



Public Notice
Technical Committee Agenda
Public Notice for the Policy Committee

Regular Meeting
August 14, 2012 – 3:30 PM - City of Champaign Council Chambers

1. Call to Order
2. Roll Call
3. Approval of Agenda
4. Approval of the 7/18 Joint Minutes and 7/24 Regular Meeting Minutes
5. Policy Committee Updates
6. Action & Discussion Items:
 - a. Construction Update
 - b. Subcommittee Reports and Actions
 - i. Marketing and Outreach
 - ii. FTTP Status Update (Mike Smeltzer/Teri Legner)
7. Discussion items:
 - a. Build-out Issues
 - b. David Young – Gigabit Burst Issue document
8. Tasks or Items for the next meeting:
9. Next Meetings:
 - August 28, 2012 City of Champaign Council Chambers, 3:30 PM
 - September 11, 2012 City of Champaign Council Chambers, 3:30 PM
10. Audience Participation – 5 minute limit per person
11. Committee Member Comments and Announcement
12. Adjourn



UC2B Policy Board & Technical Committee Meeting Minutes

Special Joint Meeting

Wednesday, July 18, 2012

12 p.m. - 1:30 p.m.

Council Chambers, 102 N. Neil Street, Champaign, Illinois

Members Present: Brandon Bowersox, Zernial Bogan, Fred Halenar, Pete Resnick, Matt Roeschley-for Fred Stavins, Minor Jackson, John Gant for Abdul Alkalimat, Bill DeJarnette, Tony Vandeventer, Mark Toalson, David Young, Bill Gray, Ross Veach, Jeff Hamilton, John Kersh

Members Absent: Tracy Smith, Abdul Alkalimat, Deb Feinen, Michael DeLorenzo, Fred Stavins

Others Present: Teri Legner, Mike Smeltzer for Mike DeLorenzo, Brandon Gant – Village of Savoy, John Gant, LaEisha Meaderds, Michael O’Linc-Pavlov Media, Laurel Prussing-Urbana Mayor, Mike Monson-Chief of Staff Urbana, Jon Rector-Pavlov Media, John Crutcher-Pavlov Media, David Glynn-Pavlov Media, Peter Folk-Volo, Joanne Hovis and Dr. Andrew Afflerbach via speaker phone

- I. Call to Order – the meeting was called to order 12 p.m. by Brandon Bowersox.
- II. Roll Call – Verbal roll call was taken.
- III. Approve Agenda: DeJarnette moved and Halenar seconded the motion to approve the agenda as written. The motion passed by voice vote.
- IV. Approval of Minutes from the June 27, 2012 Policy Board meeting: Halenar motioned and Vandeventer seconded the motion to approve the minutes as written. The motion was passed by voice vote.
- V. Correspondence - *none*



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VI. *Action/Discussion Items: (In this section, items will be presented to the Board and opened for technical questions. Then we will go to the audience for comments- audience comments are limited to five minutes per person-then we will return to the Board for general discussion and questions.)

- a) Webinar Presentation RE: Open Access Networks (12:05): Teri Legner introduced Dr. Andrew Afflerbach, CTC's Director of Engineering who joined the group on speakerphone and reviewed the PowerPoint presentation attached below.

Questions & Answers regarding the PowerPoint Presentation:

Q: Pete Resnick asked for confirmation regarding what layers were showing in the first slide picture.

A: Andrew confirmed it was all Layer 2.

Q: Mike Smeltzer asked if we were to take all of those IP services on the left and plug them into Ethernet Port 1 and piggyback them on the main internet provider that would be a description of a Layer 3 type service correct.

A: Andrew confirmed that was correct.

Mike Smeltzer said by piggybacking services on one internet service that's referred to as Layer 3 by each of those providers having their own VLAN, their own private connection that comes out of the port on the ONT, that's a Layer 2.

Brandon Bowersox stated that just to follow along, if a private provider like Pavlov came along and said we want to provide TV service, but we want to provide it with a totally different protocol over the strand of fiber and with our own electronics on both ends and speaking a whole different language that would be Layer 1.

Andrew confirmed that would be Layer 1, although in this specific case, this is done at Layer 2 because it's provisioned through the ONT device; television could happen a lot of different ways. It's a different animal. More details will come in the later slides.

Q: Zernial Bogan asked what would be a good reason we would not want a wholesaler to provide services.



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A: Andrew said technically there's a little more complexity which he will get into because you have to manage provisioning; so you have to have it set up so when you have a new customer somebody takes the call, somebody sets it up, and it all gets configured properly and it gets billed properly – so that's one complexity. Another is not a technical complexity, but it's then a question of the business case. Those are challenges and surmountable depends on the specific environment.

Q: Brandon Bowersox said the other huge public policy reason to me that I think we've all been excited about Open Access for the 2-3 years UC2B's been going is simply that our goal is to provide all our residents with the most choices, the most competition, so that a bunch of private providers can all compete to give our residents the best & the cheapest internet service and we can do that with only building one network and having to dig up our streets once. Is that or does that ring true?

A: Andrew said I think that's something we see; you do want to make sure that the entity that is building and tearing up the streets and doing these sorts of things, if it's not their realm to have a competitive framework or they can't create it themselves, then Open Access is a great way to do that.

Q: Bill DeJarnette had a question on the design, looking at the electronics provider by the retailer service provider, but if I have multiple providers, who provides that electronics on the home side.

A: Andrew said that's the interesting thing about Layer 1, is that you build this fiber at the beginning and you have to decide how much fiber you're going to put in the backbone and in the neighborhoods and how much goes to the home, you could make that call at the time of installation, but of course you only have as much fiber to plug into it as is there; what it really comes down to is you've got in any installation planned out in advanced you typically only have one or two fibers coming in, so that's the difficulty then, that's very easy if the customer only has one or two providers they want to use at the same time, but at that point you're out of fiber and that's one of the limitations of the Layer 1 model; that if you're pure Layer 1, then the provider shows up with the electronics and plugs it in but if you only have one or two fibers, you cannot simultaneously have one, two, three & four.



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Q: Pete Resnick asked with regard to Active Ethernet which is what most of our current network is, in the first example you show there was RF Video port on some of those ONTs, we don't have those on our ONTs currently, but those are available for Active Ethernet? So that is providers want to do RF Video they could do it over our Active Ethernet network, or is that PON only?

A: Andrew answered yes, they are available. There is nothing about Active Ethernet that keeps you from doing it. There are suppliers to build that. The one thing about RF Overlay though, just an example in the New Zealand case, that was something that was something heavily desired in the beginning because people were used to that, it was a technology that would plug directly into the TVs that they had, but with digital migration of video and with just the progression of the video providers to IP, it's become less and less of something provided in new networks and you're going to find a lot of the vendors are just beginning to sunset a lot of those items in the PON and Active Ethernet.

Q: Pete Resnick said that regulatory framework sounds like an important prerequisite, you mention it with regards to New Zealand that they have separation between the wire providers and retailers by regulation; are there any places currently running that have open access that don't have that separation or don't have that kind of regulatory framework?

A: Andrew said it depends on how formal and how really enforced you mean by regulatory framework, in New Zealand everybody's in this and they feel like they've harnessed all their horses to this and there is commitment to the regulatory framework because they don't have a lot of physical based competition and everybody has just sat down and decided this is the way it needs to work. In Singapore, it's the rule of law. In the European countries, you have British Telecom which like in New Zealand has been broken up between the retail and the physical entity but there's a lot of concern that those two pieces might pull themselves back together like what happens with AT&T & Verizon; in some of these environments there is a whole spectrum of regulatory responses and enforcement on this.

