UHSBTF Paragraphs

a. Statement of values

i. Advancement of State

Broadband is essential infrastructure

Broadband is critical infrastructure for Minnesota's 21st century advancement in education, health, public safety, research & innovation, economic diversification and public services. The task force recommends that Minnesota establish an aggressive and forward-looking vision that positions the State for global competitiveness. One needed policy shift is to view broadband as essential infrastructure rather than leaving it to be deployed only when private investors believe they can obtain favorable returns relative to other opportunities for their capital. The task force notes that we do not leave private investors solely responsible for the financing and decisions concerning when and where to deploy other shared infrastructure such as roads, highways, sewers, water and power distribution systems.

Communication is emerging as a fundamental human right.

As the nation moves forward in new ways with advanced digital communications, broadband access becomes a fundamental human right. Lack of access to broadband denies people the fundamental human right to communicate. Without broadband, people are further isolated from the new model of economic and civic participation, thus, diminishing antipoverty efforts. Economic distress in Minnesota communities - lack of jobs, inadequate education, poor healthcare, outflow of local talent, etc. - is exacerbated by the inability to communicate. Broadband is no longer a luxury but a vital service necessary to fully participate in the nation’s democracy, economy, culture, and society. As the nation moves forward in new ways with advanced digital communications, broadband access becomes a fundamental human right. Acknowledging and protecting this right will provide more resources for rural areas to improve economic conditions and advance with the rest of the nation.

Local ownership, self reliance, and investment in community.

Absentee-ownership of broadband infrastructure and service has failed to to deliver universal high speed broadband networks. Non-local corporations have sometimes failed to invest in infrastructure because some areas will not offer the level of return available from wealthier, more densely populated markets. Minnesota broadband policies should prioritize local ownership in our communities, thus encouraging self reliance and investment in place. Local ownership would address problems ignored by absentee-owners such as lack of broadband access, slow speeds, limited (if any) provider choice, and aggregation of demand. Communities should be empowered and ultimately held responsible for ensuring they have the networks they need to succeed.

ii. Collaboration

The essence of the Internet is collaboration

The main tenets of Internet development include building and sustaining an open, interoperable, scalable network of networks that robustly supports a variety of applications and devices. As we look forward to a ubiquitous big broadband environment, these basic philosophies still hold true.

iii. Technology neutral

Our international rivals have built fast, universal networks using both wired and wireless technologies. If we are to regain our position of dominance in the world, it can only be by avoiding the wireless OR wired question and finding a means to provide both. Wired for speed and reliability, wireless for mobility. We acknowledge that one size does not fit all with regard to broadband delivery. A mix of wired and wireless services will probably be required to reach remote and low-density locations. Indeed, experience in many places indicates that perhaps we should focus on mobile broadband as a gateway technology for underserved citizens. Mobile devices are everywhere. They have long surpassed the Internet in number of users, and in some parts of the world, mobile phones now rival television in reach. Access to quality mobile devices and services often determines the socio-economic future of a community. Many people do not have and cannot afford private access to computers or the internet. A principle of openness should include a recognition of the importance of Mobile devices as public access points. Minnesota should require improvements to Internet service that people already have, as well as increasing access to other affordable, quality, mobile devices and services. At the same time we do not wish to see Minnesota allocate resources to promoting or sustaining outdated and obsolete technologies when it is clear that these technologies will not provide the speeds and capabilities we seek for the future and are projected to see declining penetration and market-share (Dataquest).

Ultra High-Speed Broadband -- Definition

Dataquest -- 50 mBps

Vint Cerf -- "Faster than anything currently available"

New term -- Bandwidth divide -- Dataquest -- "In 2012, 12.4 million households (9% of the regional total) will have broadband of more than 50 Mbps. This means that a "bandwidth divide" will open up in North America, especially compared with some Asia/Pacific countries.

b. Where we've been

i. The history of it all, for example, how voice telecommunications evolved, how it was subsidized, etc…

ii. How we got to where we are today

c. Where we are today

i. Mapping Project

o Unserved areas shown & defined

o Underserved areas shown & defined

ii. Where competitors are today

o Surrounding states

o Leaders in the US

Lafayette, Louisiana

In 2009 started providing retail telecommunication services to residential and smaller business customers, at 20% less than the standard competitor. But the vision is to provide much more than basic TV and phone services. The city provides triple play for $85. For $138 you get 250 channels (including HD) and 30MB up and down Internet. Customers can build their own bundle. E.g., unlimited long distance for $31. Five cents a minute to reach much of the world. They also provide 100Mbps for peer-to-peer within their network for free.

