Public Notice
Technical Committee Agenda
Public Notice for the Policy Committee

Special Meeting
April 3, 2012 – 3:30 PM - City of Champaign Council Chambers

1. Call to Order
2. Roll Call
3. Approval of Agenda
4. Approval of Minutes
5. Policy Committee Updates
6. Action & Discussion Items:
   a. Construction Update
   b. Subcommittee Reports and Actions
      i. OSS/BSS RFP (Fred)
      ii. Marketing and Outreach (John Kersh)
      iii. FTTP Procurement Process/Status Update (Mike Smeltzer/Teri Legner)
   c. Discussion of Private Provider Fiber (Mike Smeltzer)
   d. Recommendation Regarding UC2B Business Rates/Pricing (Smeltzer/Legner/Kruse)
   e. IP Address Pricing (Smeltzer/Kruse)
7. Discussion items:
   a. Tasks or Items for the next meeting
   b. Next Meetings:
      - April 10, 2012 City of Champaign Council Chambers, 3:30 PM
      - April 24, 2012 City of Champaign Council Chambers, 3:30 PM
8. Audience Participation – 5 minute limit per person
9. Committee Member Comments and Announcement
10. Adjourn

UC2B

MINUTES 1-10-2012 3:30 P.M. CHAMPAIGN COUNCIL CHAMBERS

MEETING CALLED BY	Bill DeJarnette, Vice-Chair
TYPE OF MEETING	UC2B Technical Committee
GENERAL ITEMS	• Bill DeJarnette, Vice-Chair called the meeting to order. • Tracy Smith (Chair) attended via speaker phone – out of town. • Quorum was verified – Verbal Roll call was taken (see Roll Call sheet). • Approval of Agenda (moving item#6C up) Fred Halenar made motion to approve with change. Mike Smeltzer 2nd. Approved. • Approval of 12/27/11 Meeting Minutes. Mike Vrem made motion. Fred Halenar 2nd. Approved.

#6C. (MOVED UP ON AGENDA)	DISCUSSION/APPROVAL OF CORE NETWORK PLAN AND DESIGN	TRACY SMITH/MIKE SMELTZER

DISCUSSION	o Tracy Smith thanked the committee for the feedback given on the document. o Tracy Smith described the goals, details, rational, and thought process behind the document. o Tracy also stressed the goal for this equipment is a life span minimum of 5-7 years; wanting to fully leverage the grant funds, to put something in place that's going to be lasting. o Mike Smeltzer provided the committee with a handout of the most recent budget; and on the back it summarized the parts of that budget as it pertains to the pieces here. o Mike Smeltzer reviewed the budget for this plan (switches add up to about $179,000, routers $220,000, test/monitor equip $147,000, no OTR in here yet, optical transport $82,000 – Overall cost $627,000 and had about $1.146 million to spend significantly under budget) o David Young asked about equipment warranties, if there were any & for how long. o Tracy Smith advised it comes with standard Cisco warranties and the annual SmartNet maintenance cost; which is 1 year or less. o David Young expressed concerns about needing spare equipment & costs for repairs. o Tracy explained that everything we have done is box redundancy. Everything will be dual connected, all providers will have dual connections to the peering routers, and the service provider routers will have dual connections to the fiber to the premise cloud. So this eliminates the need to have spares on the shelves, plus there will be next business day replacements through Smartnet. o Bill DeJarnette asked Mike Smeltzer about grant funds and buying maintenance on capital items. o Mike Smeltzer said Smartnet is probably an ineligible grant expense, but the costs are shown, they are more of an operational expense than a capital expense. Our out of pocket expense is about $6-$10 less than shown because it's added in; in our operating budget, we have specified money for maintenance on equipment (15% of equipment budget). o Mike Vrem said Adtran has no maintenance, a 10 year warranty, with overnight replacement. o Mike Smeltzer said we will order spares for Adtran, for every piece of equipment. o Mike Vrem recommends this solution/plan. o Bill DeJarnette said just because we are under budget, we haven't found savings. We priced it out and it happened to be under the number given. o Tracy Smith added that prices have decreased in the last 2 years, and this was based on Juniper; because that's what the University was using; the Cisco solution was cheaper than the Juniper solution so that's part of the savings. o Mark Toalson asked Mike Smeltzer if this covers everything we need. o Mike Smeltzer said the only thing missing that was proposed to NTIA would be an OTDR – for doing optical fiber testing costing $30-$40,000, and there is ample budget allowed for it. o Ross Veach asked about the decision on DC Power. o Tracy Smith stated that it was a decision that everything going into the UC2B core nodes facility would be DC powered. o Mike Smeltzer stated that DC power equipment is being procured through another part of the budget. o The committee continued to discuss the design, equipment & costs and how the decisions were made by Tracy & her team. o Bill DeJarnette asked if there was any audience participation. o Erik Kotewa from the Champaign County EDC asked how someone becomes or can get added to the anchor institution list. o Mike Smeltzer explained & described what an anchor institution is specifically and even if the company is not an anchor institution how they might be added to the fiber. o Peter Folk from Volo asked about the packets per second or line rates & bandwidth numbers

	that the equipment will be able to support in the next 5-7 years. o Tracy Smith replied that it would have 1 gig initially for external internet connectivity; and would hope that it would be greater than 1 gig local capacity for the community internet. Tracy said her hope is that we generate our own local content instead of going out; it's hard to tell what the future may bring. Tracy said while it's pretty beefy right now we wanted something to sustain a 5-7 year minimum. o The committee further discussed the future regarding internet bandwidth, the equipment, the platform & cost. o Bill DeJarnette requested a motion be made. o Mike Smeltzer moved to approve the proposal as presented by Tracy Smith. o Fred Halenar 2nd the motion. o Motion was approved.