Joanne Hovis added that the separation is not as vigorous or rigorous in Europe as it is in Asia. The European models are more regional and municipal not national and there might be less leverage, and example in Amsterdam the city was a partial owner of the infrastructure not an operator, they hired an operator to operate the network for them and allowed that operator to also compete as service provider so long as it did not discriminate and enabled other service providers to participate as well. They just found it would be much more challenging to find companies that



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would take on limited roles rather than full range of roles; the range of models really does run the gamete.

b) Gigabit Squared Application (1:00)

Brandon Bowersox transitioned the floor to Joanne Hovis to discuss the information provided in the packet:

Joanne Hovis discussed whether it makes sense & how it might make sense to look for private sector investments for the next stage of building out UC2B; how can the core values that have been so apparent as part of the UC2B effort from the very beginning when the project was first conceived and how can those core values be protected if there is a potential shift in ownership model and what might be a way of evaluating whether those core values could be protected. Joanne Hovis referred to the Amsterdam example model.

The bottom line, as she sees it, after having watched the UC2B process the last 4-5 years is that certain things are not negotiable; it has to be fiber and it has to be good bandwidth. You are not looking for a private sector partner who wants to come up with a new wireless option to compete with mobile. That's sort of a given, and you're not looking for a private sector partner who would do what Verizon has essentially done which is build fiber to the homes and offer cable modems. That would be non-negotiable number one. Then non-negotiable number two is open access, given your values and the third one would be build-out to everyone without cherry picking. With certain requirements built around those three values, it seems to me, the Cities could accomplish an enormous amount of what UC2B was about while allowing the private sector to take on quite a bit of risk; rather than requiring all public risk.

Teri Legner stated that there will be no action on this item today. Staff would like to share on Monday and Tuesday with each Council on what Gigabit Squared offers, get some direction about making an application or not and then figuring out what we need to do to adapt our application based on that input then on Wednesday share feedback at the Policy Board meeting and getting some endorsement from this body. The application has to be submitted on July 31st if we are going to do that, due by 5 p.m. Eastern time.



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Technical Questions & Answers regarding Gigabit Squared:

Q: Mike Smeltzer asked would it be fair to say that you took our original list, extracted what you thought were the core non-negotiable items, and then rewrote it in such a way that it's as attractive as it possibly could be to Gigabit Squared.

A: Joanne Hovis stated that's right, forgive me for not saying that, part of what I was doing was trying to figure out what is the best way to attract private capitalist given that is of interest, it's just with some risk to the private sector. What would it take, unfortunately there's not an enormous amount of private sector capitol out there competing to build open access fiber to the home in American communities. What I was trying to do was work with your list to make sure the core values were captured and the core functional requirements were captured at the same time, and not including anything that did not advance those values, but might make the investment opportunity less interesting to Gigabit Squared.

Q: Mike Smeltzer asked if there was anything specific in there to Gigabit Squared.

A: Joanne Hovis said she has know the Principal of Gigabit Squared for many years, to some degree there was mild customization, and he has gone on record saying he is very comfortable with open access so I knew that wasn't going to be a concern although the details of what it would look like are yet to be determined; had there been some opportunity if Verizon or AT&T were approaching you about investing in Champaign & Urbana my guidance would be very different. I wouldn't spend the time analyzing open access because I know there would be absolutely no chance that that would be on the table. I think that's what is unique about Gigabit Squared at the moment. There aren't a lot of companies working with fiber to the home and an open access model.

Q: Pete Resnick referred to her example of Amsterdam, there were a couple other folks modeling themselves in the U.S. after that Amsterdam model; so how was the ownership vs. open access split up, some had ownership but it was owned by a private entity and then, in the case of the other folks modeling after Amsterdam, are there different private companies; how are those folks getting that private investment but asking for open access.

A: Joanne Hovis explained details about the Amsterdam model. The city put in 10% of the funding for fiber to the home, owning the fiber layer only not the electronics and its partners in that were a very big Dutch bank and the housing coops that own 80% of the residential real estate; so together they put up with



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100% of the funding; with the city holding a small piece, the city's feeling was that it did not care how much it had to own, it wanted to minimize its risk as long as it's policy objectives were met. They secured contracts that the entire city would be served over some period of time. To operate the network at Layer 2 they went through an RFP process and found Telecom to operate the network and they provided services so long as they did so in a non-discriminatory base and included other companies; and that model has been relatively successful.

Q: John Gant said your comments focus on the supply side for fiber, in Urbana-Champaign there's a large number of activities around on the demand side to help build capacity around digital literacy, capacity within organizations to use computers and the new high speed networks, is that also an issue that should be emphasized as a core value here with your list or does that fit in the ancillary category you talk about here.

A: Joanne Hovis said she does not think its ancillary, it's actually really fundamental to what you're trying to accomplish there. It's not clear to me that it necessarily fits into the bottom line requirements that you would have from Gigabit Squared. The way it fits it in specifically to that list is that one of the items on the list, they would pay some kind of a fee, probably revenue based % of revenue toward your digital literacy fund so they're contributing to it. Most carriers will have certain involvement in digital literacy; Gigabit Squared is pretty ambitious and creative and they may be interested in that sort of thing. Unfortunately the big incumbent carriers are mostly not interested.

Brandon also stated in your document there is an annual fee to the cities and the village based on a percentage of revenue and there is on top of that a percentage that goes into the community benefit fund as well.

Joanne Hovis went into further explanation.

Q: Fred Halenar said I would think that the overall goal would be to get fiber to the premises; everything I've read about Gigabit Squared including the report seems to go to the curb; I imagine what we're trying to do is get community commitment in that process, but I don't see how all that flows together; if that's the case, it almost creates a sandwich effect with UC2B owning the fiber from the curb to the home and owning the rings and the core infrastructure, while Gigabit Squared is in the middle. How is that process going to work?



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A: Joanne Hovis said the way this usually works in this industry and put in all of the facilities with all of the capabilities necessary to connect to the homes, but they tend not to connect to the home until there is an order of service, otherwise the capitol costs relative to revenues are driven up extraordinarily high and it's a real risk and liability and our goal is not to make UC2B profitable; that's not what we're about; but if we are interested in attracting UC2B to make sure their model is viable; my understanding of the way you are attracting local community capitol it's pretty clear upfront who wants service so they will have the connection made all the way to the home, the drop will be made. But anybody who hasn't ordered service, the facilities are all there and it's just the final drop that has to be put in. I can't speak to the technical detail.

Andrew stated fiber to the ROW and fiber to the premises; it was my understanding that there wasn't necessarily a cut off as far as Gig Squared was concerned between what was going to be built in the ROW and what was going to be built to the premises. I thought that in a lot of cases, Gig Squared would convey to the premises but we can check into that.

Pete Resnick said our understanding was that Gigabit Squared was going to own not only to the curb but whatever they installed to go to the individual customers.

Brandon Bowersox agreed. This would never become a sandwich, it will always that UC2B & the public entities would own the backbone, on top of that in the expanded residential areas the private partner would own the fiber to the curb and we'd require them to build that to past all the curbs of all our homes in all our communities, and on top of that, they would build the drop cable into the homes where businesses for those who do subscribe and so we would always own the backbone and they would always own the fiber to the curb and the drop cables, they would continue to add drop cables and hook up new subscribers, the more that our residents want to subscribe.

Q: Minor Jackson asked what would be the competitive advantage and financial incentive for private sector companies to invest in Gigabit Squared.

A: Joanne Hovis said that they've raised \$200 million but I believe that's financing that they're working with a couple other banks. I don't know that they've had investments from any other companies.

Minor Jackson clarified the question, asking what would be the competitive advantage say for a vendor like Pavlov to invest.

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Joanne Hovis said I don't know that there's an investment opportunity for local entrepreneurs but the as I said earlier, I would make it a non-negotiable condition of your bid to Gigabit Squared, if you do bid, that they would make the opportunity to lease capacity or facilities from Gigabit Squared; they would have the opportunity to compete over this very capable next generation network.

Q: Bill DeJarnette said we talked about the RFP through Amsterdam and the New Zealand project, but we're not looking at an RFP process here; and you mentioned earlier about the lack of general funds available for build out; it seems to be contrary to how we normally do business from a non-RFP perspective and the fact, that Amsterdam & New Zealand were very successful using the RFP process.

