

Unapproved Meeting Minutes Friday, October 24, 2008



Facilitator: Anne Losby

Task force members in attendance: Myron Lowe (for Steve Cawley), Brent Christensen, Tom Garrison, Steve Dunker (for Barbara Jo Gervais), John Gibbs, JoAnne Johnson, Gopal Khanna (with Jack Ries substituting for portion of meeting), Rick King, Tim Lovaasen, Dan McElroy, Mike O'Connor, Kim Ross, Dick Sjoberg, Mike McDermott (for Karen Smith), Andrew Schriener (for John Stanoch), Steve Downer (for Chris Swanson), Craig Taylor, Mary Ellen Wells, Peg Werner, Robyn West

Public attendees: Cathy Clucas, Ruthe Batulis, Dennis Fazio, Brent Legg, Mike Martin, Ann Treacy, Matthew Lemke, Bill Coleman, Lawrence Carroll, Randy Young, John Reich, Steve Kelley, Emmett Coleman, Tom Berkelman

Staff in attendance: Shirley Walz, Carlos Seoane from Thomson Reuters; Diane Wells from the MN Department of Commerce.

Opening comments; review meeting agenda

Rick King called the meeting to order at 9:38 a.m. and substitutes were introduced.

Discussed the scheduling of speakers for today and the idea of having speakers present as many points of view as possible. For the legal and regulatory discussion, wanted a broad view. For Internet basics, the discussion is a little more factual. The task force should discuss what more do we want to know and how to bring balance to the discussion. We have a full day planned. Motion to approve.

Tim Lovaasen moved.

Mary Ellen Wells seconded.

Motion approved.

Rick King called to approve the September 19, 2008 meeting minutes.
Motion to approve. Seconded by Tom Garrison.

Motion approved.

Public comment, correspondence and website comments

Rick King asked if any member of the public present wanted to make comments. Brent Legg, vice president of state and local initiatives for Connected Nation introduced himself and indicated that Connected Nation was awarded the contract to produce the broadband map for the state of MN. Asked if anyone had questions. He then summarized that Connected Nation is in the data collection process. He is here to meet with providers. During the next couple of weeks Connected Nation will be engaging in signing non-disclosure agreements with broadband providers. The initial set of broadband maps is due Feb. 1, 2009 which is a very short amount of time. Connected Nation has all of the confidence that broadband providers will participate. They already have a good working relationship with many providers. The holidays are in the middle of the upcoming three months but they will work through that.

Thinks they will have the map that is pretty much complete by that time. There will be a modification and updating process and a verification process through the 30th of June. Brent

Unapproved Meeting Minutes Friday, October 24, 2008



Legg again asked if anyone had questions. Steve Downer asked if Connected Nation had contacted the municipal broadband providers.

Brent Legg indicated that they have a list of providers from the FCC. Steve Downer was going to review the list with Brent Legg to insure it was complete.

Rick King indicated that the task force was very interested in having someone from Connected Nation at the February meeting if they could plan on that. If it substantially changes by June 30, the task force would also be interested in an update. Rick King also indicated to the task force that he has material if anyone wanted to see what Connected Nation does and the models they have. The task force isn't endorsing but is interested in the output.

Joanne Johnson – when you've worked in other states usually the mapping is done before the task force – so the process is simultaneous here.

Brent Legg responded that every state approaches things differently. Some states produce the map at the beginning. He didn't see a problem with transferring the data.

Tom Garrison asked about the level of detail in the maps.

Brent Legg responded that the street level data is plotted on a GIS map and that an interactive map will also be available. Will create household density map by census block.

With there being no other public comments, Rick King then noted that this was our first meeting in this location and thanked the City of Eagan for supplying the meeting room

Rick King noted that he had discussions with Steve Cawley about video conferencing and the legal advice currently is that we have to do meetings using videoconferencing which is two way – need to see, hear everyone. Those sites are generally a public library, college building. Task force members were asked to think about videoconferencing sites close to where they are that would be more convenient for driving in the winter months. Next month we'll talk about locations. Also

think about metro places where various groups could go to. We'll work with Steve Cawley to go out and secure the places for the dates that we want.

Tom Garrison welcomed the group to Eagan and happy to be able to provide the facility at no cost. Rick King indicated that there will be a catered lunch for task force members paid for by the State.

Rick King mentioned a few other items before the first speaker.