#5. POLICY COMMITTEE REPORT UPDATES MIKE SMELTZER

DISCUSSION	o Mike Smeltzer reported the business consultants are here visiting & have a full schedule of meetings. o All of the consultant recommendations are due by February 15th. Some of the recommendations are in the Policy Board report already. o Saturday & next Tuesday are the public sessions for the contractors & general public to discuss the procurement process for the fiber to the home/or building construction.

#6A. CONSTRUCTION UPDATE BOB MILES

DISCUSSION	o Bob Miles reported that the weather has been very cooperative and there are many crews in the field (3 bi-directional boring crews in Urbana, a plow crew is out working in campus, and 3 bi-directional boring crews are finishing in campus and 3 in Champaign).

#6B. SUBCOMMITTEE REPORTS & ACTIONS

DISCUSSION	**OSS/BSS RFP (Fred, Chair)** • No new update, waiting on specifications. **Marketing & Outreach (Mike Smeltzer)** • Mike Smeltzer said Abdul's classes/case study reports (40 students were assigned 3 anchors) are due at the end of this month. • Canvassing is not happening right now; they are doing community meetings & radio interviews. • The presentation to the Urbana Council went well last night. **FTTP Procurement Process/Status Update (Mike Smeltzer/Teri Legner)** • No further update.

7. DISCUSSION ITEMS

DISCUSSION	**Tasks or Items for the next meeting:** o Discussion of private provider fiber (added by Mike Smeltzer – draft document to come). **Next Meetings:** o January 11, 2012 City of Champaign Council Chambers, 3:30 PM – (Special Joint Meeting) o January 24, 2012 City of Champaign Council Chambers, 3:30 PM **Audience Participation:** o None **Committee Member Comments or Announcements:** o Mike Vrem announced his resignation from the committee effective Jan. 15th. **Adjournment – 4:45 P.M.**

UC2B Policy Board Minutes

Special Joint meeting of the Policy Board/Technical Committee
January 11, 2012

Location:
City of Champaign Council Chambers
102 N. Neil Street
Champaign, IL 61820

Policy Board Members Present: Abdul Alkalimat, Rev. Zernial Bogan, Brandon Bowersox, Michael DeLorenzo (arrived 12:15 p.m.), Deb Feinen, Minor Jackson, Pete Resnick, Richard Schnuer, Mike Vrem for Tracy Smith.

Technical Committee Members Present: Bill DeJarnette, Bill Gray, Fred Halenar, Mike Vrem (for Tracy Smith), Tony Vandeventer, Ross Veach, David Young

I. The meeting was called to order at 12:05 p.m. by Acting Chair Bowersox.

II. Roll Call

III. Approve Agenda: Resnick moved, Alkalimat seconded the motion to approve the agenda. Bogan asked about adding the discussion of moving the meeting time to the Agenda. This item has been added to the next meeting agenda. (1/18) The motion was passed by voice vote.

IV. Approve Minutes: Feinen moved, Alkalimat seconded the motion to approve the minutes of the December 21, 2011 Policy Board meeting as written. The motion was passed by voice vote. (only Policy Board Committee members voted)

V. Action*/Discussion Items:

A. **Business and Operations Planning Consultants – Introduction:** Diane Kruse from NEO Fiber outlined her experience and credentials. She introduced Mark Ansboury from Gigabit Squared and provided his background as well. (Bio's attached)

B. **Presentation of NEO Fiber's "Evaluation and recommendations for Pricing and Positioning Stategies, Best Practices for Retail Service Offerings, Resident and Business Services":** Kruse and Ansboury discussed the background and research of their work. Kruse reviewed what they had presented to both City Councils. Currently the US is behind in the broadband availability. Kruse has discovered that other countries are

investing as much as six times the amount of money the United States has been. Kruse explained the speed of the bandwith and also discussed the community input that they have received over the last several days. Bowersox asked Kruse to describe her input on price, speed. etc. Kruse stated that it is most important to decide on a residential component. While researching, Kruse and Ansboury found that the average local download speed is 10mbs per sec for downloads and 2mbs per upload. UC2B will be offering 20mbs for both download and upload. She recommends calling it "20 for 20". It can be offered in the pilot area for 19.95/month. At that same level of performance, the competition is charging $70 per month. The group discussed variation in pricing and bundling offers from Comcast and AT&T. Ansboury stated that while bundling options sound like a better deal at the time, they are short lived "introductory" offers (average 6 month) or dependent upon purchasing other services.

Bogan and Jackson made points about individuals from lower income families may not be able to afford $20 per month. They questioned if we could offer lower bandwith for a smaller price or even for free. Kruse stated that is something they are working on, perhaps using wireless for people that cannot afford the $20/monthly fee. Kruse did say, you have to be careful about offering the service for free, because then it has no value, and you are damaging your effort. When people are paying for the service, it has value. Board members asked questions about commercial rates, Kruse responded that they are still working on all the details. The most important aspect was the 20 for $20 to be able to have something in the canvasser's hands when they are going door to door.

Delorenzo asked about pushback from the other carriers (AT&T and Comcast). Kruse and Ansboury both stated that they have had some resistance from other carriers in their experience, but they both included the other carriers from the start and they worked with them. UC2B has already invited all the other local carriers to a meeting this week and they are all willing to work with UC2B. The ultimate goal is better broadband and it behooves everyone to work together.