UTOPIA

15Mbps/15Mbps plan at $40/mo or 50Mbps/50Mbps for $55/mo from either MSTAR or XMission over UTOPIA infrastructure.

Loma Linda, CA

* 5 Mbps - $29.95 per Month

* 10 Mbps - $49.95 per Month

* 15 Mbps - $99.95 per Month

Seattle, WA (Highlands Fiber Network)

Tech Guru - 20Mbps/20Mbps

$94.90 per month for download speeds up to 20Mbps and upload speeds up to 20Mbps.

o Leaders worldwide

iii. Demographics

o Rural/Metro population

o Per capita income

o Household income

d. Where we want to be

i. For each of the 8 points from the legislation, how we pay for it, what policy changes are necessary

1. Identification of the level of broadband service, including connection speeds for sending and receiving data that is reasonably needed by all citizens by 2015. (What's needed for tomorrow-big picture, by functionality and rural/metro considerations. Essentials we want to make sure to provide, no matter what.)

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regional total) will have broadband of more than 50 Mbps. This means that a "bandwidth divide" will open up in North America, especially compared with some Asia/Pacific countries.

Ultra High-Speed Broadband -- Goals

Increase availability to 100% of state residents/businesses by 2015

Ensure fair and affordable pricing

Increase adoption and use

Increase technology literacy

Increase service-provider participation in deployment and adoption initiatives

Increase end-user satisfaction

Extend broadband coverage to underserved and unserved areas

Underserved

As the goal for broadband availability in Minnesota must be no less than that of telephone or electricity connectivity, underserved populations must include any population where broadband access is not universal. If any household or business is unable to access broadband at a reasonable price, that population is underserved. In evaluating these populations, Minnesota should not consider current-generation satellite or cellular coverage as “served.” These technologies do not offer adequate speeds to allow users access to the modern Internet.

Unserved

“Unserved” is a more extreme example of underserved. Unserved is a population wherein more than 20% of the households and/or businesses lack broadband access at a reasonable price, or are underserved. In many rural areas, population centers may have access while those outside political boundaries do not. Setting an “unserved” bar too high would result in unnecessarily increasing the cost of building a network that would only go after those without service. A bar at 20% makes networks more feasible, by allowing the network owner to incorporate adjacent communities with greater densities, which are likely to already have service.

Projected market -- bandwidth

Connections by bandwidth -- From Dataquest/Gartner
See attachment(s): Connections by bandwidth.wmf

Market share by bandwidth -- From Dataquest/Gartner
See attachment(s): Market share by bandwidth.wmf

Connections by modality and bandwidth -- From Dataquest/Gartner
See attachment(s): Connections by modality and bandwidth.wmf

Worldwide speeds -- 2007 and 2012 - From Dataquest/Gartner
See attachment(s): Worldwide speeds 2012.wmf, Worldwide speeds 2007.wmf

Speed comes first, demand will follow

History has shown that "speed comes first" and that once people have access to higher speed connections they will figure out new applications that will use them. These new applications; e.g. Skype (Internet telephony), Youtube (video distribution), online collaboration and remote backup over the Internet will in turn drive consumer demand for high-speed connections.

2. An evaluation and recommendation of the security, vulnerability, and redundancy actions necessary to ensure the reliability of high-speed broadband

Provide security at the edge of the network, not the core

Leaving aside the issues of infrastructure vulnerability and redundancy we want to highlight that securing the Internet must ultimately be done at the edges of the network. Imposing network security in the core of the Internet a) will not work and b) provides an unacceptable risk of government (or provider) monitoring and invasion of privacy. Thus, it is important to highlight the distinction between protecting the physical infrastructure from attack and securing computers that are attached to the Internet.

Security is not possible without broadband

Today's applications and operating systems are routinely upgraded on a weekly basis, with daily updates rapidly becoming common. The size of these updates are often on the order of 50 to 100 mBytes each which means that a consumer connected through dialup or other slow connection is often faced with the choice between using their connection or being secure. As botnets and other network-enabled exploits increase, these under-connected under-secured machines pose an increasing threat to the health of the Internet as a whole

3. A description of economic development opportunities made possible by the wide dissemination of high-speed broadband

4. An evaluation of how access to high-speed broadband can benefit educational institutions, healthcare institutions, community-based organizations, and government institutions.

