What Needs to be Done About Big Broadband

Milda K. Hedblom

The overall focus on "Institutional Change" for this issue of the Rural Minnesota Journal is both needed and admirable. It is frequently observed but no less useful to state that "institutional change" may be something of an oxymoron, but despite that authors have been asked to discuss for several different policy areas "Do we need to substantially change our institutions and/or change the way we do things to succeed in the 21st century?"

Here the question applies to the area of big broadband telecommunications technology and is directed toward several specific queries. First, it raises the question whether provision of big broadband should be considered to be an essential utility in the same way that provision of water, sewer and electrical services are thought to be. Second, if provision of big broadband is considered an essential public utility, should public bodies be able to invest in and operate the networks that provide big broadband in the same way that privately owned companies can do? Third, if fiber optic networks are necessary and public bodies as well as private providers can invest, what ideas might be advanced for models of financing and deployment throughout Minnesota and how might those models be realized?

This brief essay focuses on the second and third questions but with a few initial comments about the first.

It is also necessary to say a word or two at the outset about the term "Big Broadband." The term broadband itself has become a victim of political warfare between broadband industry defenders and broadband industry critics. Without wasting much more energy on that debate, in this essay the term big broadband means network capabilities to each premise of 100 megabits to a gigabit, both up and

The author would like to acknowledge the assistance of Brenda Krueger, Vice President, Springsted Inc. in providing information on bonding options.

down. Therefore, the technology for that network would be fiber optics.

Big Broadband As An Essential Utility

Thinking about whether big broadband technology should be viewed as an essential public utility might be helped by understanding what is meant by the term "public utility."

It usually includes the notion that a public utility maintains an infrastructure for a public service thought to be essential to the public. The public utility organization or company can be privately owned, government owned, non-profit, co-operatively owned or some combination of these. Historically, essential services were often thought of and treated as natural monopolies and public utilities were often regulated.

Historically, U.S. telecommunications firms providing telephone service were treated both at the national and state level as public utilities and regulated on both price and service. Beginning in the 1980s, however, an un-regulation goal took over and the public utility face of telecommunications slipped into the background or was eliminated entirely.

The companies that provided cable television service were not defined as telecommunications companies, so they never fell within the public utility model of regulation, although they were regulated from time to time at the national level by laws specifically directed toward the cable television industry. As technology evolved, however, both telephone companies and cable television companies emerged as providers of Internet services, so both types of companies are part of the equation when we confront current questions about provision of big broadband.

As far as ownership of the companies that provided telephone or cable services, it was mostly private ownership with a modest number of smaller, rural cooperative companies. Public ownership of services could be found in a few dozen Minnesota communities that started local cable services when service was otherwise unavailable or thought too poor. Like the private electrical utilities in an earlier era, both telecommunications and cable television companies have pressed and continue to press the political case that only private companies should provide these services.

Therefore, when the question is asked whether provision of big broadband over fiber optic networks should be considered as an essential utility in the same way as provision of water, sewer and electrical services and whether big broadband investments should be made by cities, one must start with the fact that there is a legacy

of ownership thinking in the political culture which was, and is still today, shaped largely by the dominant influence of private economic interests in the legislative halls, at the regulatory table, and in the lobbying hallways.

Cities Define Big Broadband as Essential Utility By Actions

While most incumbent providers continue to oppose the idea that cities have an obligation or even a right to build publicly owned fiber optic networks or to provide big broadband over those networks, increasing numbers of cities seem to be acting as if they have both an obligation and a right to do just that as may be seen by visiting the American Public Power Association website (www.appanet.org). Inevitably, state legislatures as well as Congress were presented with demands from opponents to limit or forbid public investment in big broadband networks.

Fourteen states have such limits or barriers to entry (see www.baller.com for detail). In Minnesota, the chief such barrier is a requirement that cities wishing to construct a local exchange to deliver local telephone service must hold a local referendum and pass it by 65%. Since most cities that do construct a fiber optic network will aim to have the three major services of telephone, television and Internet over that network, they will most likely find it necessary to hold a referendum on the question of a local exchange. The 65% requirement is so much higher than called for in most legislative action that it is widely seen as a barrier to entry. The rising view that big broadband is as necessary as water, sewer and electricity is perhaps best reflected in the very intensity of efforts at state and federal levels to legislate against municipal entry to broadband investment and provision of services. As long as cities see themselves at an economic disadvantage nationally and internationally from the absence of big broadband on fiber optic networks, they will continue to seek to provide for themselves what they believe is necessary for their long-term community welfare. In a practical way, every fiber build by a city is a statement that big broadband is as necessary as water, sewer and electric public utilities.