Everyone received the letter from the Governor's office regarding the gift ban, use of state property and resources, conflict of interest, open meeting law, MN government data practices. We heard about all of that from Alberto Quintela (Department of Commerce lawyer) at the last meeting. Have since then asked Commerce to put together an advisory opinion on a list of issues and we should get the opinion back within the next 30 days. Have a rather conservative interpretation of the rules right now and some of this will go to how we actually get our report produced. We may get some relaxation on the interpretation in the advisory opinion.

As an action item from the last meeting, Rick King talked with Commissioner Wilson regarding how the task force is going to need some funds that we did not anticipate to produce a meaningful report. The California report is the style that we are after. It's going to take some tens of thousands of dollars – today we have to take out of Commissioner Wilson's money. Costs include layout, graphic design, making the report appealing to look at as well as full of information.

Rick King asked if there were questions about the information from the Governor's chief of staff – none.

Rick King also mentioned that we've had a few times since the last meeting when we've had e-mail information sent and then people start responding. It is recognized that every piece of information that comes out we may not personally support.

Unapproved Meeting Minutes Friday, October 24, 2008



Would prefer if you want something sent out to send it to Rick King or Diane Wells for them to send out. Rick King asked that people do not respond – the information should be out there but the discussion can't be outside this room.

Rick King opened this suggestion for comments. JoAnne Johnson indicated that we'll try to be good. Mike O'Connor suggested that this might not be a good group to ask (to hold their opinions). Rick King noted that if this part gets softened in the advisory opinion, we'll take that into consideration.

John Gibbs indicated that he thinks what Rick King suggests is a great way to proceed. Rick King indicated that pretty much everything that has been sent in has been posted, there is no intent to discriminate.

Dan McElroy noted that the concern is that your e-mail may constitute an extension of the meeting. The problem with e-mail conversations is that they are not available to the public.

Rick King responded that is why we

talked about having a forum on the website but the advice that we got is that we shouldn't host a forum. We are seeking clarification on this.

All agreed with suggestion from Rick King that e-mails that contain information to be posted go to him and/or Diane Wells.

Speakers:

Topic: Legal and Regulatory Environment – history of regulation, how communication companies are regulated

Speaker: Steve Kelley – Senior Fellow, Hubert H. Humphrey Institute of Public Affairs

Steve Kelley thanked the task force for the opportunity to provide the presentation. He indicated that the request to him was for an overview of the regulatory and legal framework related to communications.

You will get the point of view of a former elected official and what might be relevant to understanding how ultra highspeed broadband fits into the existing infrastructure.

The task force is dealing with something forward looking in a regulatory system with deep history. In looking at how to approach the topic, he decided to address on an industry by industry basis where the sectors are now converging. Interstate and intrastate communications have been regulated by the federal government and the states, respectively.

Price, quality of service, and availability have been regulated. In the 1980s, Ma Bell was broken up and there was a move to more flexible regulation. The concept of alternative regulation has been widely adopted. Tariffs were retained for rate setting.

In Minnesota, 98% of residents have a telephone so the policy of universal service was successful. We also had a policy of

assigning specific service areas and requiring companies to serve those areas.

Had the concept of common carrier and the notion that you could not discriminate against certain customers.

Steve Kelley mentioned that you cannot ignore the tax issue where taxes are imposed on telecommunications services. At the federal level, you have the federal universal service fund (USF) charges. At the local level there are public safety charges for services like 911.

There are also lots of acronyms in the telecommunications industry: ILECs, RBOC (Qwest in Minnesota). We also have regulations for large providers like Qwest, Embarq, Citizens and Frontier (50,000 or more access lines). Small providers (less than 50,000 access lines) have

Unapproved Meeting Minutes Friday, October 24, 2008



less aggressive regulation. ILECs include small privately held companies, co-ops and a few municipally owned companies and we have roughly 90 such companies in Minnesota. In New Jersey, by contrast, 98% of the access lines are served by one company, the BOC. So in New Jersey they can largely implement policy by dealing with one company. In Minnesota we have this profusion of separate companies to deal with, so it is difficult to apply a statewide solution. To illustrate, Steve showed a slide of the service area map for Minnesota.

Steve then discussed the topic of Universal Service which is ensuring voice service is available to everyone. The common good argument is that it is to everyone's benefit the more people you have on the network. It is also a benefit for safety and economic development.