Board members were encouraged to send any questions they have to Teri Legner and she will compile them for the consultants. Kruse and Ansboury will also plan on being available by telephone on Wednesday, January 18th for the next UC2B Policy Board Meeting.

C. **NTIA/Grant Update**: A written report was provided in the packet. Smeltzer stated that the Technical Committee approved the equipment recommendation yesterday. Further information will come to the Policy Board next week. Legner encouraged everyone to review the set of spreadsheets included in the packet as to how the FTTP Procurement process could work. Meetings have been scheduled for the contractors regarding the FTTP Procurement process for, Saturday, January 14 at 10:00 a.m. in Council Chambers and Tuesday, January 17 at 5:30 p.m. in Council Chambers, mailings were sent to all local minority contractors, local churches and advertisements were placed in six area newspapers.

D. **Public Participation**: CM Kyles stated that he is very excited about the UC2B project. He was very happy these meetings were occurring and getting the public involved. He feels that low cost, not necessarily free service is important. Fiber to the home is exceptionally important to him. He asked a question about what happens to the leftover grant money after people sign up. Bowersox answered that the Grant provides for 2500 homes to be connected. After those 2500 are connected, individuals would have to pay the connection fee (approximately $3000 per home). Bowersox gave an example of, If for some reason we only get 2000 people interested in signing up, if we don't get additional signers, we will lose that extra grant money. So the money has to be spent on a first come, first served basis. Kyles also asked about displaying signage in the census block areas announcing UC2B just to help get the word out even more. He thanks staff for all their hard work on this issue.

E. Adjournment: Meeting was adjourned at 1:30 p.m. by Bowersox.

F. Next Meeting: Wednesday, January 18, 2012, from 12:00 noon to 1:30 p.m. in the Council Chambers at the City of Champaign, 102 N. Neil Street, Champaign. Please respond to Deb Feinen prior to that meeting with your preference for meeting times (Keeping the meeting on the 1st and 3rd Wednesday's from 12:00 noon to 1:30 or moving to the 1st and 3rd Thursday evenings from 5:15 or 5:30 to 6:45 or 7:00 p.m.)

UC2B Business Service Rates

During the Policy Board meeting on 3/22/2012, there was discussion regarding the strategy for pricing business services for UC2B. NEO Fiber has proposed flat-rate pricing, with various tiers of bandwidth. The Policy Board asked NEO Fiber to also provide business pricing based upon data usage or metered service. There are advantages and disadvantages to both UC2B's potential customers and to UC2B with each approach. These will be discussed herein.

Objectives of the Business Pricing Strategy and Core Values of UC2B

The objectives and core values of the business pricing strategy for UC2B are as follows:

- Simple, straight forward pricing
- Superior service than the competition
- Much better pricing than what is available in the market today
- Attractive pricing and packaging to meet the goals of the grant, a sustainable financial plan
- A possible financial path for further expansion of the network
- Provide novel, unique approach to UC2B's offering

It is important to keep these objectives and core values in mind when making the decision for business pricing strategy. The two business pricing strategy methods are discussed below.

Tiers of bandwidth with flat-rate pricing

The first approach is to have flat-rate tiers of bandwidth available. Larger data users may purchase faster tiers of service and small users may subscribe to smaller Internet bandwidth (yet much better bandwidth speed, performance and availability than what is available in the marketplace today).

The pricing recommended previously was:

Comcast Cable			
	22 Mbps/5 Mbps	$ 106.95	
	50 Mbps/10 Mbps	$ 196.95	
	100 Mbps/10 Mbps	$ 376.95	
Comcast Ethernet		Low End	High End
	22 Mbps/5 Mbps	$ 399.00	$ 899.00
	50 Mbps/10 Mbps	$ 489.00	$ 948.00
	100 Mbps/10 Mbps	$ 650.00	$ 1,048.00
UC2B Ethernet, Fiber Optic			
	20 Mbps/20 Mbps	$ 114.80	
	40 Mbps/40 Mbps	$ 213.80	
	60 Mbps/60 Mbps	$ 312.60	
	80 Mbps/80 Mbps	$ 411.00	
	100 Mpbs/100 Mbps	$ 509.00	

If the Policy Board wanted to bridge the jump between residential pricing and business pricing, UC2B may want to include a lower tiered service of 10 Mbps/10 Mbps for $59 - $79 per month. Another consideration may be that the customer does not get access to the 1 Gbps Intranet service or is charged more for this additional capability.

This pricing is far more competitive than its equivalent in the marketplace, offering better service, reliability and pricing that is more than 50% less than Comcast's Ethernet service. Ethernet service has a higher standard of service, as it is delivered via a fiber-based IP network, similar to how UC2B is providing services. Additionally, the pricing is competitively priced versus Comcast's cable product, which is a shared technology or "best effort" service. The Policy Board may want to adopt slightly different pricing than what is proposed to be less expensive than Comcast's cable service.

UC2B customers would also be able to connect to the Gigabit Intranet service at no additional charge.

The primary advantage of flat-rate pricing for customers is that they know exactly what their bill will be each month. If experience shows that a customer has purchased too much bandwidth, they may elect to go with a less-expensive, slower tier in the future. UC2B loses a little future revenue, but we allow the customer to purchase the correct package to meet its needs.

If experience shows that a customer has not purchased enough bandwidth, they will have two options. First they can simply elect to move to a faster and more expensive

tier for the future. However, if the customer does not want to purchase a more expensive tier, the customer may elect to stay with their current tier and monthly rate and accept the fact that for some percentage of the day, they will be constrained by their bandwidth limit. If that congestion is only 10 minutes a day, it may be acceptable to the customer. If that congestion is 10 hours a day, they may want to purchase additional bandwidth.