Remote backup

Backing up personal files to a remote computer over the Internet provides profound advantages to consumers and businesses. As hard drives continue to expand, the volume of backed-up data is exploding. Symmetrical ultra high speed broadband is the only practical way to enable this capability.

Cloud Computing

A major driver of bandwidth and speed will result form data and computing power moving to remote cloud-computing services such as those provided by Amazon, Google, Microsoft, etc. This application, like remote-backup, will demand more symmetrical broadband speeds as once again "consumers" become "producers" on the Internet.

Low-probability, high-impact events

We need networks that can support sudden very-high-demand situations. What happens if there is a pandemic, or a 4 foot blizzard and people are confined to their homes for

days or weeks (potentially as much as 6 to 10 weeks in the case of a pandemic)? Can our networks handle long periods of extremely high demand (9-5 telecommuting combined with entertainment for the kids that are home from closed schools)?

Disaster Recovery

It's often said that the telling part of a disaster is whether the individuals and organizations have prepared in advance. We've seen a number of real disasters this past decade. A disaster is not simply a terrorist attack, a hurricane, or an earthquake. It's also a significant vendor suddenly declaring Chapter 7 bankruptcy. The challenge companies face in Disaster Recovery (DR) planning is that it has traditionally been complex and expensive. Ubiquitous ultra high-speed broadband would make data disaster recovery much more widely available to Minnesota citizens and organizations.

Distributed Worplace

Broadband is a facilitator of distributed workplaces. It serves to reduce the individual, corporate and social costs associated with bringing the worker to the workplace

Retired and the elderly

Ubiquitous broadband availability supports the ability of the aging workforce, who are retiring in increasing numbers, to continue their interaction with the Internet, which they've been conducting at the workplace due to lack of broadband at home

e. How are we going to get there? [A high-level look]

i. A description of the policies and actions necessary to achieve the goal including the elimination of obstacles to investment and the identification of areas in the state that currently lack infrastructure necessary to support broadband service

1. A description of the opportunities for the public and private sectors to cooperate to achieve the goal

Middle Mile

The state should encourage building middle mile infrastructure in unserved and underserved areas, and ensure that this infrastructure is open and publicly accountable. Scott County Minnesota has entered into a number of innovative partnerships that could serve as a model for this.

Ensure that Minnesota is a junction on the Internet backbone, not a station on the line

Today, the vast majority of MN Internet traffic passes through Chicago. This presents an opportunity to increase reliability, redundancy and capacity. We should launch two initiatives; 1) Develop two additional routes (a Northwest route to Seattle and a Southern route to Kansas City or Omaha) to the Internet backbone and require all providers to use and support those routes. 2) Make sure that Minnesota bits stay in Minnesota by requiring all Minnesota Internet providers peer with each other within the state rather than degrading performance by peering in distant hubs like Chicago.

2. A description of what other states have done either by public policy or legislation to increase broadband (Utah grant program, WI tax credit, for example.) Evaluate strategies, collaborations, financing methods, and financial incentives used in other states and countries to support the deployment of high-speed broadband

Policy changes

Change the definition of broadband speed

The standards of speed for broadband access must first rest on symmetrical upload and download rates. This technical definition implies that our networks must make it as easy to produce content as it is to consume. The standard of speed in networks should weight the upload speed over the download speed to ensure participation.

The standard of speed is also changing, we should not be locked in a regulatory framework that limits us to obsolete technology. Instead government should promote and fund networks that offer a high quality of service, low-latency networks, and the functionality to meet the service and application needs of our communications future.

The electrical grid is designed to work on the hottest day of the year. Yet many broadband systems become bogged down at peak times, offering the worst performance when the networks are most needed. For this reason, the speed threshold should be specified in terms of peak and non-peak speeds. A network that offers fast speeds only in the middle of the night does not benefit the state as much as one designed to ensure higher quality of service around the clock.

Provide public oversight

Provide coordination and leadership

The task force firmly believes that there will be a significant shift to a more proactive national policy on these matters over the next several years. The election of a new “wired” President and the appointment of broadband-savvy members in a new administration is complemented by increasing concern in Congress and widespread recognition of broadband advancement as a key element of the nation’s economic recovery. In addition to adopting a strong vision, Minnesota must position itself with committed and focused statewide broadband leadership that will be nimble and empowered to lead Minnesota’s internal efforts and leverage federal opportunities. The task force recommends that a permanent Broadband Advancement Authority be established with the tools and authority to take both short-term and long-term actions to continually improve Minnesota’s capacity.