Federal Universal Service Fund – serve those customers that are dispersed. Qwest, on average, serves relatively dense areas. It doesn't fit the definition of a high cost company. The issue is whether we support companies versus customers. There is an explicit subsidy for low income and disabled

There are also a number of hidden subsidies that have supported low local rates. Long distance through access charges contributes significantly to the revenues of local companies to hold down the rates for local service. Also a metropolitan to rural subsidy but large providers are required to have a uniform price.

Permit telephone companies to charge a higher rate to businesses so there has been a business to residential subsidy. However, competitive local exchange companies typically go after business customers which has tended to drive down the price and thus the subsidy.

The federal USF supports high cost companies but also has a portion used to subsidize hospitals, schools, libraries and low income.

In terms of payments to governments, telephone companies pay corporate and sales taxes and property taxes. There is the federal USF payment. And in Minnesota a per access line assessment of 7 cents for TAP, 6 cents for TAM and 65 cents for 911 and the radio system.

Wireless doesn't always show up in the conversation on broadband. Wireless is federally regulated with minimal state regulation. At the state level, we had an issue with extending wireless contracts but a federal judge ruled the law was illegal because contract extensions was a pricing issue and so the law was overturned.

Cities and counties have the ability to control tower sitings but even this is not unconstrained.

Cable TV is subject to federal, state, and local regulation. Minnesota uses mainly a local regulatory model. State law delegates to cities and requires uniform rules. Some states have recently gone to state level regulation through a state agency like a state PUC for issuing a state franchise. There is no price regulation. There are no USF or common carrier requirements. The closest thing is that most local cable commissions have requirements that service be available throughout a community i.e. even if the service is not used it has to pass a house. Area served has been a big issue when discussing competition.

The cable company-city relationships are complex. Franchises are basically agreements. Government did not impose a public good model on cable television as it was seen as entertainment or a private good, not a public good. Indicated they should compensate the city so the franchise fee is for taking advantage of being in or crossing a public right of way. Because a private good, cable did not get free access to the rights of way like telephone companies did. Cities do regulate quality of service. Cities, in negotiating franchise agreements, have also negotiated for connections for the infrastructure between offices or institutional networks. There is a prohibition against granting a legal monopoly to cable. But relatively few areas in Minnesota have more than one cable provider. Cable says it has competition from satellite service.

Unapproved Meeting Minutes Friday, October 24, 2008



Other states have adopted state level franchises. State level franchising has been pushed by telephone companies in those states. The laws address franchise fees, PEG channels.

Satellite TV – Internet

In the market, but a small part of the market. Federally regulated.
Satellite service is subject to sales tax.

Internet – subject to federal regulation, mainly because practically all aspects of Internet service have been classified as information services. Providers do not have common carrier obligations. Federal subsidies for schools, libraries and rural hospitals for Internet services. Service rules/Internet neutrality issues are in dispute. The FCC is making it up as it goes along.

1996 – Telecommunications Act passed. Codified definitions of telecommunications service, mostly telephone – long distance or local; cable service; and information services which includes electronic publishing. The definitions go back a long way. The FCC has held that Internet Service Providers (ISPs) are information services. Google is clearly an information service. But if you are an ISP providing transport, one could argue that you provide a telecommunications service. However, if ISPs were defined as communication companies they would be subject to all of the regulations that telephone companies are and the FCC did not want that. Now you have providers that are doing all three (telecommunications, cable, broadband) which really complicates matters. Cable and wireless companies can exclude providers from their network. The definition of regulation is stretched.

In addition to regulation, government has an important role as a purchaser of services. The government can be an anchor customer in rural areas. The purchasing role can be used to accelerate deployment of higher speeds, especially in rural areas.

Cities have two options – they can buy the network from the local provider. In that case the city replaces the local provider as the local exchange provider. The other option is to enter in competition which requires a 65 percent vote. Steve Kelley's sense is that the supramajority vote was required to ensure that this is what everyone in the town really wanted.

The 1996 Act contained a lot of provisions encouraging competition that haven't worked out the way some folks might have hoped. There were provisions encouraging cable companies to get into the telephone business. There was a provision for what is called an open video system. The idea was that you built an open system that was shared and there would be less oversight needed. This put back into play the common carrier notion that had applied to telephone companies. It was a half formed idea that didn't accomplish what was hoped for. Another idea to encourage competition was telecom purchasing cooperatives. This idea was to bring together a bunch of purchasers. Not aware of any telecommunications purchasing cooperatives in Minnesota.