If Cities Want To Invest in Big Broadband

If cities want to invest in big broadband they need to understand their reasons. In Minnesota, dozens of cities have engaged in developing that understanding and many more are engaged in that effort now. The reasons advanced have been fairly consistent, including:

- long-term community economic development;
- increased choice of service;
- more affordable broadband;
- wider use of broadband in community services in education, health, senior services, government services;
- support for home businesses and telecommuting;
- competitive advantage in the world economy.

Once cities understand their reasons, what else must they do?

Given the prevailing legacy of ownership thinking, the first task of cities who believe big broadband is an essential utility requiring their investment is the task of political engagement. They will need to convince their politicians that the need to deploy truly big broadband fiber networks to the premise in many — probably most — communities poses an investment problem that calls for fundamental re-definition about public participation in the provision of big broadband services.

The terms of that engagement have already been laid out. The broadband user in the United States pays much more for less bandwidth than in competitor countries, and users have at best two choices for wired broadband service. (Dial-up service does not count as broadband.) The issues are affordability, big bandwidth, choice of service, and access.

The most widely circulated report worldwide is the OECD report which in mid year (June 2007) ranked the United States 15th in the world in broad penetration per capita, down from fourth in 2001 and 12th just six months earlier (www.oecd.org). In response the FCC and industry critics attacked the OECD's methodology (FCC Comm. McDowell, *The Wall Street Journal*, July 7, 2007). A cogent response to that attack was set out in the report called "Shooting the Messenger," by S. Derek Turner, research director of Free Press (www.freepress.net, July 25, 2007).

Economic Basis for Established Provider Resistance

If cities do engage politically and attempt to re-define the scope of public participation in providing big broadband services, they can expect stiff resistance from the established industry. Since telecommunications companies providing telephone and media companies providing cable television were among the first providers of Internet service in Minnesota, they are largely operating over networks that have something other than fiber running to each home or premise. The installed lines to the premise are very often a fully

paid investment and bring handsome returns to the companies right now. On the other hand, installation of fiber to each premise calls for investment that will take a long time to recoup and the volume of usage by most customers on that fiber installation will take time to grow to produce a concomitant higher return on investment. Most private companies are looking for return on investment that takes a shorter time than fiber investment is likely to take, so there is understandable reluctance on the part of many private providers to replace their existing lines with fiber.

The Political Culture Factor

Cities who do engage politically and attempt to re-define the scope of public participation in providing big broadband services can also expect to encounter views ranging from skepticism to opposition about whether cities should compete with private providers at all. There is a strong underlying friendliness in the general political culture toward private business activity, and beyond that there is a strong ideological opposition to the public providing services such as broadband among some. The main challenge for cities will be to demonstrate that the private sector has been invited to make the fiber investment but that if it fails to respond, cities then need to take their fiber investment future into their own hands.

Long-Term Investment — A Major City Asset

The strongest asset among cities who believe big broadband is an essential utility requiring their investment now rather than later is the fact that cities typically take a long-term view in planning for the welfare of the people in their communities. They ask what needs doing today in order to be an economically viable community tomorrow with a good quality of life for all their residents. Cities typically think about twenty years from today and create infrastructure projects that are financed over a fifteen- or twenty-year time span. That mentality and willingness to make a long-term investment in fiber networks is a major city asset. The reluctance of private providers to make the fiber investment today is heavily influenced by the desire to realize a rate of return on investment in a much shorter time span than twenty years.

Ideas on Financing and Deployment

Most everyone in and out of the broadband industry agrees that it would be desirable to have widespread build-out of fiber optic networks to the premise and that worldwide competitive pressures will make that necessary. Beyond that, there is wide difference of

opinion about who should build the networks and provide the services, about timetables and about investment.

If we take as a given that fiber optic networks are necessary and that cities as well as private providers should be able to invest — leaving aside for the moment the clear industry opposition to that assumption — there are threshold questions cities need to address before they move very far down that path. These include at least the following:

- Who will be the users (public users versus city wide commercial users)?
- Will the city build the network and provide the services or will the city build the network and lease the network or run an open platform system?
- What are the primary goals of the community among the likely goals of economic development, choice of service, lower-cost services, local service, faster speed, improved community and public services, quality of life, among others?
- Is the community in a general financial position to contemplate the investment?
- What are the strengths and weaknesses of the existing incumbent services?
- How well prepared is the community and especially how well prepared is community leadership to cope with the resistance of incumbents to the entry of municipal investment and services?
- What is the political culture in the community regarding the legitimacy of municipal ownership and operations?
- Can the political leadership successfully persuade residents that a successful municipally owned and operated business will return excess earnings to the community in the long run?
- What does an independent feasibility study say about likely market success of a city-owned fiber optic network? What services will be offered and who will take them?
- What assets can the municipality contribute to the fiber optic network project?
- How will the municipal network gain access to affordable content for video services if the fiber optic network will be

used to provide telephone, TV and Internet services?