As long as UC2B remains flexible about allowing customers to change their bandwidth packages for future months, this is absolutely the most customer-friendly, simple and straight-forward, and understandable way UC2B can sell Internet services to businesses.

From UC2B's perspective, there is minimal overhead involved in operating a tiered bandwidth system. It is certainly possible that a business customer paying for the least amount of bandwidth could actually transfer more Internet data on the network over any given period of time than a customer paying for more bandwidth. While that may seem unfair, it is actually OK for UC2B. We will have the ability to increment the Internet bandwidth we have available, and stay ahead of the heavy users' demand.

Metered bandwidth services

The second school of thought is that we should sell bandwidth like a utility, and meter every bit of usage. Start with a fixed monthly fee that covers UC2B's typical fixed overhead: JULIE locate costs, fiber maintenance, equipment depreciation, debt service, customer service and billing. Then either sell all bandwidth by the drop, or create packages that are similar to cell phone minutes packages and have tiers of service that each provide different levels of Internet data transfer every month, but then also have defined "per gigabyte of data transferred" charges for business customers that go over their monthly allotment.

In order to put forward a metered pricing strategy, there are a number of questions that should be answered. As you can see from the attached Excel model, pricing metered bandwidth requires some assumptions about usage that will be hard to make. Should UC2B sell bandwidth at a cost per Gigabyte of Internet data transferred that reflects UC2B's costs if the network were to be 100% utilized 24x7? Should we assume 50% utilization 24x7, should we assume 25% utilization 50% of the time and 10% the remaining 50% of the time?

There are no correct answers to those questions, as we currently do not have any basis in which to make these assumptions.

Here are the disadvantages to this business pricing strategy:

Water, Sewer, and Power are Utilities that work in a Monopoly Environment. Unlike other utilities that are monopolies (i.e. water, sewer, power), UC2B is in a competitive environment where it will need to compete on price, features, ease to

work with, straight-forward pricing, and customer service in order to attract and retain customers.

The utilities model of metered service may work well in an environment where there is a monopoly. There are no other choices; the customer has no other recourse other than to take no service. The customer usually cannot live without water or electricity, and therefore, subscribes to the service regardless. With Internet service, UC2B will be competing against fierce and viable companies and will need to set itself apart in order to gain customers.

Water and electricity are utilities to be conserved. The pay-as-you-use model works well with a conservation-type product. The less you use, the less you are billed. The customer is rewarded to conserve, or use LESS, of this resource. The customer is penalized, by being charged more, for MORE use of this resource. Does UC2B want to incentivize this type of behavior? To use less Internet? The purpose of the grant is to bridge the digital divide and create infrastructure that enables economic development. The purpose of the grant and UC2B is not to conserve Internet use.

Uncertainty of Monthly Rate and Bill from UC2B. A typical customer will not have any idea how much bandwidth (speed) they use or need, nor will they have any ballpark for how much data they upload or download to and from the Internet. Even the most technical users will have no framework for how much data is consumed in a day, a week or a month.

As an example, let's take an engineering firm and try to determine the amount of data that is used each month. When the firm is awarded a large engineering project, it sends and receives large CAD files and network drawings to and from the customer, and to and from employees and engineers that are working on the project. How large are the CAD files and network drawings that the engineers send back and forth to each other? How often do they send these files to each other?
What other applications does this company use? The company sends pictures, proposals, downloads software and software upgrades. How much data is this? How can this company predict how much data they consume? Why would UC2B want to create an environment in which this company should worry about this?

The idea of a metered service will be hard to sell to the customer because the customer has no framework in which to understand how much data they "consume" in any given time. While we all have some idea of how much time we spend on our cell phones each month, and have a fixed upper limit of how many waking minutes there are in a month, very few business owners have any clue how much data their employees or their servers send and receive to and from the Internet each month. AN UNCERTAIN BUYER will NOT BECOME A CUSTOMER. As the customer will have no framework for how much data they consume, the customer will not be able to determine how much their invoice will be with UC2B.

UC2B is a new player in the market; and will be met with skepticism in the marketplace simply because it is new. To add further uncertainty by offering a metered service, whereby the customer has no framework to understand the concept, and will not be able to know or predict what their monthly usage would be, creates fear, uncertainty and doubt. A fearful, uncertain or doubtful customer will not buy the service. UC2B's COMPETITORS KNOW THIS.

Alternatively, if a customer is able to subscribe to a monthly, flat rate, whereby the monthly amount does not fluctuate, then, there is no uncertainty. The customer pays a flat rate every month. If the customer consumes more data per se, the customer may temporarily suffer a slower connection; uploading or downloading data may take a longer amount of time. The customer then may decide that a slower connection is okay, or the customer has the opportunity to upgrade to a higher level of service. The last thing UC2B would want to have their customer face is excessive amounts of data, and a bill that is much more than they have budgeted. Would UC2B need to notify their customer if their usage peaked much greater than the customer's "normal"? The customer who is billed greater than their budget will call UC2B, try to fight the charges, and complain that they were not aware, nor were they notified, that their use exceeded their limit.

Even if UC2B made the pricing such that an excessive amount of data is "inconsequential," this would be a hard sell to the customer, and my question would be this, "Why do it then?" If the customer's revenue is inconsequential for greater use, how does UC2B benefit from this pricing strategy? As a new competitor in this marketplace, UC2B needs to gain the market's trust. To enter into this market with needing to educate the customer on this new concept is unnecessary. It will create a barrier for customers to buy the service.