Net neutrality. Congress and the FCC have not really set rules in advance. Decided Comcast could not throttle down peer to peer traffic on high use customers. If you have a high volume user in one area, Comcast tried to set limits and the FCC held that they could not do this. Comcast has appealed.

Unapproved Meeting Minutes Friday, October 24, 2008



There are real issues about quality of service. Companies that want to buy high volume pipes can do this on virtual private networks. So what you do with the issue of quality of service over the public Internet is not an easy issue. Comcast's take on this is to apply a 250Gig cap. There is a question of whether they have the authority to do this and whether the FCC has the authority to tell them that they cannot.

Other issues. Is broadband a public good so it should be treated like telephone service? How do you subsidize and is that subsidy overall or user specific? Do you have triple play providers regulated at multiple levels? What should the division be between the FCC and state/local?

Questions:

Steve Downer asked Steve Kelley to talk about subsidies – to what extent can any provider subsidize broadband service through their cable operations?

Steve Kelley: No restriction on how cable providers use their money. There are restrictions on telephone providers using funds or moving from a regulated to unregulated service.

Peg Werner indicated that broadband should be a public good. Mary Ellen Wells pointed out that even with public services like water and sewer, if you live in the country you need to build your own well and septic.

Steve Kelley commented that creating a statewide solution that works everywhere is really hard. You need to think about the players and how government can enlist everyone in the goal.

Peg Werner noted that you don't have to build your own telephone lines. Steve Kelley commented that you don't want to get locked into a particular technology.

The telephone companies are used to working in wire. A real challenge for them is to get over that mindset so that part of the network can be wire and part can be wireless. Have to keep in mind there are mixed systems. Think through that customers have indicated desire for mobility. With increasing use of tools like YouTube and video, customers have a strong appetite for bandwidth.

Consumers are expressing a mixed set of desires.

Tom Garrison said it sounded like you are suggesting multiple strategies to achieve the goals. Can you elaborate on funding for the goal: grants, USF, something else? There are ways to do this and ways to do this fairly.

Steve Kelley had some ideas that he's thought of that may or may not play out. As you think about a potential source of implicit subsidies, cable companies are using their existing revenues from their entertainment base to subsidize the buildout of their telecom and broadband facilities. Convergence.

Do folks that have high levels of interest in entertainment subsidize the quasi-typical grandma that just wants a minimum connection—a telephone. Competition drives out cross subsidies. So you have to think about other ways to do this. You can also use explicit subsidies. We have talked for years about a state USF with the issue delegated to the PUC. They haven't done anything in ten years. You could establish a state USF. Public safety has the 65 cent per access line charge, some don't like it but all accept the 911 system. You have to do something even handed across multiple providers. Another national policy debate is that telco providers have resisted telco only taxes/type of charges. Minnesota hasn't been a major offender like some other states. There is resistance to business specific charges.

Brent Christensen asked Steve Kelley to talk about the one program that did work in Minnesota, hooking up schools and libraries. Steve Kelley indicated that those were general fund dollars. There was not one state purchaser but driven to regional purchasers. There was a state telecommunications council that worked out the distribution of the funds that wasn't fair (not per pupil or per mile) but by who was ready – who could put the money to work right away. It was amazingly flexible. For many providers this accelerated the upgrading of the switch, but did not solve the last mile to residents problem

Rick King thanked Steve Kelley for his presentation and the work that he is doing.

Unapproved Meeting Minutes Friday, October 24, 2008



A short break was taken.

Topic: Fundamentals of Broadband – delivery methods, different speeds and what they do

Speaker: Mike O'Connor – Internet Basics, Impact of the internet

Mike O'Connor indicated that his presentation would cover three parts, history, architecture and applications and it would be light on applications because Bret Swanson will cover that in more detail.

Mike O'Connor indicated that he got involved with the Internet late, 1991. He worked with Mike McCahill at the University of Minnesota who developed the Gopher network and POP. One of the people featured in the history of the Internet is Vint Cerf who will be in town in November and may have an opportunity to talk with us.

Mike asked people to remember where the Internet came from, late 1950's government research project to link scientists together. It was an information sharing mechanism, built by the government for science, security. It did not start out as a replacement for the television. It has gone in a direction never intended.