Designate one state agency as lead coordinator for defining and implementing statewide broadband policy to help ensure cohesion, speed, and efficiency.

Monitor progress with mapping and data collection

Implement an ongoing program of data collection and mapping to enable Minnesota’s policy-makers to monitor progress in achieving the state's broadband goals.

Provide a granular method of defining where broadband service exists. Current methods do not reveal the true availability of broadband to residences and businesses and can lead to poor policy decisions.

All data on available speeds must be made available to the public in a format that can be used to generate similarly-granular overlays with other types of economic and demographic data

Consider modeling efforts on locally-driven broadband data collection projects.

All data on available speeds must be based on actual, not advertised availability, and also be accompanied by cost of service.

Oversee Internet transport providers as common carriers

For much of the 20th century, the United States and most other nations found it useful to develop a notion of common carriage for communications and a status known as common carrier for the communications providers themselves. A common carrier must provide a neutral communications platform. IP packets should be delivered between parties regardless of who they are, what is talked about, what the content of their packets are, and so on. As long as each party pays its bills on time, they should be treated by the provider as a legitimate and equal user of the network. As a network of networks, the very architecture of the Internet demands that packets be routed regardless of who the initiator and recipient of the communications are, whether the communication constitutes information or entertainment, the language used, and so on.

Minnesota should require the more strict standard of common carriage on networks serving the state. Common carriage has been applied to canals, roads, bridges, telephone networks and more. The network owner must not be allowed to monopolize the network or it will diminish societal benefit and inhibit innovation. In the event that a competitor wishes to use the network to provide services to a customer, the network owner must offer a wholesale rate no higher than the cost the network owner charges internally for the delivery of its own service.

Ensure that consumer privacy is protected and that providers are prohibited from inspecting the contents of Internet packets without consumer notification and consent (except in the case of law-enforcement). This includes monitoring for bandwidth-shaping and bandwidth-capping purposes

Ensure clear service definitions and monitor performance against those definitions

Require that broadband providers provide very clear definitions of the services they offer (tiered pricing, upload vs download speed and bandwidth caps) as well as independent quality and performance monitoring and verification

Require that broadband providers provide tools by which consumers can verify (and challenge) the information that providers are collecting (e.g.. consumption speed and data volume) along the lines that credit-reporting agencies are required to provide.

Broadband networks should have to meet reliability performance standards. Broadband connections are replacing traditional phone lines but do not offer the same high level of uptime. This is especially true of some wireless networks. Networks should meet some reliability metric as part of the performance standards that will be evaluated as part of the oversight designed to prevent fraud and wasteful use of taxpayer money.

In addition to uptime requirements, Internet providers should be required to meet a threshold of customer service. Many states already have metrics and systems for reporting the time customers spend on hold or waiting for a support call to be answered.

Rethink the Universal Service Fund

As we rethink the Universal Service Fund with an eye towards broadband and internet

adoption we must develop policies that promote the goal of Universal Access. The focus should be on the human impact rather than the service provider - the opportunity for every person, regardless of their digital skills, geographical and socio-economic situation, to create and to share information useful for their own life plans.

Recently, the Federal-State Joint Board on Universal Service, comprised of state and federal regulators, recommended to the FCC that the USF be divided into three separate programs - one focusing on traditional wired telephone service, one focusing on wireless or "mobility" service, and one focusing on broadband. By law, the FCC is required to act on the Joint Board's recommendation within one year.

Oversee broadband as a lifeline service

Broadband is no longer a luxury but a vital service necessary to fully participate in the nation's democracy, economy, culture, and society. Policy makers should define and fund broadband as a lifeline service that must be made available to all residents.

Acknowledge broadband as essential infrastructure

One needed policy shift is to view broadband as essential infrastructure rather than leaving it to be deployed only when private investors believe they can obtain favorable returns relative to other opportunities for their capital. The task force notes that we do not leave private investors solely responsible for the financing and decisions concerning when and where to deploy other shared infrastructure such as roads, highways, sewers, water and power distribution systems.

Ensure an open and interconnected Internet

Consistent standards and network behavior are essential to ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers. In 2005, the FCC adopted four principles to encourage broadband deployment and to preserve and promote the open and interconnected nature of the public Internet (FCC 05-151). According to these principles, people are entitled to: access the lawful Internet content of their choice; run applications and use services of their choice (subject to the needs of law enforcement); connect their choice of legal devices that do not harm the network; competition among network providers, application and service providers, and content providers. MN should enforce network neutrality laws mandating the equal treatment of all communication consistent with the principles adopted by the FCC.