- What sort of operating entity is acceptable to your community, consistent with state and federal laws and appropriate for the provision of the contemplated services?
- How big does the financing need to be?
- Can the municipality rise to the challenge of insulating the day-to-day business operation from political interference while also remaining accountable to the community through the political system?
- Does the municipality have other enterprises with cash reserves who can make loans to the municipality to backstop construction overruns or operating losses during the early years of winning customers and living through two to three years of predatory pricing by incumbents?

Finally, if all these questions — and more — can be answered satisfactorily, the question remains: How do you borrow money to invest in a fiber optic network and to pay the costs of providing services that include not only big broadband Internet but also video and telephone services?

Paying for Fiber Optic Networks

The desire to build fiber networks is strong but no one financial model works for all communities because — among other reasons — not all communities aim to do the same thing.

In Minnesota, some cities have found it possible to fund WiFi wireless build-outs with cash, inter-fund loans from other municipal enterprises, equipment certificates or direct bank loans. But the cost of WiFi build-outs is so much less than the cost of fiber optic networks which go to each premise in the community. And most communities that aim for a fiber optic network try to take it throughout the community — to older and newer parts alike as well as to businesses and public facilities. Therefore, this usually drives the fiber-hungry municipality to the bond market to sell bonds to investors.

A Fork In the Road: General Obligation Bonds

The first fork in the road a municipality will confront is whether the bonds to be issued will be general obligation bonds backed by the full faith and credit of the city and its taxpayers or whether they will be revenue bonds where the risk lies with the private investors.

Confronted with that fork-in-the-road decision, cities are

usually conflicted. The general obligation bond is easiest to place and costs the least in interest rates and issuance cost. However, if the enterprise does not prosper, the municipal budget will be called upon, taxes may increase as a result, and the credit rating may fall, affecting other borrowing negatively. If the municipality prefers to incorporate the general obligation bond into its finance and political picture, some options do exist besides generic general obligation bonds, including general obligation equipment certificates (subject to limitations on amount, term and legal debt limits) as well as general obligation bonds for economic development (not subject to legal debt limit).

A Fork In the Road: Revenue Bonds

If the municipality does not prefer to walk down the financing path with general obligation bonds, then the most likely bond option will be revenue bonds. These bonds will carry a higher interest rate as well as higher costs to issue the bonds. The size of the difference will depend on general market conditions in the first instance, and in the second, on the ability to satisfactorily answer all the detailed questions about the prospective enterprise so the underwriter has a coherent and truthful account to provide to prospective investors.

In today's market climate, the conservative and honest reputation of cities stands them in good stead. The bonds are placed with private investors, who assume the risk that the enterprise will succeed. This requires that a community have an excessively good business case, that it take steps to prevent avoidable legal challenges (such as by holding a referendum on phone service and working very hard to pass it), and that it have sound business operations advice from the very beginning of the project. The placement of the bonds is a negotiated transaction: legal documents will be required specifying how funds, accounts and covenants will be set up by the city, and additional money will need to be borrowed to fund debt service and operating reserves. These requirements and practices are all customary with revenue bonds; cities have used them for a variety of purposes, so it is not a new financial path just for fiber optic networks. Some cities combine the use of revenue bonds with cash contributions, assuming the debt or operating reserve fund obligations or other enhancements. Investors always like to see such municipal contributions, which may make it simpler to place the bonds.

The largest question is whether enough private investors believe that fiber optic networks are a good long-term investment for a community to make. The only way to learn the answer is to test the market.

Other Options

Apart from the fork-in-the-road option of choosing between general obligation and revenue bonds, a couple of other options exist, including lease revenue bonds and the installment purchase contract or lease arrangement. These options may be particularly appealing to the municipality that wishes to invest in the building of the network but does not prefer to provide the services that the network would support. In this case the municipality may lease the network entirely to a private or other municipal provider or it may choose to offer the fiber optic network as an open platform system. The option to wholly lease the system to a third-party provider or to secure providers for an open platform system depends upon the availability and interest of a provider or multiple providers. Evidence so far is that traditional incumbents have little interest in operating over anything other than their own networks, even if in most cases they are not fully fiber to the premise.