Dennis Fazio is at the meeting today and he was hired by the university to run the first Minnesota connection to the Internet hub in Chicago. That first connection was 56k.

What the Internet has done is to trigger a huge amount of innovation and change.

No one thought of any regulations back when it was getting built.

In 1980 there were 400 host computers.

In 1981 there were 200 sites, so rapid growth.

Domain names start to show up.

Another big transitional moment was the notion of bulletin boards. That happened in the mid-80's. A lot of companies came out of the bulletin board community. This isn't what people think about now but it was a lot of geeky people that spent a lot of time online communicating. The Internet has always been about people talking to each other. The community thread is very old in the Internet. It was about getting communications across long distances for cheap.

There was a transition from the Internet funded by the national science to the commercial Internet. By the end of the 1990s, we have in place a lot of the stuff we now take for granted.

Architecture

Be aware that when you are talking about the Internet you are talking about layers.

The first layer is the physical layer. It gets the Internet to you. This layer is going to be the most contentious. This is the layer where a natural monopoly could form because there are only going to be one or two connections into a location. You need to regulate the physical layer different than you regulate the other layers.

What's in the physical layer: wires that traverse the right-of-way. The issues are capacity, deployment, natural monopoly.

The middle layer is the Internet layer and it does not care what kind of medium the packets go through (wireless, satellite, wire) to get to you. The Internet layer is how the packets move, getting the packets routed from the customer end to the access provider. When a provider wants to do the transport, the access and the applications, that's the triple play.

The Internet layer are the big things: protocols, routers, switches, interconnections. For the Internet layer, the issues are reliability, capacity and scale. The Internet layer struggled with the issues of who is going to interconnect with whom.

Unapproved Meeting Minutes Friday, October 24, 2008



The final layer is the application layer. Usually software on one side and content on the other. The original Internet was always thought of as same speed up as down (equal sided). Everyone was equal in terms of speed and application. It gets tricky now when the model changed so that a client and provider are unequal. The application layer is where you worry about software and data, programs that run on your computer. The big issues are ease of use, privacy, security, software data. Issues like business privacy, medical records.

Summary of applications—email, messaging, VoIP, remote computing, media, file sharing, research, discussions, communities, ecommerce. The application list has not changed much but the way we do things has changed. What are the big things that this is going to do to a community: commerce, digital divide, neighborhood, globalization, governance, education, etc.

Speaker: Bret Swanson, Senior Fellow and Director of the Center for Global Innovation at The Progress & Freedom Foundation joined us via telephone from Indianapolis

The Progress and Freedom Foundation is a think tank based in Washington. A lot of the research that he's been doing is about the growth of the Internet – physical layer and application layer. He tends to divide the history of the Internet into three phases. Phase 1 was the original architect where the Internet connected scientists. That lasted through the 1980s. Stage two came about in the mid 1990s. The Internet came to the masses with email and the world wide web and made it user friendly. In the last year or so phase 3, real broadband, video over the Internet became real. With the additives to YouTube infinity became real. Giga is the new baseline that kids today start with. We are in the exabyte era. Had a 10x leap in growth from 1994 and 1996. Today video is driving the need for greater bandwidth. If YouTube converted to HD, it would be 12 exabytes per year or equal to the whole U.S. Internet use in 2007. Today's HD requires between 8 and 18 Mbps. Next generation 3D video will require between 50 and 100 Mbps.

Open for questions for Mike O'Connor and Bret Swanson.

Tom Garrison asked what advice the speakers had for the task force or state regulators and legislators of what we can and should do.

Bret Swanson indicated that in Indiana, two years ago they passed what he considers to be the most advanced telecom reform bill in the country. Since then, there has been an incremental investment of \$500,000 million in broadband in fiber to the home and fiber to the neighborhood – deliver 10, 20, 50 MB services. Indiana is served by AT&T and Verizon in various parts. It's only been a few years but he views it as successful with more to come. Bret Swanson sent the task force the Wall Street journal articles he's written. His view is in the 1980s and 1990s we over regulated and stopped broadband dead in its tracks and lead to the telecom tech crash. Starting in about 2003 with the Triennial Review, we got some important decisions on fiber and some more FCC deregulations, court decisions and some state telecom reforms. His view is that nationwide we are on a positive path in regards to building out broadband networks, but this is not true in every state. He thinks we fell behind in the first part of the decade and we are on a positive path. It's an important to have a bias toward deregulation and encouraging investments by the private sector.