A: Joanne Hovis replied they were, but as with most RFP processes run by government, they were putting up the money, they were putting out an RFP for vendors and providers to take advantage of government funding or financing in the case of New Zealand. Yours is a somewhat different model, you're looking presumably for a private sector partner, and you could put out your own RFP and ask Gigabit Squared and other providers to bid on it. One of your competitors for this money is actually a Consortium at the University are planning to do exactly that; they're going to put out their own RFP rather than bid on the Gigabit Squared opportunity but unless they are putting up a whole lot of cash, my understanding of this industry, my guess is they will not get any bids, but what they're likely to get are documents from vendors saying we'd be happy to sell you our stuff and documents from incumbent providers saying we've already got a good network, what are you looking for, you can buy services from us. This is a fundamental problem; you just don't have a lot of competitive providers out there who are investing in fiber to the home in our communities so there may or may not be any competition for the opportunity and that's the risk of putting out your own RFP rather than competing through this reverse process for private investments.

Q: Bill DeJarnette said I would assume that means most organizations are not looking at this as a viable project to invest in besides Gigabit so if they're not successful, they build it out, and they're not successful & in year two, three, four and some version of a fire sale or bankruptcy happens, I know we see this Right of First Refusal but I don't see how we can take advantage of that given that usually that's established by a market price and then they come to us and



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say cities can your raise X number of dollars. I don't know how we can tangibly take advantage of that.

A: Joanne Hovis said that is a very real concern. If it is a fire sale and you have the opportunity to buy it at a fire sale for municipal ownership, then you have the Right of First Refusal. This is an area where your Council should be consulted to create the exact language for the bid or whatever is negotiated with Gigabit Squared, but assuming that Illinois allows it and you have that opportunity, even in the bankruptcy court you would presumably have a Right of First Refusal at those fire sale prices; I don't know that's a function of local law. I have seen that play out to the benefit of local governments in the past; it's a State and local law matter. But in North Carolina about eight years ago with Adelta went bankrupt, they had a Right of Refusal on that network and they pursued it because what they did not want to happen was for Time Warner, the dominant provider throughout most of the state, to buy up that network and make it a monopoly. They pursued it through the bankruptcy process and Time Warner contested it and they bought the network. It's going to be important to have legal advice on how this would work. Even in worst case scenario, she suggests that we'd be better off than if they never come to Champaign and Urbana. Because if they build fiber to the home to all of your homes and business and then they go bankrupt and somebody else buys that network, you still have fiber to the home in Champaign and Urbana and they are very few places in the United States that can say that.

Q: Bill DeJarnette said in that scenario, open access and all my other goals that are important to me are going to process and flow through that court system to the new buyer and on the back side, at that point in time, I have another Comcast in town.

A: Mike Smeltzer said that we still own the backbone, we still control the backbone, if there's a fire sale and somebody we don't like buys it, we don't necessarily have to make our strands available to that buyer and they have a whole lot of neighborhoods sitting out there stranded.

Q: Pete Resnick said you mentioned Time Warner's challenge in North Carolina and you mentioned legal risks in the report; have there been any successful legal challenges in the U.S. that you know of.

A: Joanne Hovis said she does not know of any other places where local government has exercised a Right of First Refusal, so that's the only one I can point to. This is the dominant model. One thing that makes Gigabit Squared a little more attractive, even though in detail it's not 100% of you want, but if



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you build municipally using local funds and its municipal ownership; you are likely to save, based on the other experience of other communities. Legal changes in the form of lawsuits and potential PR campaigns, lobbying both at the local industry level, this is the story of municipal broadband, right in Illinois there was an effort to build fiber to the home by the municipal electric utilities about 10 years ago, and AT&T engaged in an extremely aggressive PR campaign and stopped the project.

Q: Pete Resnick confirmed, stopped the project as in the cities decided not to do it after the campaign.

A: Joanne Hovis said in those cases, yes, there was a referendum forced at the local level. Because there will frequently will be changes to state law as part of the lobbying campaign when a municipality goes into this business that requires different kinds of referenda; in other cases there are changes to state law that just either create insurmountable barriers to city and county broadband.

Q: Pete Resnick asked if there have been any successful lawsuits.

A: Joanne Hovis stated there have been successful lawsuits in the sense of attrition, so after facing \$10 million worth of legal fees, communities just give up and get out of it. In terms of closing down these projects, it's really based on state law, I don't believe that there has been any successful lawsuits in terms of the content of it, because in most cases the city either give up when state laws change to their detriment or they give up over some period of time because of it becomes so costly to defend the lawsuit. There are lawsuits in the number of hundreds, I should disclose to you, I mean this is one of the great risks of municipal broadband and I am sad to even have to say this because it means these efforts by incumbents to stop competition from emerging has nearly been successful because they create this massive deterrent.

Q: Mike Smeltzer said he knows that Lafayette, Louisiana probably holds the record for the number of lawsuits in the length of time, but in every case Lafayette prevailed in terms of their court rulings, appellate court and supreme court; has an incumbent provider actually ever won something where the community stuck it out and took it all the way to a verdict.

A: Joanne Hovis said not that she knows of, I don't think so. There may be cases were some certain state law where a community has to get out of a certain business, for example in some states they're precluded from being in the telecom business so on the basis of a lawsuit they would have to get of



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providing phone service. I know of no big public loss in terms of a judgment actually entered against a community.

Q: Rev. Bogan referred back to control. He stated that he is a little confused especially with what Mike said about us still retaining the backbone, should Gigabit Squared actually be the controlling interest in the actual rings that we have set out. Any other business wanting to get laterals or strands would their IRUs then be controlled by us or by UC2B or controlled by Gigabit Squared.

A: Joanne Hovis stated regarding control over the open access provisions, that your fiber is your fiber and you would control it and be able to make it available to any entity you wanted; where if they build with their capitol they would own it and control it, subject to the contractual terms you negotiate between you and them. So if you negotiate that they provide open access at Layer 1 and Layer 2 under certain circumstances then with certain 'broad' pricing considerations, not detailed pricing because I think it would tough be in a business that's setting their prices; but just to make sure they're not setting grossly unfair prices. You're control would come through the contractual relationship and the consideration you bring to the deal, but you would not control their infrastructure.

Q: Rev. Bogan said no, what I'm asking is if the private entities want to buy laterals or strands, with the control of that particular entities laterals or strands to regulations would it still come from UC2B or would it be coming from the control of what Gigabit Squared has.

A: Joanne Hovis said if it's their infrastructure, then I assume they would be controlling it, but you would have a say in the terms under which they would have to do it.

Q: Ross Veach clarified the question; I believe he is talking about our infrastructure.

A: Joanne Hovis said that is entirely within your control; and under your BTOP obligations I don't think you have the opportunity to even if you wanted to; if somebody else wants to come in and build a network like theirs you would be presumably be willing to deal with them; but I don't think that's likely to emerge.

Ross Veach stated I think it's all a matter of the legal contract and the IRUs or how we go about letting a Gigabit Squared use our infrastructure; it's all contractual, and if we're foolish enough to write contracts to let them own it, well we blew it.



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c) NTIA & Grant Report (1:30) - *deferred*

VII. Items for future meeting agendas

- a) Field Orders – Interim, J.U.L.I.E. Locating Services and Fiber Restoration (Vandeventer, Shonkwiler)
- b) UC2B Core Values Discussion
- c) Policy Statement Regarding Use of Public Resources by Private Entities Furthering an Articulated Public Purpose
- d) Resolution 2012-20 A Resolution Establishing Wholesale Transport Services and Rates and Core Connection Charges

VIII. Public Participation

David Glynn, 2014 Keratin representing Pavlov, in the memorandum recommending interaction with Gigabit Squared as provided by CTC, Item 1 #C says Gigabit Squared will manage and support the existing UC2B fiber infrastructure and customers.