Legal Approval of the Bond Issue

There is also a legal hurdle municipalities need to consider when they contemplate walking the citywide fiber optic network path to every home and business. This is the fact that regardless of the type of bonds issued, it is necessary to obtain an opinion from Bond Counsel that the bonds are legally issued and likely to withstand a relevant legal challenge. Apart from the telephone referendum statute previously mentioned, it is the duty of the issuer to demonstrate that it is highly unlikely that a private provider will itself over-build with a fiber to the home (FTTH) project and that the system will be different from services of the current providers. This will mainly turn on the fact of the fiber to the premise deployment rather than fiber to the neighborhood or curb and the intent to provide symmetrical very high-speed Internet services to all premises.

In summary, the financing can be figured out in communities with a reasonable base of resources, but all that goes before resembles a stiff mountain climb. Not all municipalities will want to make or be equipped to make the climb. But for those who do, the prospect is rather exhilarating.

Case Study: Monticello, MN

On September 18, the City of Monticello held a referendum to ask its citizens whether they approved the building of a telephone exchange that would be used to deliver local phone service over a fiber-to-the-home network that is to be built and which will

also provide TV and very high-speed Internet. *The vote was an overwhelming 74% in favor.*

The Opposition Campaign

This result was especially surprising in the face of an intense campaign that attempted to persuade the voters that the network would be financed by city bonds that taxpayers would have to pay off. The opposition offices were located in St. Paul and appeared to bring together every telecommunications provider group on the scene in Minnesota, as well as enjoying the expensive direct mail support from the Taxpayer League with an even more misleading message than those on the opposition web site or appearing in the numerous newspaper and shopper ads. Ads in opposition appeared on the cable TV channel of incumbent Charter Communications and even on CNBC. The CNBC ads startled local residents and led one to write to the city "For cripes sake, we are on CNBC. What do these people want? We are just Monticello!"

There were numerous waves of blanket push poll phone calls. The mayor was a recipient of one of those calls early in the calling sequence and elicited a set of responses from the hapless hired caller which he was able to recount with great effectiveness in the local newspaper and on email distribution. It demonstrated how under the guise of questions the push polls actually misinformed the citizens about the basis of financing and the nature of the network to be built.

The Education Effort and "Vote Yes" Campaign

By contrast the effort by the City Fiber Optics Committee was limited by law to presentation of facts and educational materials and had a very tiny budget when compared to the "vote no" effort. It depended a lot on personal contact and effort, but also on quick post card and email response to the ads that it believed were factually untrue and the misleading claims about the financing for the intended citywide fiber optic network. Independent of the City Fiber Optics Committee, a Monticello Citizens for Fiber was formed and was active throughout the short campaign with lawn signs, community meetings, and personal messaging by phone and email. The efforts by the City Fiber Optics Committee and the Monticello Citizens for Fiber campaign were both mainly grass roots efforts.

Consequences of the Vote

This was the most aggressive campaign yet waged in Minnesota over the question of municipalities entering the fiber optics business.

It came at the end of two years of work by the City. The vote opens the door to the next steps, including financing and engineering the system. Construction is expected to begin next year.

The Path to the Vote

The path to the vote is instructive for the issues raised earlier in this brief review. The relatively small city (about 10,000) of Monticello, lying west of the Twin Cities on Interstate 94, decided to explore the possibility of a fiber to the home network in May 2005. It began by hearing a presentation about the experience of Windom, MN, in building its fiber system and a presentation from this author, acting as an independent consultant from Dain International Services, and Brenda Krueger from Springsted Inc. about possible next steps in technology study, ownership and operations, legal concerns and financing options. That first discussion set the path for the next two years of work.

Formation of the Fiber Optics Task Force

The Council immediately formed a small Fiber Optics Task Force representing main stakeholders in the community. It spent several months educating itself further about fiber to the home possibilities and limits, it compared options and learned about what was happening in other places. The report carried in to the city council in August of 2005 recommended that the council continue the Task Force and direct it to prepare the call for a feasibility study. That study included not only technical analysis, but a market study, as well as an assessment of business operations and regulatory issues in forming a business. The writing of the request for proposal and its circulation led eventually to the award of the contract to CCG Consulting in conjunction with Dain International Services and Springsted Inc. in May 2006 and the completion of the feasibility study by mid September.

Unanimous Council Approval to Develop the Network

On September 25, 2006, the Council took the first of several unanimous votes in support of the fiber optics project. It approved the resolution that the city move forward with the process to develop a broadband fiber optic network to service the entire community for the provision of telephone, cable TV and high-speed Internet to all residents and businesses. The condition attached by the Council was that the network would need to be financed solely by revenues and not by tax levy. The process of developing a plan for the citywide fiber network was to include an education and information program

as well as a second, even more rigorous market study to identify how many in the community were interested in taking services from the network when built.