Dan McElroy asked if Indiana did anything to encourage access in more remote parts of the states. One concern is that total deregulation will lead to more investment in urban areas but less investment in rural areas.

Bret Swanson responded that this was in the center of the debate in Indiana, which is not quite as rural as Minnesota but still has a large rural population. The way they worked it out was that some companies promised to deliver high speed DSL to all of their rural central offices and

Unapproved Meeting Minutes Friday, October 24, 2008



locations even before the reform was passed. They set up for the next 3 to 5 years to have a gradual transition of pricing. Rural areas were very heavily subsidized, had very low rates. Telcos were only allowed to raise the rates slowly. There were other protections built in to help rural consumers, so far it has worked well. Most rural areas of the state have DSL, but not fiber to the home. More important to get people broadband than to enact something that never got done.

Steve Downer asked whether the 2015 predictions are based on infrastructure in place or just demand.

Bret Swanson responded that you have to look at it from both sides of the same coin. If you think about the Intel chip, when Intel was building these amazing new chips, people were asking what are we going to do with all those transistors. Creative people found ways to use those transistors. The analogy here is that if we build a lot of bandwidth people will find creative ways to use up that bandwidth. On the flip side, some of the applications may drive us to have to build even more capacity.

If you build more infrastructure, people get more creative. They keep building off of each other. It's not either/or but the predictions are based on assumptions that we continue the build out of fiber to the home. That is one of the reasons we didn't make a hard and fast prediction for 2010 because we just weren't sure what percent of the country would have new systems. By 2015 we are more comfortable saying that we will have the systems in place. Rough estimates, you don't know when the network will be built out or when an application will take off.

Joanne Johnson indicated that the issue that we need to remind people of is that these volumes do not go to the same place. We are talking about a robust enough network to carry this amount of information. AT & T just upgraded their backbone and indicated they don't intend to upgrade again til 2013 but that should be sufficient, right?

Bret Swanson indicated that he can't speak to the question about whether this will be enough but that he is talking about aggregate numbers. For the consumer, the issue is having a robust, sufficient connection so that they can do some of the new, exciting applications.

Tom Garrison indicated that one of the things the task force is assigned is to recommend a speed goal for this state. What range or speed should this be.

Bret Swanson responded that he had two answers. By 2015, I think you'd want to see probably 100 MB per second per home which would be ideal to do all the HD things, not that you couldn't get away with less than that. The other thing is that if you are making a recommendation of speed, be careful about mandates. You can actually discourage investment, especially in rural areas, if you mandate.

Gopal Khanna had a question for Mike and Bret. They both talked about the intertwining of supply and demand. What about security considerations, space, data flowing? What does this do for the world security questions.

Mike O'Connor responded that security at the physical layer is quite different than security at the applications layer. When you go down toward the bottom or physical layer security has to be more uniform. At the application layer it can vary. All kinds of encryption exists for security at the applications layer. If you get to security at the physical layer your choices are much more constrained. Focus the implementation to security at the top of the stack versus the bottom. If you do it at the bottom, you will be out of date right away. Security isn't terribly germane to the broadband discussion. Bret Swanson agreed that security will move to the edge and should stay there.

Break for Lunch

Topic: Internet2 Overview – what it is

Unapproved Meeting Minutes
Friday, October 24, 2008



Speaker: Myron Lowe – Director of External Technology Initiatives, University of MN

Most people who have heard of Internet2 just know the name but don't have a real understanding of all that Internet2 involves. The purpose today is to give you a comprehensive overview (technical information, who is using it, applications, how they connect). Some implications to think about as a task force.

Internet2 is primarily a university network. It was started in 1996 by 34 universities that were not getting what they needed from the public Internet. It's a 501-C3 nonprofit. The core mission is advancing networking to create tomorrow's Internet. It supports the research needs of its members. It is also about partnerships between academia, industry, government and international. The Internet2 network has corporate partners in deploying the network. It was deployed to get the performance needed, so it is a very high performing network. Today it runs primarily over fiber owned by Level 3. The first initial backbone speed was 2.4Gbps and now it is 10Gbps. It is a point to point data network. It continues to grow. Bandwidth can be rapidly provisioned. By 2011 or less, it is expected to be at 40Gbps. Northern Lights GigaPoP is the access point for entering Internet2 in Minnesota. Internet2 has agreements with regional networks to interconnect.