Brandon Bowersox asked David Glynn what he suggests about that phrase.

David Glynn asked if that means the operation of the rings of UC2B would be managed by Gigabit Squared's technical personnel staff, will that be an outsourced benefit that would be received by UC2B by having Gigabit Squared operate it, is it their staff that would be the functioning technical operations group for UC2B fiber rings.

Brandon Bowersox asked David Glynn from your interest which way would, which better serves the community, the core values, or Pavlov.

David Glynn said if somebody goes ahead and contracts this, Gigabit Squared is applying to go ahead and get a franchise for the fiber to the premise in exchange for collecting debt financing to go ahead and build to the curb, with the opportunity to connect to the premises, they seek some return; I'm curious about this part that says they will manage the UC2B rings because that strikes me as then they becomes the operational body for the whole of it. I thought it was just their overlay that was their portion and UC2B directed them, if they're being contracted to go ahead and do this as another portion of their investment, should there be an opportunity for other people to bid for the services if



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they're being contracted out by UC2B. As a matter of fact, on a fair amount of this stuff you have a single investor who has proposed to go ahead and raise debt financing and come in to go ahead and give you an opportunity if you hurry and buy today, they will go ahead and put money in. The idea that you don't have more money elsewhere available may or may not be true, but you don't know, you haven't had the opportunity to check or given anybody else an opportunity to possibly raise money or bring it forward, and lastly your business plan, everybody in this, that's given you the numbers you've worked with seems to have an existing relationship with Mark Ansboury, he was brought in as a consultant on the business plan, he knew how it worked before you did, and CTC said that they've had an existing relationship, and Gigabit Squared is Mark Ansboury's project. You don't have an independent source of information here. That's what I'm saying. And I see things that say have them run the infrastructure, and you can't get money; and he's love to put money in. At least check to see if there's other money available from other potential investors.

Peter Folk, 1407 S. Maple St., Champaign, Il, owner of Volo Broadband and Chairman of the Broadband Access Subcommittee of the Cable Commission, Cable Commissioner for the City of Urbana, said I am hearing in what David Glynn said something along the lines of what I was going to bring up, which is basically that Gigabit Squared is proposing to get a franchise to build out service in Champaign and Urbana. So what you need to do to analyze this situation offer or RFP response, or whether you should do it or should not do it, what you need to look at is the difference between Gigabit Squared simply coming in with a franchise to build out service to homes based on the UC2B backbone and Gigabit Squared and whatever it is that you're offering as part of your RFP response. If you break those down, there's really not that much that is different between those two situations, I haven't spent a huge amount of time doing it, but what I see is the revenue for wholesale access to the fibers, you're giving up that as an entity as UC2B because you're proposing to allow Gigabit at least as far as I read what has been discussed so far, you're proposing to allow Gigabit Squared to use fibers to build out the network without paying the dark fiber or IRU fees that were established last meeting. So that's one thing that you're giving up over Gigabit Squared simply coming in with a franchise in which would be the same, they'd be providing funding and that kind of thing. Another thing you're giving up is the local determination of the wholesale and grant funded area pricing. So right now you guys are God in deciding how to price all this stuff. If Gigabit Squared comes in and is given that control over all of that, then you'll no longer have the ability to control that pricing, whether that's valuable to you or not, I don't know, but to me as an independent service provider, it is much more valuable for a public entity or an entity whose control goes ultimately back to the public, it is much more valuable for that entity to be determining my wholesale pricing than for a private company who is my competitor to be

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determining that pricing. So you had a presentation about wholesale access and what that mean, not wholesale, I mean open access and what that means. And the big difference between open access and wholesale access is that in open access, retail providers are not competing with the wholesale provider or there is some clear separation between the finances of the wholesale provision and the retail provision that is my number one concern about the plan on the table with Gigabit Squared. That you are not, I have not seen a clear forced separation between those two financial, between the books of the wholesale and the retail operation. The problem is if the wholesale revenues are subsidizing the retail service, and then there is no way to have a fair retail competitive market. The other thing that is very concerning to me about the way this is going down, is that because it's a timeline and you have to respond quickly, you're not doing the kinds of RFP's that you would do in a normal situation like this. For example, the operation of the network itself, you're not going through the decision process that Fred Halenar laid out years ago, two years ago I think, of is it going to be contracted out, is the City going to hire staff, how is that going to go, and at each stage of that game doing a public RFP for that thing. I know that the shining star of the open access presentation Singapore did just that, and RFP, now yes, in that situation you are proposing to put up the money, but it's not the Cities necessarily that have put up the money to operate the network, it's the revenues of the network that have to put up the money to operate the network. So having it be done by one company as a monolithic entity versus you bidding it out independently is not necessarily a big difference. So I don't think I have time to go into detail on much more but my recommendation to you would be to focus on the difference between doing this as an RFP response and doing it in the way that it would normally flow if someone came into town with the goal of establishing a franchise, and in that situation normally the City would be on one side of the table and the provider would be on the other side of the table and they would negotiate and it would be an adversarial situation there; they've convinced you to turn it instead of it being an adversarial situation into one where you're both on the same side of the table; that's great, I'm all for win win situations, but you've got to make sure that what you're giving up by doing it that way is not important to you; I would suggest that there are people in the room who are already investing in your community and would bring money, for example we just responded to a state grant application where we're providing about a million dollars to do similar things in other communities in this area. So there is money, and there are other private people who are putting up money to do this kind of thing. I'm not suggesting that you should not respond to the RFP, I think you should, if anyone comes to you with a great business deal you should respond, but you need to make sure that you're not by responding subverting the dozens or maybe hundreds of years that have been built up figuring out how to do franchises and that kind of thing in the public interest. You're not giving away the keys to the car. That's my public comment.



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John Rector, Pavlov Media, stated where I still get confused is Gigabit Squared is so unique because, and I'm not sure what that is, what sets them apart from everybody else. I'm also curious, how big is Gigabit Squared, I know part of the history with Mark Ansboury, but can somebody tell me how many employees there are with Gigabit Squared.

Brandon Bowersox stated that it's not really our time to answer questions, but we want to hear from the public.

John Rector, Pavlov Media stated that he thinks that is a fair question and I'm looking for the answer so if somebody could answer that.

IX. Board Member Comments

Mike Smeltzer said he believe Joanne did a good job of capturing what we had expressed prior, she used it in different words and perhaps put it in a different order but I don't see anything that's missing from what our previous discussions were, and I think that would be the document short of us revising it today that we would take to both City Councils next week.

Rev. Bogan applauded Joanne for what they have done, as a representative of the community we're looking at this document as though it's a done deal with Gigabit Squared and I don't see anything in here that is really showing that should this not go through, what is Plan B for the Councils to consider. I think that is very viable especially with the time constraints that we're given. So while looking at this, we need to ask ourselves that question, and make sure that Councils asking that same question, is this a done deal, then yes, this is a very good plan, but if it's not, what is the Plan B that goes with this.

Pete Resnick said I don't think that whatever we could write into this would give it sufficient strength of those open access policies to prevent bad things from happening. There are no models in the U.S. where this has successfully been done as far as I can tell, not even in the world without a whole lot of regulatory requirement that we simply do not have. I've gotten a great deal of feedback from Urbana City Councilmembers and the mayor that this is going in reverse of what UC2B's mission was, UC2B's mission was to build out to the community a community controlled network that other people could compete to provide services on, this is allowing that network now to be used by private entity in order to make profit for themselves. I do not see how we can build into any



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requirements document that would even be vaguely acceptable to an outside investor like Gigabit Squared who's expressed no interest in us having ownership and control of the network, the kind of thing that would be satisfactory. Even as described the Amsterdam network was set up by an investment of the municipality plus an investment of a local bank and a housing cooperative and then there was a clear sharp separation legally between the folks providing service and the folks providing the infrastructure, I don't think we can do that here. And so I think I would recommend against going forward with this particular thing, until we have an appropriate RFP and vetting process which this is clearly not.