Ensure privacy

The freedom to hold opinions without interference is not possible without privacy of information and regulation around the collection and sharing of personal data. All members of the Internet community must be protected from government and corporate surveillance. The right to privacy on the Internet has two equally important aspects:

1. information privacy or data protection, which requires the establishment of rules governing the collection and handling of personal data such as credit information, and medical and government records.

2. privacy of communications, which covers the security and privacy of mail, telephones, e-mail and other forms of communication.

Strive for universal access

National and state policy for broadband and internet adoption must develop policies that promote the goal of Universal Access. The focus must be on the human impact rather than the service provider - the opportunity for every person, regardless of their digital skills, geographical and socio-economic situation, to create and to share information useful for their own life plans.

Significant aspects of Universal Access should include:

· The ability to access to infrastructure regardless of where you live. Broadband must be widely distributed, and should support bandwidth that will enable people everywhere to use it.

· Affordable access. Broadband infrastructure- including rules, pricing, taxes, etc. should make access affordable for all income levels-to ensure that as many people as possible have access.

· Access in the workplace -especially for those whose primary access is at work.

· Public access. Given that man people will not be able to have private home computers and internet access, a premium should be placed on creating public access points such as telecenters, libraries, community centers, clinics and schools- so that all people can have access within walking distance of where they live or work.

· Access to information that is culturally and linguistically diverse and representative of all of MN's ethnic and racial groups. Additionally, since most internet content and hardware is dominated by the use of Latin script, and given MN's large Hmong, Lao, Vietnamese, and Somali communities-MN should ensure the development of local content in non-Latin languages. Technical development should encourage linguistic diversity on the internet and simplify the exchange of information across languages.

Require pricing options without cross-subsidies from video or voice services

Artificially low prices for Internet services distort the market and confound the policy making process. Ultra high speed Internet access is a premium service and should be offered in such a way that providers can make a rate of return, while consumers have the option buy the service without having to buy unwanted video or voice services.

Incentives

Encourage local ownership

Incentives should be created to encourage local and public ownership. For example, local providers, Tribal governments, community-based nonprofits, utilities, and co-ops should get incentives to construct, own, improve, maintain, and operate broadband facilities and to provide broadband services.

Coordinate broadband with other aspects of Federal Stimulus

Only dig once -- coordinate construction projects, such as roads and electrical-grid improvements.

Only plan once -- develop coordinated broadband, electric-grid, energy retrofit projects.

Find anchor tenants -- community colleges, health care centers and the like can help justify bigger pipes (power and broadband) for a whole community.

Stimulate demand by increasing digital literacy

Public Education

Affordable, fast and easy access to the internet can strengthen educational and health services, local business, public participation, access to information, and good governance. Digital knowledge and skills enable people to use and shape the internet to meet their needs. MN's government, community organizations and private sector entities should support and promote free or low-cost training opportunities, and materials related to using internet. Students and community members need to have a shared platform for collaborative learning. MN should fund digital and media literacy as a component of public education. MN should also support education in libraries, YMCAs, and public housing community centers. All education should include basic literacy, media production, and e-commerce (how to start a business online).

Funding should be made available for technology training, production, and adoption in communities historically at the margins of technology such as rural, low-income, immigrant, and communities of color.

Fund technology training, production, and adoption efforts and programs by agencies with a track record of contributing to rural, low-income, immigrant, and communities of color.

Require that an adoption component be required of all broadband projects funded.

Measure progress

Metrics

Increase in availability

Expand speed in each tier of service

Increase in adoption and use

Increase in technology literacy

Increase in service-provider participation in deployment and adoption initiatives

Increase in end-user satisfaction

Encourage accurate/timely data sharing by providers

3. How we pay for it

§ Estimate of the costs of reaching the broadband goal, including capital costs

§ Identify who will [or should] bear those costs

§ Opportunities to leverage investments

4. Future scenarios and how to take advantage of them

f. Define broadband by functionality: define what's needed for each application (e-mail vs. telecommuting, vs. HDTV downloads, etc.) - similar to the California report

2. Comprehensive Policy Recommendations

A. Be sure to cross reference 8 points of legislation

B. Recommend focus of future legislation

C. Other recommendations the Governor/Legislature should consider for future study