Who is connected to Internet2 today? Over 212 university members (at least one in each state and Alaska), corporate members, affiliate members that join at a lesser rate. In 2002, Internet2 established a category called sponsored networks, so the K-12 and community colleges can join, right now there are 46,000. Each MNSCU campus is connected. In Minnesota, 70 percent of the school districts are connected. We are working on getting the science museum connected. Have to be able to connect to Northern Lights and be able to separate traffic out.

It is a high capacity network. Thousands of interconnected participants. It avoids the congestion of the public Internet which is important when connecting scientific instruments, collaboration (viewing a surgery, joint testing), high quality audio and video (music instruction). The real emphasis is multi-site, interacting.

The website is www.internet2.edu

Question from Rick King as to what the task force should keep in mind from Myron's perspective since he has seen both sides. Myron Lowe responded that as we are looking to increase broadband speeds, what goes along with that to maximize return and use.

What's being done is the science community can translate to services. Services in the home, like health care, what's being done on internet2 that can inspire or be learned from.

Internet2's success is that it has an end to end view of what can be done.

As we look at increasing the speeds what might go along with that. Also, observe what's happening with these virtual communities that form around these advanced networks: leadership, coordination, commitment, participation. We need someone to step up and indicate that this is a priority. Bring together working groups to understand what we need in addition to faster bandwidth.

Dan McElroy asked whether the work being done on Internet2 is likely to develop applications for the commodity network. Will it always take internet2 to do surgery?

Myron Lowe responded that he has seen Internet2 get faster and faster since 1998 as has the public network gotten faster and faster, but not at the same rate as Internet2. Internet2 is more focused. Concerned about MN in comparison with other states and what is possible.

Unapproved Meeting Minutes Friday, October 24, 2008



Dick Sjoberg asked if Myron could see the day when the general population will be able to access Internet2. Myron Lowe responded that by design Internet2 is a private network and maintains a greater level of headroom. The more that it would be opened to others, the more it would be challenged. Plus university members paid a lot to be members of Internet2.

John Gibbs asked for Myron's hunches on how advanced levels of bandwidth will be used. Myron Lowe is thinking the UofMN is looking for ways to leverage K-12 as a part of this. Looked for focal points and applied to specific areas. If we had more bandwidth, there would be more innovation on more levels because we've seen it today with Internet2. Hospitals networks are looking how they can interconnect among themselves. Locally regionally and internationally. Emergence of virtual communities – healthcare is one of the fastest growing – it will have strong implication to what home users can have.

Task Force action items and plans for upcoming meetings

- November agenda: Leaving the meeting on Nov. 14th.
Think that we may have a special forum with Vint Cerf the following week – likely to be Wednesday or Thursday and we will notify people as soon as possible.
This would be an extra session and there would not be any other business.
 - Rick King indicated that the Task Force has been asked to provide members for a panel for the Blandin Broadband Conference on December 4th.
Bill Coleman is here and asked if we would like to have representation on the panel. Three or four people could volunteer and would have just under an hour for input and then another 45 minutes for questions. The conference will be on Dec. 4th at 9:00 a.m. at ADC headquarters in Eden Prairie.
Task force members expressing interest in participating on the panel included Brent Christensen, Dan McElroy, Rick King, and Kim Ross. Mary Ellen Wells can't go herself but will suggest someone from the healthcare community.
 - Video conferencing for future meetings.
Rick King asked members to forward to Steve Cawley and Rick King a couple locations that would be your choice if we had a video conference set up. That was to be taken as an assignment.
- JoAnne Johnson mentioned that it didn't necessarily have to be a college; they had done something at the hospital in Fergus Falls. Peg Werner has a list of locations that aren't colleges, which would be holding classes on a Friday and may be hard to book. JoAnne Johnson indicated we should try to get members of the public to the videoconferencing sites too.

- Review task force calendar template

Schedule

Rick King indicated that the template group did meet. He suggested we do the template and style guide discussion at the November meeting. Then we would actually be able to look at starting to draft some chapters. This might take two-thirds of the next meeting to discuss and decide what our deliverable would look like.

Unapproved Meeting Minutes Friday, October 24, 2008



Peg Werner indicated that she had heard that the Bill and Melinda Gates Foundation is doing a broadband initiative and are scheduled to be in Minnesota in the spring. She will get more information and we will include as a tentative agenda item for a spring meeting.