Bill DeJarnette said he was looking at Joanne's memorandum and her memorandum indicates she addresses the two matters, but the next sentence talks about retain to assist with strategic planning for expansion of UC2B beyond the footprint covered by the federal grant, is there another document that she's done that is explored those other areas. If she's consulted for other expansions, or if this is the only component that she's actually looked at regarding that, and if so, I think I'd pull out that sentence. The question is (the sentence says she's retained to exist with strategic planning for expansion of UC2B beyond the footprint) .The question is, is this the only document we've seen addressing expansion.

Pete Resnick asked if her statement of work just to review the Gigabit Squared project.

Teri Legner answered yes. She is assisting us with our application and if you want to see the statement of work I can get that to you.

Bill DeJarnette said the memorandum indicates to assist with strategic planning but she's only addressing one issue and she has expertise in a number of issues of expansion and growth besides just taking advantage of what Gigabit Squared has to offer. So I didn't know if that was in her scope or not.

Teri Legner said if we decide we need her help to consider something different, let's say we're not successful in an application, presuming we make an application, then we can talk to her about doing that. But this engagement was specifically for this purpose.

Brandon Bowersox said the one thing that I feel that is most important to have kind of iron clad open access rules so that there's true competition and for us to be somewhat specific and say that for commercial businesses it go down to Layer 1 or Layer 2 and let open access provide all those different layers of options for providers. But this document is maybe the 10,000 foot view, it doesn't get into those specifics, so I wonder if you felt



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that those would end up in this document before submission or if those details about the open access, or even things like the separation of the books between the wholesale and retail so that their retail provider isn't preferentially treated, is it later in the actual contract should we be one of the six communities selected in the competition, is it at that point that we get specific about the open access regulations.

Joanne Hovis said that you could go either way. You could give them some specifics upfront if you wanted to given that they've already made very clear that they are open to open access, they just haven't defined in detail what that looks like, and I didn't put in any detail there because I knew that Andrew was doing the presentation today and that you'd be evaluating different forms of open access. If you do decide to go ahead with this, I would recommend putting in the bid, if you want to be very specific, be specific but put in that what gets you what you need from a policy standpoint and no more because again, it's trying to be sure the bid attracts the private investments. If it doesn't get the policy functional benefits then it's not accomplishing anything. I certainly think language could be crafted around that, it's just a strategy matter to go either way.

Brandon Bowersox said for me alone as a board member here, just speaking on my own behalf, it would help me to see some of that language. To me the most important thing here is the open access, but for our residents they end up with a competitive choice, so if you could suggest some language that would help us make sure all retail providers are treated equally and none preferentially or maybe getting into the specifics about the residents have Layer 2 and 3 access but commercial entities have Layers 1, 2 and 3 depending, if you could put some thought into that language that would help me as a board member think through what we should be specific about upfront because open access is I think the critical piece here for our residents.

Joanne Hovis said she would be happy to do that and work with Andrew on the technical expertise.

Fred Halenar said I think open access is certainly one of those very important issues and I think that there's another one here that I'm not sure that I know the answer to; and Peter kind of mentioned it that almost two years I created a document about issues for UC2B in terms of the Policy Board and we kind of we dealt with that issue in the IRU contracts group, and should UC2B own the network or not. Why we might say right now if Gigabit Squared comes in, we might own the rings and part of the infrastructure going to the premises, then we would not own the rest of that; I guess I'm just saying I don't know the final answer to that, or not, because that really tells me which we could be headed.



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Joanne Hovis said that generally on the ownership question I would say that asking for ownership of privately funded infrastructure is likely to just be a deal breaker. If that's the requirement, then bidding on the Gigabit Squared opportunity seems to me doesn't make a lot of sense, because if they're bringing the financing to the table and taking the risk they're going to expect the infrastructure and profit from it. I think you can require them to let people compete over it and to compete in a fair and reasonable way where a real market emerges; but I don't think they're going to be interested in taking the financial risk without owning the assets; from what they say though, their model is development model so they are happy to work with communities that would like to own it and they can bring financing to the table and like any developer they take a cut off the top of the financing for bringing it, I'm sure they'd be happy to help with that if you're model is ownership, it's not clear to me that that's more cost effective than the tools you already have at your disposal for public financing, of publicly owned infrastructure but I think what can't be separated here are the benefits of ownership and the risks, they're going to go together. The benefits of ownership are going to entail this whether it's private or public and vice versa.

Fred Halenar said I'm not sure whether it's this group or if the Councils and boards need to get together and make some decision. I am just not clear on which way we're going, because I was assuming all along as we did this for the last couple of years that UC2B would be the owner, and I'm not sure if we sold it for example, yes UC2B would still own the parts they put in based upon you're document, but you'd still need federal approval if everything went haywire to sell it to some third party.

Mike Smeltzer said for the next 20 years the federal government owns 78% of our network. We really don't have anything we can sell.

Joanne Hovis said we're not talking about selling your fiber to UC2B. We're talking about them using and operating it, presumably in the benefit of your community. And if they build something and they have financial trouble and have to sell their interest, they have no rights to sell yours, in no way, that's not a conceivable model.

David Young said it seems like open access is essential, but there is another part which is having a level playing field and I think that I see how we could have an open access network where there isn't a level playing field for competition and it seems that it's built into the terms of the competition; that is if I put my \$500 in, I can get that paid back to me but only as a credit on my Gigabit Squared retail services. So I can get \$850 a month basically for five years, if I switch to another internet provider, in the third year or something, I don't get that credit anymore, but it's still waiting more me. It seems like in

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order to be very competitive in those first five years our retail providers who are in competition with Gigabit Squared are going to have to somehow make up that \$850 and lower prices or greater service for the price. I don't know if that's deal breaker if we can get Gigabit Squared to knock that off, it seems really problematic that there's an \$850 price difference built in for the retail services. That's one of the things that I think contributes to a possibly unlevel playing field as I'm reading what's on the table.

Rev. Bogan stated the Marketing Committee started their meetings yesterday, to which they'll develop a process like they did the groundbreaking ceremony; to also have a 'Switch Connection' ceremony with Bethel and Salem Baptist Church, so we need heads of the Marketing Committees there; every Tuesday at 6 p.m. except for the Tuesday when there's a Council Meeting.

X. Adjournment – 2:25 p.m.



Sign-in Sheet

UC2B Technical Committee
 Time: 3:30 PM

Date: 7/24/2012
 Room: Council Chambers

VOTING MEMBERS	ORGANIZATION	Present
Mark Toalson (Vice Chair)	City of Champaign	✓
Tony Vandeventer	City of Champaign	
Tracy Smith	University of Illinois	
Bill DeJarnette (Chair)	City of Urbana	✓
Bill Gray	City of Urbana	
VOTING ALTERNATES		
David Young (for Bill Gray)	City of Urbana	✓
Ross Veach	City of Urbana	✓
Jeff Hamilton	City of Champaign	✓
NON-VOTING MEMBERS		
John Brighton	University of Illinois	
	University of Illinois	
TBA	City of Champaign	
Ross Veach	City of Urbana	
David Young	City of Urbana	
OTHER ATTENDEES:		
Mike Smeltzer	U of I	✓
Bob Miles	U of I	✓
Mike Vrem	Champaign Telephone Co.	✓
Teri Legner	Champaign	✓
Paul Duke	Shive Hattery	✓
John Crutcher	Pavlov Media	✓
Jon Rector	Pavlov Media	✓
Mike O'Linc	Pavlov Media	✓
David Glynn	Pavlov Media	✓
Peter Folk	Volo	✓
John Kersh	U of I	✓



UC2B Technical Committee Meeting Minutes

Regular Meeting

Tuesday, July 24, 2012

3:30-5 p.m.

