks and work should be delegated to specific individuals. Individuals write plans, committees approve plans. Individuals execute plans, committees often just delay them if there is no clear delegation of responsibility to the project director.
- Partner with the eager. Many groups in the community may not be ready to embrace the new communications tools. Offer assistance to all, but if staff time and resources are limited (and they usually are), work with groups that are actively soliciting help and have a clear vision for their work.

Adopt an education focus, not a technology focus

- Education is the challenge, not technology.
- Acquire technology expertise as needed, for specific tasks. A community network effort is more like a community development project than a network engineering task.

- Train key segments of the community . Teachers, leaders, business people, and citizens are all groups that should be targeted for training and education programs. Young people and senior citizens are key groups; seniors and youth are the two groups most likely to get online early and use it heavily. Train them early and enlist them as partners to provide assistance and support to other members and groups in the community..

Broad community support

Some community network efforts are started by a small group of citizens seeking to use technology to address a single issue or challenge in the community.

Community networks that do not have a broad base of support in the community often have financial difficulties. It is usually more effective to set an agenda of service to the community that is focused on providing technology and services to any non-profit, government, or citizen group, regardless of the individual agendas of each group. This ensures that the community network staff can stay focused on providing high quality technology services affordably to widest possible cross section of the community.

Avoid the Field of Dreams approach

The Field of Dreams approach does not work. Build it and they will come is an expensive pipe dream--wishful thinking is no substitute for leadership, building consensus among key public and private partners in both the community and the region, and developing a vision for the community that looks beyond buying stuff and hoping someone figures out how to use it.

Plan for the long term

It takes two to three years to develop a community network -- Buying some technology and dropping it into the community will not create immediate change.

The technology should be regarded as a new communications tool--the network provides the community new ways to communicate. People will adopt this new medium gradually, over a period of years. Be prepared to take the time to invest time and energy in training and education before expecting to see benefits emerge.

Plan lightly

- Distinguish between what you can do and what you want to do. Many communities confuse the two. Unfortunately, what communities **want to do** is often much more interesting to talk about than what communities **can do**, today. But it is important to understand that “wiring” a community will take several years of hard work, and that work starts with the possible. Small things done well lead to higher visibility in the community and future success. Do what you can first.. What the community wants to do is the long term vision. Short term goals and objectives should be checked regularly against the long term vision--this assessment is how the project determines success and stays on track.
- Don't buy more than you can use today. A common mistake to spend too much money too soon with the idea of acquiring extra “capacity.” This was true years ago in the old mainframe era, but because technology prices tend to fall while performance tends to increase, it is much better to buy only what you are ready to use immediately. Any purchase that can be deferred should be.
- You don't need very much. Community network services can be provided very economically. Equipment and software should be evaluated carefully to ensure that it can be supported easily and affordably with part time and volunteer help, if that is the way the project is being staffed.

Community networks are not about technology, but community participation

The real purpose of technology is to strengthen relationships within the community. The real value of the Internet is about communicating more effectively--with family, with friends, with business associates, and with our fellow citizens. The most important thing I have learned over my many years of designing software and services for community use is that in a world where the technology is changing constantly, the most important thing in any business or community venture is human relationships.

In a fast changing, increasingly complex, and interconnected world, the only thing we can rely on is our relationships with other people. So many communities come to Blacksburg with questions about what to buy--what “stuff” to get--but that is the easiest part of the problem to solve. The hard part is understanding how technology and the Internet are changing our relationships.

The network is a great equalizer. It offers every citizen the potential to become an entrepreneur and a businessperson, to take more control of their life, and to become a prosperous and engaged member of the community. If we believe in the vision of a prosperous and connected region, it must be more than teaching people to buy books and CDs online. But to achieve this greater vision, it also means that our communities must begin putting more effort into consensus-based decision making focused on regional strategies of win-win and abundance rather than the old economy approach of top down decision making focused on strategies of win-lose and scarcity.

Telecommunications infrastructure development may appear more daunting, but communities large and small across the world are securing a better future for themselves by modest investments in this area, with the goal of increasing private sector investment and offerings in telecommunications services.

Summary

I have given you a lot of checklists and information this morning. Let me simplify things a little bit for you. Many communities tell me they simply don't have the funds to do what I suggest.

So here is your first assignment. Go home and calculate how much your community spends each month on telephone, cable, and satellite TV bills. Don't forget major business and government expenditures. Multiply that by twelve to get a yearly figure. I can assure you that you will be shocked at how much money your community is already sending out of the community, out of the region, and probably out of the state. Now commit to a one year goal of diverting ten percent of that to local public and private telecommunications ventures. Now commit to adding an additional 5% per year for the next ten years. That's a good first step for your planning.

And remember that any time you feel confused or overwhelmed by these issues, simply substitute the word "barbecue" for the "telecommunications" in your discussions.

Acknowledgements

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References

[1] Cohill, Andrew M. (1999) *Telecommunications for neighborhoods and communities: four key areas of investment*. <http://www.bev.net/project/digital_library/>

About the author

Dr. Andrew Michael Cohill is the President of the Association For Community Networking (2001 - 2002). He is an information architect with an educational background in architecture, ergonomics, and computer science. Cohill is the Director of the Blacksburg Electronic Village (BEV) at Virginia Tech and an adjunct professor in the Department of Architecture at Virginia Tech.

He has published numerous papers and book chapters, and is an author and co-editor of the popular book about Blacksburg (*Community Networks: Lessons learned from Blacksburg, Virginia*), now in its second edition, and also available in Japanese. He is currently working on a new book on communities and technology that will be published in the fall of 2001. He is an advocate for community-managed technology efforts, and is Co-Chair of the Governor's Task Force on eCommunities in Virginia.

The Blacksburg Electronic Village, an outreach project of Virginia Tech, is designed to link Blacksburg's citizens to each other and to the world, using computers and networks. It is serving as a model community for the data "superhighways" being planned for the United States. A variety of innovative services and network access methods have been developed for the BEV (<http://www.bev.net>). Applications include education, medical uses, government and general information, and other retail and commercial opportunities. Current BEV work includes the design and development of a community MSAP (Multimedia Services Access Point), and the development of a community fiber infrastructure.

Blacksburg has become widely known as the "most wired community in the world." In the fall of 1999, more than 87% of the town's residents were using the Internet. An estimated 60% of Blacksburg citizens and businesses have high speed broadband Internet access.

Cohill has an international reputation for his efforts in network design for communities. He is in wide demand as a speaker and consultant because of his shrewd and plain-talking approach to complex technology issues. He is also a member of the National Advisory Board for Communities of the Future, a national coalition of thinkers and policy makers concerned with the sustainability and health of communities. He is also a member of the Local Access Place (LAP) Keyboard Ensemble, an eclectic group of technology experts dedicated to making technology more human-centered and playful.

Contact information

Andrew Michael Cohill, Ph.D.
Director
Blacksburg Electronic Village
840 University City Boulevard
Blacksburg, VA 24060

Voice: 01-540-231-7855
Email: cohill@bev.net
WWW: <<http://www.bev.net/cohill/>>