Consulting Other Cities and Pre-engineering Advantages

The city leadership, the Fiber Optics Task Force and the consultants to the project continued to work together over the next six months to examine the interaction between the ownership and operations models, the business requirements for the varied services, the legal and regulatory requirements and the possibilities for finance. The experience of other successful fiber-to-the-home communities was called upon. Major milestones were visits in March and April of 2007 by representatives from Bristol Virginia Utilities, as well as by Hiawatha Broadband to share their experience. Another major milestone was the completion of a pre-engineering report which was able to refine route expectations and cost estimates sufficient to put a general price tag on the project. That opened the door to selection of a bond house for developing a revenue bond proposal.

Critical Role of City Council

One of the vitally important lessons from the process in Monticello is that city council members need to be kept fully informed all the way along in the process. The leadership from the council is critical and their willingness to continue to fund the exploratory process has to be based on bringing results to the table.

Finances and Bond Issues

The spring and summer of 2007 were occupied chiefly with attempting to clarify the demands of the bond offering. The fact that the Council clearly directed that the effort should be made to finance the network with revenue bonds means that the narrative accompanying the bond placement has to be particularly persuasive as a business case. It also means that additional demands are laid on the bond attorney, who needs to certify the issuance of the bonds. The Monticello approach on financing meant that the bond attorney took a very cautious view about whether a telephone referendum was required. Telephone service could have been initiated by a third party without the construction of a local exchange, but it would likely have undermined the economic case for the whole network. As a result, a decision was taken by the political leadership to call for a referendum. They went to work to win. On September 18, they won.

The critical task of securing investors to finance the system lies

just ahead. The bond market environment is less promising now than it was in early spring and the network will cost more to finance now than it would have then. But receptivity to fiber optics in the investment community is reputed to have warmed with every passing six months. It may be that fiber optics to the home as a "someday" investment has become today's smart move among the sophisticated in the U.S. investment community. If so, we would be catching up to the rest of the world, not leading it.

Conclusions

There are two general conclusions to draw from the Monticello experience. The first has to do with the unreasonable barrier to entry posed by the 65% requirement for a municipality to construct a local exchange. This is widely understood to be a serious barrier to entry. The general argument for such a vote is that a community should have to express its will about broadband ventures in telecommunications which are by their nature quite expensive. Of course, cities make equally expensive decisions without being forced to meet the undemocratic standard of 65% super majority. The other argument offered by opponents of municipal entry is that municipalities should not be encouraged to offer competitive choice in the telecommunications service area. Requiring a 65% majority certainly does discourage municipalities. Sometimes the barrier is overcome (as with Monticello), but sometimes not. In any case, the opponents to the 65% rule attack it as highly undemocratic and point out that it is punitive to cities to have to engage in expensive preliminary explorations to clarify whether, in business terms, there is a viable project and then much later finally test the question of approval for a telephone exchange.

A happy conclusion of the Monticello vote is that a community without an electric utility or a large number of positively predisposed high-tech types gradually built up a large base in favor of the "fiber vote for the future" that spelled victory on Sept. 18. If Monticello can do it, so can others.

The second point is not really a conclusion. Instead, it is a possibility. That possibility relates to demonstrating that revenue bond financing is a viable option for building and operating big broadband fiber optic citywide networks. The financial advisors and the bond house are confident the bonds can be placed. When Monticello places its bonds, it should in turn significantly encourage municipalities where taxpayer-backed general obligation bonds are not likely to be approved to think about citywide fiber optic networks. It will be another door open to municipalities, and some

will walk through.

Finally, it should be remembered that this essay was asked to focus on the investment aspect of fiber optic networks. It did not explore the options available for operating the networks after they are financed and built. But it is important to emphasize that cities do have options about how to operate new networks. They might choose to operate the network directly or by contracting with a single provider. Alternatively they can choose to have the network managed in an open platform system. For example, if a community values local ownership and management of operations as well as the prospect of future dollar returns to the community, it will likely prefer the municipal operator option. If the community believes it can attract numerous new providers to start services on an open platform, it may prefer that, but the critical issue — especially for a small community acting by itself — is the inherent limitation of small market size. A small pie cut into several small pieces is unlikely to either attract or sustain numerous providers. In the end there is no avoiding the fact that the investment challenge must be met, since without investment — whether public or private — nothing new under the fiber sun will happen in any community.