Council Chambers, 102 N. Neil Street, Champaign, Illinois

Members Present: Bill DeJarnette (Chair), Mark Toalson (Vice-Chair), David Young, Ross Veach, Jeff Hamilton, John Kersh

Members Absent: Tracy Smith, Tony Vandeventer, Bill Gray

Others Present: Teri Legner, Mike Smeltzer, Bob Miles, Mike Vrem-CTC, Paul Duke-Shive Hattery, Michael O'Linc-Pavlov Media, Jon Rector-Pavlov Media, John Crutcher-Pavlov Media, David Glynn-Pavlov Media, Peter Folk-Volo

1. Call to Order – the meeting was called to order at 3:30 p.m. by Bill DeJarnette.
2. Roll Call – See roll call sheet.
3. Approve Agenda: Jeff Hamilton moved and Mark Toalson seconded the motion to approve the agenda as written. The motion passed by voice vote.
4. Approval of Minutes from the July 10, 2012 meeting: Jeff Hamilton motioned and David Young seconded the motion to approve the minutes as written. The motion was passed by voice vote.
5. Policy Committee Updates:
Teri Legner stated the last meeting was a Special Joint meeting between the Tech Committee and the Policy Board and the purpose of that meeting was to learn more about open access and what that means at all layers of the infrastructure. Andrew Afflerbach from CTC, who has been hired to help with our Gigabit Squared application, joined via a webinar and provided us with an education on what that is across the world. Then Joanne Hovis joined us on that call talking about the report included in the packet related to the Gigabit Squared opportunity for expansion and proposing core principles upon which to base our application for that competition. That same kind of information was shared with the Urbana Council Monday night. Joanne Hovis is here in town for the Champaign City Council meeting tonight, and the Policy Board meeting tomorrow to re-review the

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content of her proposals in terms of what we include in our application and then we'll make our application a week from today.

6. Action & Discussion Items:

a. Construction Update – Bob Miles stated that the Urbana Phase I work is virtually complete other than we have a few more fibers to pull in, a half of one ring and half of another ring that's got to be done; then they are to clean up now. We are in there now starting the Phase II work on the anchors, we've done some of the schools that we had to do, and they are continuing to work on that. We haven't started the indoor side of it yet, but that will start this week or the beginning of next; running the pipe – we just don't have the fiber to pull in it yet, but it will be here. Urbana's looking good, splicing is about half done. In Champaign they are pulling the last of some of the fibers and rings right now. We are running the pipe for Phase II work up to the buildings like the firehouses & that; we will start doing the penetrations into those buildings probably next week. They are going to start working the downtown area next, pulling through the existing ducts, and looking right now they are doing preliminary stuff, testing the ducts to see if they're good. Moving along well, we'll start Phase II a little better once we get more parts in, which should be happening here in another week & a half or so.

b. Subcommittee Reports and Actions:

- OSS/BSS RFP - Mike Smeltzer said we have an opportunity to get one thing off our plate and that's in the fiber management system, this was the procurement that we basically stalled on about a year ago. The company that Shive Hattery has had working on the fiber design 'NewCom' out of Des Moines uses an ArcGIS based software program called OSP Insight, it also turns out they are a reseller for that and we can acquire OSP Insight through them, through Shive as a part of what we're doing already for under \$10,000 and it's an extension to ArcGIS, you also need ArcMap, which we have, the current version runs on version 9.1 or 9.3 of ArcGIS which is not the version we're running on, we're running on a newer version so we'd have to set up an instance with the older version, they've promised they'd be on a newer version by fall. It also happens to be the software that Joanne Hovis's firm uses for all their fiber planning and work as well, so we know at least two professional companies that do this for a living and use this software. And I think it meets all of our other requirements that we had last spring. Now we haven't went through that



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whole list and worked against that yet but I've had John Kersh looking at it for the last 24 hours and he'll probably be the person ending up doing this in the short term and I'll let him express his own thoughts about it. But conceivably we could have a system in place in less than a week, and we're really at a critical point; this has been a backburner thing too long. We're having lots of fiber that's turned over soon and we don't really have a good way of managing it and one of the things that's happening or one of the downsides of our current system is if the City of Champaign were to change its mind and say we want to have two strands on this ring instead of four strands on that ring, which is fine, but all the splice documents that are out there have it the other way around, and by the time we tell them and they change their drawings and they give us new splice documents, the new splice documents get to the guys in the field about two weeks too late. So in theory, if the City of Urbana were to say we actually want to have three strands here instead of two strands, then John could go in, make that change in the system, produce new splice documents for the cases that are affected by that change and we can get them out the splicers in a timely fashion. We are at a point where people are fine tuning what they want to do with their fiber and whatever we told NewCom two months ago, most of its still correct but some of its changed and we really don't want to have to open up splice cases again. We think based on the fact that all of our data's currently in that format and it would be a very easy thing to bring up, that we may be able to do a Sole Source requisition through the City of Champaign. There is a form that needs filled out and signed by the City Manager. We haven't filled out the form yet but wanted to float the idea by this group first and give people a week to look at that, and see if that makes sense.

Bill DeJarnette said that would be the only question, is the ability to spend a little time with it, see how it works.

Mike Smeltzer said we don't actually have the software yet or the data but we could certainly get that.

Bill DeJarnette said when you're looking at Sole Source, obviously the goal is to vet it as best you can on the front end, how well does it integrate and run some splice and analysis.



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Mike Smeltzer said there is one other sub-package they recommend that apparently makes labels more predictable in terms of where they land on your maps.

Mike Smeltzer said we could still do an RFP process, and it would be a month from now and the RFP would still be on the street, and this next month is going to be pretty critical for splicing.

Bill DeJarnette said under \$10,000 doesn't mean a year from now or two years from now if there's something more robust that deals with us and puts us in better shape that we wouldn't roll to something else at a better time, but there are operational issues that are pushing us pretty hard.

Mike Smeltzer said the folks from NewCom have offered to provide some training; there was a \$1200 potential training fee in there. The company that markets OSP Insight, sent two guys to Utah for a couple of days for a training course and came back and the lead engineer for Joanne Hovis said it was a wonderful investment because they've become tremendously more efficient in using that tool; even though they were already GIS guru's, they learned enough tricks of the trade and what they actually did while they were there is they took their data from a live project and worked on it while the teachers helped them. We would want to do the short term training to get up and running and then maybe long term, send someone for a little more.

Bill DeJarnette said training that is done with stuff you care about sticks a lot better than theoretical training. We do have good live data that would make sense. We just need to get some information back from a couple of users that are using it, get an understanding so that we know the way they use it is similar to the way we're going to end up using it. Then this is one of those things that will run through as a Champaign decision and if it makes sense, then it's good to go.

Mike Smeltzer said we did not want to circumvent this group in terms of looking at it, and Mark Toalson, as the Champaign GIS director.

Bill DeJarnette suggested getting a demo piece in that Mark could play with and a discussion, tied with what Joanne Hovis says, then we're in a great position to say this what we do.



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John Kersh said to add to that, I haven't actually spoke to anybody yet, but has been doing some research, but to someone who has a solid foundation in GIS, it is pretty straightforward. In terms of a demo, they seem really willing to do that, they give you a 10-day free trial so you can put your data in and see how it works with your own live data.

Bill DeJarnette asked would there be some benefit to anybody like Mike Vrem's organization or somebody who's done a lot of splicing, or Volo, to also take a look at it and get a sense of how it works. We're getting some interest from the last meeting from organizations saying we're looking to taking advantage of what UC2B has but now we have to figure out where the handholds are, where everything's going to be, what will it take to light up our businesses.

Mike Smeltzer said we'll have to spin up an instance of ArcGIS 9.3 and also ArcMap, but the University has a sight license so we should be able to do those for free. John Brighton confirmed it is ArcGIS 9.3.1.

- Marketing and Outreach – John Kersh said the subcommittee hasn't met for several months. The canvassing, survey team and GISlist, they've taken a lot of those activities.

Bill DeJarnette asked what our comfort level is.