If the Policy Board wants to offer pricing based upon metered service, do it five years from now when UC2B has gained the customers' and markets' trust and has established itself as a player in this competitive marketplace.

Operational Efficiencies. In order to effectively provide metered service, UC2B will need to be able to capture and measure the data, bill it, allow customers to be able to track it, notify customers when usage comes close to, or exceeds the predetermined limit. UC2B will need to train its customer service representatives to respond to questions regarding the billing process.

As a general rule, 5% of an Internet Service Provider's customers consume the majority of the bandwidth used. There are several ways to constrain the 5%, but they all involve counting bits and bytes and subjecting the 95% who are "average" users to the same constraints that are designed for the heavy users. Any bandwidth metering system increases the network's operational costs as well as increases calls to customer service.

Novelty. The Policy Board has expressed that it would like the pricing to be novel, new, unique, fresh, and different. NEO appreciates the entrepreneurial and forward-thinking spirit of wanting to offer something that is unique. Our suggestion would be to offer "novelty" in areas where your competition cannot. UC2B has the ONLY ALL FIBER NETWORK in the area. This is novel. Offer novel pricing and services that your competition cannot offer. Your competitors will not be able to offer Gigabit VLAN services, Gigabit Intranet services, and more than 100 Mbps service throughout the community. UC2B can. UC2B is the only provider in the marketplace that can do this. To offer far superior service, at a much lower, monthly price, creates a competitive advantage. Offer novelty around something your competitors' cannot touch, rather than offer novelty around pricing that your customers will not be able to understand.

Three Models for Metered Service for UC2B Business Customers

The attached PDF has three approaches to metering UC2B business customers. They are all based on the same basic sets of assumptions on how many gigabytes we can actually move on a 1 Gigabit link in a month (combined inbound and outbound), and what percentage of that capacity we should base our rates on. If we based rates on full capacity, we will lose our shirts, because we know that by design we will rarely run at full capacity.

Someone on the Policy Board suggested that we also look at metering Intranet rates. These three models make some suggestions on what those Intranet quotas and overage rates might be, but I did not attempt to factor additional assumptions in the sample rate calculations. They are reasonably complex as it is. Should we end up adopting any of these three models or something similar, we might need to also factor in Intranet quotas and overage rates if that is what the Policy Board decides.

I have based the rates on a 25% capacity goal for the Internet link for the base packages, keeping in mind that customers will be able to go way over those quotas. In terms of making rates cheaper per gigabyte transferred the more you buy, I have introduced a multiplier that gets applied to each bandwidth rate. That multiplier starts at 2.0 for the smaller tiers and gets down to 1.1 at the very largest tier.

The first model is tiered pricing - based on the cell phone minutes concept. The customer commits to paying $X a month for “Y” Gigabytes of Internet data transfer each month. If they go over “Y” they pay extra per Gigabyte of overage. If they go under there is no price break. The more Gigabytes the customer commits to, the cheaper each one is within the base rate and the cheaper the overage Gigabytes are.

While anyone who has a cell phone plan will recognize this model, it will be a challenge to implement, for users will not know what level to start with. We would have to suggest that they start with the smallest package and work up to the correct package over time. Even then there will be bad feelings from customers who end up with too small of a plan for a while as they grow and pay a little more than they would otherwise if they had selected a more appropriate plan.

The second model uses "Progressive" metering. Pricing starts with just a small, 1 Gigabyte-per-day package, and then all overage is charged extra, but somewhat like an inverse of our federal income tax system. The overage gigabytes are charged at progressively cheaper rates in defined tiers. You pay the maximum overage rate for the first 250 Gigabytes you use, then a slightly lower rate for the next 250 Gigabytes and then a slightly lower rate for the next 500 Gigabytes and so on.

The third model is similar the to the second, but uses "Flat Rate" metered pricing for all the overage charges. It has the same 1 Gigabyte-per-day base rate, but simply charges all of the overage Gigabytes at the same rate per Gigabyte. That rate is based on the total data transferred for the month. This is absolutely the simplest plan that still provides some quantity discounts. It also raises the least amount of money for UC2B at the higher bandwidth usages. At the lower usage rates, all these plans

produce about the same amount of revenue for the same usage. It is at the higher usages that they vary.

The one positive thing I can say about these plans is that they do allow the business customers to run at a full 1 Gbps speed all the time. There may be marketing value in that, but I am not sure that it trumps all of the other negatives that accompany metered pricing.

As a potential business customer, I would be wary of the uncertainty that all of these metered plans cause, but the last two are at least almost explainable. I might like these plans if I was a small 1-2 Gigabyte per day customer and knew I would always be a small user. However, I would hate these plans if I was a big user or aspired to be one.

UC2B will not always be the only Internet provider on this network, and we will have a hard time selling services against other providers who offer X amount of bandwidth for a set rate as opposed to Z Gigabytes of data transfer for a metered rate.

In a business environment where you may not be able to, or may not want to tightly control what your employees do on the Internet, signing up for a metered service is essentially handing your ISP a blank check every month.

As a network operator, all of these metered plans create extra overhead and costs for operations. While metering is certainly doable, we have made no plans to engage developers to create custom software. The staffing plan does not include someone to manage the metering system on an ongoing basis.

There would be additional one-time and recurring costs to develop a metered platform. Bandwidth metering also creates extra friction each month with customers who can't believe they have used as much bandwidth as the meters say they did.