Help on who can do the "Where we've been" segment. Dick Sjoberg recommended Jack Geller. JoAnne Johnson suggested Bruce Brorson who has a lot of background. JoAnne Johnson liked the idea of having two people speak and that the shared speaker format today worked well. She noted that both Jack Geller and Bruce Brorson are on the Crookston campus and could collaborate. JoAnne agreed to contact them and ensure that Jack could cover the metro piece. We'll plan on this for the November 14 meeting.

There was discussion of getting speakers here to cover what we've done in Minnesota in K12 and healthcare and what the future needs are. Maybe to give some more lead time we should ask people now. Mary Ellen Wells would be happy to coordinate and help bring someone in from Healthcare for the January or February meeting.

Tom Garrison asked Tim Lovaasen if there was someone from the CWA that could speak to the information that they had compiled and had been distributed to the task force. For example, the principle researcher. They could also join by telephone if that was more convenient.

It was suggested that it might make sense to set out January, February and March dates and find people on healthcare, K12, CWA and find out availability and pre-meeting reading material. Peg Werner volunteered to take education. The broadband maps from Connected Nation should be ready for the February meeting and was included as a topic.

- December and January agenda topics and speakers
Tom Garrison asked if the task force felt there is anything interim that needs to be sent back to the legislature this year. If so, we need time to discuss. It was agreed not to report on an interim basis.

Rick King indicated that updates/status is being sent to legislators that have expressed interest.

Dan McElroy indicated that he has some information that is being worked on from his department showing economic development factors related to broadband penetration that should be ready in February or March and is work that we can incorporate into the report.

Tim Lovaasen made the comment that he thought all the information presented today was excellent but he thought it might be a good idea to be able to take some time as a group to kick around what we've heard and get task force members' perspectives. Peg Werner agreed that it would be a good idea to go around the table and make sure that everyone's point of view is heard. Rick King indicated that we could leave some time unstructured for the next meeting for discussion time.

Rick King asked if there was anything big still missing. Tom Garrison asked if the global piece was covered and also indicated that we have not yet reacted to the state reports

The broadband providers asked to have time to present what they are doing in the state. The providers could present what they are doing or plan to do and how that compares to other states and internationally. Providers can work out their presentations. It was determined it is not necessary to pair this up with the broadband mapping information presentation. The subgroup coordinating this will be John Gibbs, JoAnne Johnson, Brent Christensen and Andy Schriener/John Stanoch. JoAnne Johnson mentioned that the MTA has compiled some historical

Unapproved Meeting Minutes Friday, October 24, 2008



information and she will check on the availability of any summary information that could be shared with the task force. The provider presentations will make sure to cover a comparison to other states and the world. That will be for the December meeting.

To summarize, for the November meeting, JoAnne Johnson will coordinate to get Bruce Brorson and Jack Geller to present plus the task force will discuss the style guide/report template/chapter outline. For the December meeting, the broadband providers will present, including where they are now, where they are going, speed and services. There will be a comparison to other states and the world. Shirley Walz and Craig Taylor will work to categorize the information that has been gathered on what various states and countries are doing. Some time will also be spent at the December meeting on the style guide and assigning report sections to write. For the January, February and March meetings, we will plan on presentations by Healthcare (coordinated by Mary Ellen Wells), K-12 (coordinated by Peg Werner), and CWA (coordinated by Tim Lovaasen) plus the Connected Nation broadband mapping project (February) and economic development factors related to broadband as compiled by the Department of Employment and Economic Development (February or March). And, when there are presentations at future meetings, we will attempt to build time into the schedule for discussion/reaction by task force members.

Mary Ellen Wells also indicated she would like to see a discussion of what infrastructure is required and the cost.

Dick Sjoberg suggested having users come in and tell us what they use and need, big business, small business, residential. Some of this may come out at the Blandin conference.

The question was asked whether the legal and regulatory overview was complete or whether we needed more information. JoAnne Johnson indicated that there is a historical piece on the AT&T website that can be put out for task force members to read.

Any other topics? Robyn West asked whether it has been discussed how many government entities have gotten involved in broadband, WIFI for example, and how they have fared, being aware of things that worked and did not work. How have other state government initiatives played out? Lessons Learned.

Meeting adjourned at 3:01 p.m.