Teri Legner said there is a meeting tomorrow with PowerUp and the canvassing team to touch base about that. They've met a couple of times and talked about some processes, but based on some order delays, they want to touch base tomorrow to make sure we have a revised schedule for when we'll be starting connections, particularly in the fiber to the home areas.

Mike Smeltzer said that the number of subscribers is almost to 900.

- FTTP Procurement Process/Status Update (Mike Smeltzer/Teri Legner) – Bill DeJarnette said they are already doing part of the role out to the anchors.



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Teri Legner said that Paul Duke is actually our agent that's purchasing our materials for us, authorizing those purchases. Several orders have been placed, we've got some deliveries, but we've had some delays.

Paul Duke said there have been a couple issues with getting the fiber to the premise, one of which is getting the materials and we're trying to work through that with our supplier KGP. Secondly is the scheduling of what we've got for people signed up and how that goes. We're collecting a lot of good data right now, we're trying to get that in a format that is usable for the project and that's a work in progress – we're working with Gant's group to get that pulled together, within a week that should be pulled in pretty tight. The issues with PowerUp and scheduling, it's hurry up and wait situation until we can get some of these other issues resolved.

Paul Duke commented on the fiber management tool, a couple things to note, this tool already has our data loaded into it so there's no translational errors that would occur with somebody else's tool; it's available now, and it's available now.

7. Discussion Items:

a. As-builts

- Bill DeJarnette said our issue is getting ourselves in place, the methodology, the level of data and detail we want to be able to provide out to interested parties so they can start to make some business decisions, and work backwards to us, so we can get money from them. Not sure if we're ready to discuss that in detail right now, but maybe the question is or thoughts on what would put us in a good position to do that.
- Bill DeJarnette said we have a certain amount of information at the pure detail level, which is overkill. Maybe it would be better if I asked the businesses that are interested, what you need to know, so we can better understand what exactly we need to provide you and what mechanism or what way will answer your operational questions regarding handholds, fiber counts, locations that will get you lit up in service. What is the next step from an As-built perspective that withstanding from our operational side, we know what we want, the question, what information do we need to make available to allow you to make the business decisions you need to make.
- Peter Folk, Volo, said at one point there were a certain number of splice points, there were 500 splice points, if these are still the only access points



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to the network, that's important where they are, if they are not the only access points to the network, what the terms are of adding a splice point; because things are only sold in rings, we need to know where those rings are, but that needs to be public information.

- Mike Smeltzer said there's a PDF document that has all 12 of the rings in it and asked where would be the best place to post that.
- Bill DeJarnette asked if the details were sufficient.
- Mike Smeltzer asked if we could put it on the UC2B website or City's website.
- Bill DeJarnette said that maybe there's a list of documents that can be requested. We do need to get somewhere, information that is available if we don't put it out there.
- Mike Vrem said location of handholds, labeling of handholds, fiber counts and the laterals, what's the fill rate on the conduit on that lateral, can you pull cables through it, where are the storage loops. All of those things would be helpful.
- Bill DeJarnette said from my personal perspective and that's probably not the level of detail that I would put out for general availability or use.
- Mike Smeltzer said the ring maps are available now, and I'm not sure if we've gotten enough as-built information from the contractors at this point to document exactly where all the splice cases ended up, where the slack loops ended up, but we're probably not too far away from that.
- Bill DeJarnette said this is the kind of information that helps us evaluate the tool and make sure that it gives us the information we want and we can easily pull it.
- Mike Vrem also suggested knowing the number of conduits per run; thinks that's probably the biggest miss on the whole build is that we don't have enough spare conduits and that would've been really inexpensive to fix in the beginning.
- Ross Veach asked what was your objection of what Mike asked for in terms of making it public or in terms of making it available to what I'll call our partners.
- Bill DeJarnette said my objection was just a lot of really detailed operational plant information just out there for general purvey. I am more than happy, and we need to make it reasonably available to whomever we're dealing with but that's on a contractual basis.
- Ross Veach said we don't want this level of detail publicly available, but we should be making available whatever our partners need.



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- Peter Folk, Volo, asked what determines who a partner is, and what determines who a member of the general public is.
 - Bill DeJarnette said a contract to access the system
 - Peter Folk said if it's an NDA, that seems perfectly reasonable, but if it starts becoming I have to have a contract before I can access the information that is the basis of whether I want to have a contract.
 - Ross Veach said an NDA is the right word. My concern is that you can't find out where wells are at, there are security reasons for wells not being public but the same kind of stuff applies with this, you don't want to tell everybody where all our stuff is.
- b. Technical discussion of Citywide build-out:
- Mark Toalson described the map presented on the big screen - it shows the delivery polygons defined with the counts, 13-14 being the highest (in red), then blue after that.
 - Bill DeJarnette explained that this is Gigabit Squared, the people that have been signing up and putting down their \$100 and \$500 deposits/pledges to show they are interested in Gigabit Squared (a neighborhood by neighborhood contest and the neighborhood that wins, the one with the most interest, will be the first to be built out to).
 - Teri Legner reported we have a relatively significant number of expedited sign ups which cost \$500. People have the option to pay a higher fee to get connected this time next year or sooner. The majority of the deposits have been for the regular \$100 fee.
 - Mike Smeltzer said some people may be waiting to see this map, to see how well their area or neighborhood is doing whether they want to deposit \$100 or \$500. The polygons are service areas of roughly 450 addresses. This will be updated daily and will be provided to Gigabit Squared as part of our application (a week from today).
 - John Kersh asked if the map included the people who signed up for the expedited service.
 - Teri Legner confirmed that yes they are included, but they don't show the breakdown between the regular & expedited. She included that they have asked for breakdowns by city, by type of service (residential or business), and expedited versus a regular sign up.
 - Mike Smeltzer said it would seem that perhaps because we have the expedited options that a version of this map that shows the pin, not for public display, but for Gigabit Squared's purposes a pin map of just the



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expedited's; are those somehow delineated differently than what you have in the database.

- Mark Toalson said currently no, but there could be.
- Mike Smeltzer said that would be good because they're going to be interested in how many of the expedited's are in the areas we're probably going to do anyway, and how many are in the middle of nowhere.
- Mike Smeltzer said the cabinets we ended up with were a little bit less than optimal and we already have two different companies working on a modified cabinet. We will have a couple extra cabinets sitting in storage in case something happens.
- Peter Folk, Volo, discussion of infrastructure that was put in under the grant is interesting, but I know that I, as soon as we get our head above water, we expect to be deploying additional infrastructure in Champaign, Urbana and the surrounding communities and we'll be doing it based on our own backbone and hopefully UC2B if that's an option for us. We have quite a different build-out model than was done in the grant funded areas, costs a lot less; we want to make sure there are not hurdles in the way.
- Bill DeJarnette from a technical perspective anything that's not proprietary that you want to provide us that would give us better information to get a better sense of build-out issues and methodologies, so that we've got a grasp on a number of ways this could be achieved that would be great.
- Peter Folk, Volo, said we have two apartment complexes, at least one of the largest apartment complexes that we are going to be upgrading to gigabit speed in the next couple months. I'd be happy to walk you through what we do there when we roll out service in one of the local communities, I'll also bring that design document to the table for the technical committee to comment on.
- David Glynn, Pavlov, said we're kind of frozen. We're waiting to see what the circumstances are with Gigabit Squared. We understand that February 1, 2013 that it's possible to do business with UC2B. We don't have any information on where the interconnection points are; we have information on pricing on dark fiber options; but we don't have layer 2 option pricing; and there's a possibility that we may have a third party that's between us and the end points of the network. That's a possibility, so in a lot of sense, we're frozen.
- Mike Smeltzer said to David Glynn that you guys can lease fiber whenever you want; it's just the IRUs that are limited until February 1st, so if you wanted to start with a short term lease, that would be possible.