Tiers of fixed bandwidth on the other hand let UC2B's customers benefit from statistical multiplexing and do not punish them financially if one month their usage goes up significantly, or if it simply continues to rise over time.

With simple automated bandwidth graphing, a customer can see how much of their purchased bandwidth they are using every day, every week or every month. If their graph flat-lines at their maximum bandwidth often, that is good indication that they need to buy more bandwidth. But it is always their choice. With metered service, a business owner is somewhat at the mercy of the decisions that his or her employees make about how they use or abuse the metered Internet connection.

I will answer questions about the three models on Tuesday, but please email them ahead of then if you can.

UC2B Metered Pricing Plan

Assumption, Goals & Calculations

Average Cost to UC2B of Bandwidth per Gbps per Month	$6,400.00
Cost per Gigabyte of Total Data Transfer Capacity (two way)	$0.0099
Average Internet Link Capacity Goal - includes both inbound and outbound traffic	25%
Cost per Gigabyte of Internet Data Transfer Capacity Goal	$0.0395
Percentage of Intranet/Internet Use	10%
Cost per Gigabyte of Intranet Data Transfer	$0.0040
Base Monthly Overhead per Business Customer (call center, billing, customer field support, network operations, depreciation, debt service, JULIE locates)	$30.00

Tier A

Tier A Gbytes of Internet Data Transfer / Month	250
Tier A Gbytes of Intranet Data Transfer / Month	500
Tier A Base Internet Cost Multiplier	200%
Additional Internet Gbyte Charge	$0.0790
Additional Intranet Gbyte Charge	$0.01

Tier B

Tier B Gbytes of Internet Data Transfer / Month	500
Tier B Gbytes of Intranet Data Transfer / Month	1,000
Tier B Base Internet Cost Multiplier	180%
Additional Internet Gbyte Charge	$0.0711
Additional Intranet Gbyte Charge	$0.007

Maximum Data Transfer on a 1 Gbps Internet connection (one way)

Internet connection	1,000	Mbps	1.00	Gbps
Data Transfer per Second	125	Megabytes	0.13	Gigabytes
Per Minute	7,500	Megabytes	7.50	Gigabytes
Per Hour	450,000	Megabytes	450	Gigabytes
Per Day	10,800,000	Megabytes	10,800	Gigabytes
Per Month	324,000,000	Megabytes	324,000	Gigabytes
Per Month	324,000	Gigabytes		

Tier C

Tier C Gbytes of Internet Data Transfer / Month	1,000
Tier C Gbytes of Intranet Data Transfer / Month	2,000
Tier C Base Internet Cost Multiplier	160%
Additional Gbyte Charge	$0.0632
Additional Intranet Gbyte Charge	$0.006

Tier D

Tier D Gbytes of Internet Data Transfer / Month	2,500
Tier D Gbytes of Intranet Data Transfer / Month	5,000
Tier D Base Internet Cost Multiplier	140%
Additional Internet Gbyte Charge	$0.06
Additional Intranet Gbyte Charge	$0.006

Tier E

Tier E Gbytes of Internet Data Transfer / Month	5,000
Tier E Gbytes of Intranet Data Transfer / Month	10,000
Tier E Base Internet Cost Multiplier	120%
Additional Internet Gbyte Charge	$0.0474
Additional Intranet Gbyte Charge	$0.005

Tier F

Tier E Gbytes of Internet Data Transfer / Month	5,000
Tier E Gbytes of Intranet Data Transfer / Month	10,000
Tier E Base Internet Cost Multiplier	110%
Additional Internet Gbyte Charge	$0.0435
Additional Intranet Gbyte Charge	$0.087

Tiered Metered Rates for UC2B Business Customers

Tier A-1 - 1 Gigabyte per day

Monthly Base Rate	**$32.37**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**30**
Internet Data Transfer Overage Charge per Gigabyte	**$0.0790**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**60**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.0079**

Examples with Tier A-1 Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	28.125	$32.37	$1.151
Total Use of Internet data in a month in Gigabytes	56.25	$34.44	$0.612
Total Use of Internet data in a month in Gigabytes	112.5	$38.89	$0.346
Total Use of Internet data in a month in Gigabytes	225	$47.78	$0.212
Total Use of Internet data in a month in Gigabytes	450	$65.56	$0.146
Total Use of Internet data in a month in Gigabytes	900	$101.11	$0.112
Total Use of Internet data in a month in Gigabytes	1800	$172.22	$0.096
Total Use of Internet data in a month in Gigabytes	3600	$314.44	$0.087
Total Use of Internet data in a month in Gigabytes	7200	$598.89	$0.083

Tier A-2 - 2 Gigabytes per day

Monthly Base Rate	**$34.74**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**60**
Internet Data Transfer Overage Charge per Gigabyte	**$0.0790**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**120**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.0079**

Examples with Tier A-2 Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	28.125	$34.74	$1.235
Total Use of Internet data in a month in Gigabytes	56.25	$34.74	$0.618
Total Use of Internet data in a month in Gigabytes	112.5	$38.89	$0.346
Total Use of Internet data in a month in Gigabytes	225	$47.78	$0.212
Total Use of Internet data in a month in Gigabytes	450	$65.56	$0.146
Total Use of Internet data in a month in Gigabytes	900	$101.11	$0.112
Total Use of Internet data in a month in Gigabytes	1800	$172.22	$0.096
Total Use of Internet data in a month in Gigabytes	3600	$314.44	$0.087
Total Use of Internet data in a month in Gigabytes	7200	$598.89	$0.083

Tier A-3 - 4 Gigabytes Per day

Monthly Base Rate	**$39.48**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**120**
Internet Data Transfer Overage Charge per Gigabyte	**$0.0790**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**240**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.0079**

Examples with Tier A-3 Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	28.125	$39.48	$1.404

Total Use of Internet data in a month in Gigabytes	56.25	$39.48	$0.702
Total Use of Internet data in a month in Gigabytes	112.5	$39.48	$0.351
Total Use of Internet data in a month in Gigabytes	225	$47.78	$0.212
Total Use of Internet data in a month in Gigabytes	450	$65.56	$0.146
Total Use of Internet data in a month in Gigabytes	900	$101.11	$0.112
Total Use of Internet data in a month in Gigabytes	1800	$172.22	$0.096
Total Use of Internet data in a month in Gigabytes	3600	$314.44	$0.087
Total Use of Internet data in a month in Gigabytes	7200	$598.89	$0.083

Tier A-4 - 8.3 Gigabtyes per day

Monthly Base Rate	**$49.75**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**250**
Internet Data Transfer Overage Charge per Gigabyte	**$0.08**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**500**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.008**

Examples with Tier A-4 Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	225	$49.75	$0.221
Total Use of Internet data in a month in Gigabytes	450	$65.56	$0.146
Total Use of Internet data in a month in Gigabytes	900	$101.11	$0.112
Total Use of Internet data in a month in Gigabytes	1800	$172.22	$0.096
Total Use of Internet data in a month in Gigabytes	3600	$314.44	$0.087
Total Use of Internet data in a month in Gigabytes	7200	$598.89	$0.083

Tier B - 16.7 Gigabytes per day

Monthly Base Rate	**$65.56**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**500**
Internet Data Transfer Overage Charge per Gigabyte	**$0.07**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**1,000**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.007**

Examples with Tier B Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	225	$65.56	$0.291
Total Use of Internet data in a month in Gigabytes	450	$65.56	$0.146
Total Use of Internet data in a month in Gigabytes	900	$94.00	$0.104
Total Use of Internet data in a month in Gigabytes	1800	$158.00	$0.088
Total Use of Internet data in a month in Gigabytes	3600	$286.00	$0.079
Total Use of Internet data in a month in Gigabytes	7200	$542.00	$0.075

Tier C - 33.3 Gigabytes per Day

Monthly Base Rate	**$93.21**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**1,000**
Internet Data Transfer Overage Charge per Gigabyte	**$0.06**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**2,000**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.006**

Examples with Tier C Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**

Total Use of Internet data in a month in Gigabytes	225	$93.21	$0.414
Total Use of Internet data in a month in Gigabytes	450	$93.21	$0.207
Total Use of Internet data in a month in Gigabytes	900	$93.21	$0.104
Total Use of Internet data in a month in Gigabytes	1800	$143.78	$0.080
Total Use of Internet data in a month in Gigabytes	3600	$257.56	$0.072
Total Use of Internet data in a month in Gigabytes	7200	$485.11	$0.067

Tier D - 83.3 Gigabytes per day

Monthly Base Rate	**$168.27**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**2,500**
Internet Data Transfer Overage Charge per Gigabyte	**$0.06**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**5,000**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.006**

Examples with Tier D Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	225	$168.27	$0.748
Total Use of Internet data in a month in Gigabytes	450	$168.27	$0.374
Total Use of Internet data in a month in Gigabytes	900	$168.27	$0.187
Total Use of Internet data in a month in Gigabytes	1800	$168.27	$0.093
Total Use of Internet data in a month in Gigabytes	3600	$229.11	$0.064
Total Use of Internet data in a month in Gigabytes	7200	$428.22	$0.059

Tier E - 166.7 Gigabytes per day

Monthly Base Rate	**$267.04**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**5,000**
Internet Data Transfer Overage Charge per Gigabyte	**$0.05**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**10,000**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.005**

Examples with Tier E Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	225	$267.04	$1.187
Total Use of Internet data in a month in Gigabytes	450	$267.04	$0.593
Total Use of Internet data in a month in Gigabytes	900	$267.04	$0.297
Total Use of Internet data in a month in Gigabytes	1800	$267.04	$0.148
Total Use of Internet data in a month in Gigabytes	3600	$267.04	$0.074
Total Use of Internet data in a month in Gigabytes	7200	$371.33	$0.052

Progressive Metered Rates for UC2B Business Customers

	Bandwidth Used		Rate per Gbyte
	Low	High	
Bandwidth Tier A	30	250	$0.0790
Bandwidth Tier B	250	500	$0.0711
Bandwidth Tier C	500	1,000	$0.0632
Bandwidth Tier D	1,000	2,500	$0.0553
Bandwidth Tier E	2,500	5,000	$0.0474
Bandwidth Tier F	5,000	1,000,000,000	$0.0435

Progressive Single Rate - 1 Gbyte per day in base rate

Monthly Base Rate	**$32.37**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**30**
Bandwidth Charge: 31 - 250 Gbytes	**$0.0790**
Bandwidth Charge: 251 - 500 Gbytes	**$0.0711**
Bandwidth Charge: 501 - 1,0000 Gbytes	**$0.0632**
Bandwidth Charge: 1,001 - 2,500 Gbytes	**$0.0553**
Bandwidth Charge: 2501 - 5,000 Gbytes	**$0.0474**
Bandwidth Charge: more than 5,000 Gbytes	**$0.0435**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**500**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.0079**