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- David Glynn, Pavlov said then we'd be glad to talk to you about that, but is the money we pay in on the short term leases going into the UC2B general fund that's a part of the grand funding. My understanding was that UC2B as an operational entity outside of the grant coverage was seeking to go ahead and optimize the potential investments.
- Mike Smeltzer said we're more worried about the IRU money doing that than the monthly lease money. I would think seeing how this is mid-July, September would probably be the first you would be able to turn anything up. There's only five months worth of lease payments at that rate and that's a lot better than a whole big hunk of change from IRUs.
- David Glynn said again, my impression was that the UC2B business availability was the constraints of the grant made these circumstances difficult, but I'd be glad to go ahead and talk with you afterwards about the opportunities.
- Mike Smeltzer said any money you spend on short term leases we'll have to spend on grant eligible expenses but that shouldn't be hard.

c. Tasks or items for the next meeting

- Build-out Issues
- David Young – Gigabit Burst Issue document

d. Next Meetings:

- Tuesday, August 14, 2012 at 3:30 p.m. Champaign Council Chambers
- Tuesday, August 28, 2012 at 3:30 p.m. Champaign Council Chambers

8. Audience Participation

- Peter Folk, Volo, said a couple weeks ago they imported the existing data that they have into their system; so they've been slowly going through it and making the changes that they need to keep it up-to-date and get the splicing done coherently.
- Bill DeJarnette asked if he could make it available for people to look at.
- Peter Folk, Volo, said sure, and said it's just a matter of setting up an account; everyone should have his contact information.

9. Committee Member Comments and Announcement

10. Adjourned at 4:27 p.m.

From: David Young
Sent: Tuesday, July 31, 2012 2:32 PM
To: DeJarnette, Bill
Subject: Cisco ASR 9000 QoS configuration statements for UC2B

Bill,

Per your request at the last tech meeting, I did some more research and wrote up a sample configuration for gigabit bursts. It's pretty rough, today, but I think that it gives an idea of what's possible.

Using information from the "Cisco ASR 9000 Series Aggregation Services Router Modular Quality of Service Configuration Guide, Release 4.2.x", I have derived the following ASR 9000 configuration statements for 20-, and 40-megabit subscribers (with 1-, and 9-second gigabit bursts, respectively). I have only derived the statements for traffic from the Internet to the subscriber---that is, for uploads---but the download statements can be derived from the upload statements.

My main goals are to 1) let subscribers burst up to a gigabit for a short period of time, 2) use the Internet link efficiently by assigning a fair share of leftover Internet bandwidth to subscribers after fulfilling every subscriber's tier, 3) give subscribers a fair share of the Internet link when it is saturated.

This may not be the best way to configure an ASR 9000 to meet those goals, and in some details I have probably made mistakes or forgotten something, but this should suffice to demonstrate the basic principles of a burst configuration and to show that it is feasible to set up an ASR 9000 for gigabit bursts.

Configuration overview:

Example 1: subscriber 1, a subscriber in the 20-megabit service tier whose ONT has MAC address 00.0a.01.0b.02.0c, may upload at 1 gigabit per second for up to 1 second. After 1 second, their upload rate falls to 20 megabits per second. Their gigabit-burst capability recharges during a period of no upload or of uploads less than 20 megabits per second. For more information on the recharge, see the discussion of the token-bucket policer in the Configuration Guide cited above.

Example 2: subscriber 2, a subscriber in the 40-megabit service tier whose ONT has MAC address 00.4a.41.4b.42.4c, may upload at 1 gigabit per second for up to 9 seconds. Their gigabit-burst capability also recharges during periods of no/slow uploads.

In each of the examples below, the interface "gigabitethernet 0/1/0/0" is the 1-gigabit UC2B Internet link, and "tengige 0/9/0/0" is the 10-gigabit link to a neighborhood switch. I assume that subscribers 1 and 2 are attached to the same switch.

Example 1: 20-megabits, maximum 1-second gigabit burst

p. 107: Create a traffic class for subscriber 1, a subscriber in the 20-megabit service tier whose ONT has MAC address 00:0a:01:0b:02:0c. Call the traffic class 'sub1'. Traffic *to* the ONT as well as traffic *from* the ONT matches class 'sub1'.

```
router# configure
```

```

router(config)# class-map sub1
router(config-cmap)# match destination-address mac 00.0a.01.0b.02.0c
router(config-cmap)# match source-address mac 00.0a.01.0b.02.0c
router(config-cmap)# commit
router(config)#

```

p. 111, p. 81: Create an input traffic policy for subscriber 1. Call that policy 'sub1'. Apply policy 'sub1' to the subscriber's packets---packets belonging to class 'sub1'. Attach the policy to packet input on the neighborhood-switch link. The policy says that the router will always transmit packets that conform to the 20-megabit service tier's traffic allowances (20-megabits, 1-second 1-gigabit burst). The router labels packets that exceed the service tier's allowances with qos-group 1. The router will treat packets belonging to qos-group 1 differently from other packets when they are retransmitted on the Internet link.

```

router(config)# policy-map sub1
router(config-pmap)# class sub1
router(config-pmap-c)# police rate 20 mbps burst 1 gbps
router(config-pmap-c-police)# conform-action transmit
router(config-pmap-c-police)# exceed-action set qos-group 1
router(config-cmap-c-police)# exit
router(config-cmap-c)# exit
router(config-cmap)# exit
router(config)# interface tengige 0/9/0/0
router(config-if)# service-policy input sub1
router(config-if)# commit
router(config)#

```

Example 2: 40-megabits, maximum 9-second gigabit burst

This configuration is similar enough to the Example 1 configuration that I leave out the narrative and write only the configuration statements here:

```

router# configure
router(config)# class-map sub2
router(config-cmap)# match destination-address mac 00.4a.41.4b.42.4c
router(config-cmap)# match source-address mac 00.4a.41.4b.42.4c
router(config-cmap)# commit
router(config)# policy-map sub2
router(config-pmap)# class sub2
router(config-pmap-c)# police rate 40 mbps burst 9 gbps
router(config-pmap-c-police)# conform-action transmit
router(config-pmap-c-police)# exceed-action set qos-group 3
router(config-cmap-c-police)# exit
router(config-cmap-c)# exit
router(config-cmap)# exit
router(config)# interface tengige 0/9/0/0
router(config-if)# service-policy input sub2
router(config-if)# commit
router(config)#

```

p. 66: Create output traffic classes and policies both for subscribers who exceed their tier's traffic allowance, and for conformant subscribers. Apply the policy to the gigabit link to the Internet. I intend with the (untested!) statements below to reserve 100% of the Internet link's bandwidth for conformant subscribers. If the link is

not saturated by conformant traffic, then non-conformant subscribers receive a share of the remaining bandwidth according to their service tier. I have chosen to assign 44% of the remaining bandwidth to the 40-megabit tier, and 22% to the 20-megabit tier. I would assign 34% of the remaining bandwidth for the 30-megabit tier. It is kind of an arbitrary choice.

```
router(config)# class-map match-all conforms_to_tier
router(config-cmap)# match no qos-group 1
router(config-cmap)# match no qos-group 3
router(config-cmap)# commit
router(config)# class-map exceeds_tier_20
router(config-cmap)# match qos-group 1
router(config-cmap)# commit
router(config)# class-map exceeds_tier_40
router(config-cmap)# match qos-group 3
router(config-cmap)# commit
router(config)# policy-map tiers
router(config-pmap)# class conforms_to_tier
router(config-pmap-c)# bandwidth percent 100
router(config-pmap-c)# exit
router(config-pmap)# class exceed_tier_20
router(config-pmap-c)# bandwidth remaining percent 22
router(config-pmap-c)# exit
router(config-pmap)# class exceed_tier_40
router(config-pmap-c)# bandwidth remaining percent 44
router(config-pmap-c)# exit
router(config-pmap)# exit
router(config)# interface gigabitethernet 0/1/0/0
router(config-if)# service-policy output tiers
router(config-if)# commit
router(config)#
```