Examples with Progressive Metered Rates Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	28.125	$32.37	$1.15
Total Use of Internet data in a month in Gigabytes	56.25	$34.44	$0.61
Total Use of Internet data in a month in Gigabytes	112.5	$38.89	$0.35
Total Use of Internet data in a month in Gigabytes	225	$47.78	$0.21
Total Use of Internet data in a month in Gigabytes	450	$63.98	$0.14
Total Use of Internet data in a month in Gigabytes	900	$92.81	$0.10
Total Use of Internet data in a month in Gigabytes	1800	$143.38	$0.08
Total Use of Internet data in a month in Gigabytes	3600	$234.25	$0.07
Total Use of Internet data in a month in Gigabytes	7200	$396.22	$0.06

Flat Metered Rates for UC2B Business Customers

	Bandwidth Used		Rate per Gbyte
	Low	High	
Bandwidth Tier A	0	250	$0.0790
Bandwidth Tier B	250	500	$0.0711
Bandwidth Tier C	500	1,000	$0.0632
Bandwidth Tier D	1,000	2,500	$0.0553
Bandwidth Tier E	2,500	5,000	$0.0474
Bandwidth Tier F	5,000	1,000,000,000	$0.0435

Flat Metered Rates - 1 Gbyte per day in base rate

Monthly Base Rate	**$32.37**
Monthly Internet Gigabytes of Data Transfer Included in Base Rate	**30**
Monthy Internet Bandwidth Charge per Gbps	**$0.0790**
Monthly Intranet Gigabytes of Data Transfer Included in Base Rate	**500**
Intranet Data Transfer Overage Charge per Gigabyte	**$0.0079**

Examples with Non Progressive Rates Billing	**Gigabytes**	**Monthly Bill**	**$ per Gbyte**
Total Use of Internet data in a month in Gigabytes	28.125	$32.37	$1.15
Total Use of Internet data in a month in Gigabytes	56.25	$34.44	$0.61
Total Use of Internet data in a month in Gigabytes	112.5	$38.89	$0.35
Total Use of Internet data in a month in Gigabytes	225	$47.78	$0.21
Total Use of Internet data in a month in Gigabytes	450	$62.24	$0.14
Total Use of Internet data in a month in Gigabytes	900	$87.36	$0.10
Total Use of Internet data in a month in Gigabytes	1,800	$130.27	$0.07
Total Use of Internet data in a month in Gigabytes	3,600	$201.61	$0.06
Total Use of Internet data in a month in Gigabytes	7,200	$343.96	$0.05

UC2B - Public IP Address Rates

IP subnets are available in the following fixed sizes:
8, 16, 32, 64, 128 and 256

In each subnet, 3 of the addresses are utilized by the network.
That actually leaves customer useable subnets of:
5, 13, 29, 61, 125 and 253 hosts.

Customers who use blocks of Public IP addresses generate one-time costs to set up the subnets and routing, as well as recurring costs in adding extra complexity to the network and Doman Name Service (DNS) operations.

Public IP addresses are becoming increasing scarce and UC2B should discourage their use except when absolutely needed for business purposes.

Customers who require multiple public IP addresses typically are running servers and services that generate more bandwidth usage than a "regular" customer. The more Public IP addresses they have, the more bandwidth they are likely to use.

Proposed Rates for Subnets of Public IP addresses

Subnet Description	Total IP Addresses in Subnet	Customer Usable Hosts	One-Time Set-Up Charge	Recurring Monthly Charge	Average cost per Host
/29	8	5	$20	$4.95	$0.99
/28	16	13	$20	$12.95	$1.00
/27	32	29	$25	$28.95	$1.00
/26	64	61	$25	$60.95	$1.00
/25	128	125	$30	$124.95	$1.00
/24	256	253	$30	$252.95	$1.00

To: UC2B Policy Board

FROM: NEO Fiber, LLC and Staff

DATE: March 12, 2012

SUBJECT: UC2B Pricing, Services, Billing Decisions

The purpose of the reports that follow is to present the UC2B pricing and services evaluations provided by NEO Fiber. A summary of the 15 most urgent questions needing Policy Board direction follows below and is supported with detailed explanations in the report that is attached entitled "NEO Fiber Evaluation and Recommendations for Pricing and Positioning Strategies, Best Practices for Retail Service Offerings, Residential and Business Services." This report is updated from that which the Policy Board reviewed in January with additional market research and analysis.

Also attached is a report, "Feasibility Objectives, Background Information on the Financial Model" which seeks Policy Board direction relating to UC2B's feasibility objectives. Once the Policy Board determines a set of feasibility objectives such as those recommended herein, the financial models (attached in a draft workbook for Board information) can be refined.

All of this information is intended to be presented for Board discussion at its meeting on Wednesday, March 14 so that Policy Board direction/action may be provided at its next meeting on March 22. Diane Kruse will be joining the meeting on the 14th via Skype and will be present at the meeting on the 22nd.

Teri Legner

Interim UC2B Consortium Coordinator

Summary of Pricing and Services Recommendations:

1. What are the residential pricing tiers beyond $19.99 for 20 Mbps?

The following pricing is recommended for the grant area for residential services:

Name of Tier	Advertised Speeds		Average Speeds		Average Latency	Pricing Plan $ Per Month
	Downstream Mbps	Upstream Mbps	Downstream Mbps	Upstream Mbps	@ end-user CPE milliseconds	
Residential						
UC2B 20/100Internet CNS	20	100	20	100	<10 ms	$19.99
UC2B 30/100Internet CNS	30	30	30	30	<10 ms	$29.99
UC2B 40/100Internet CNS	40	40	40	40	<10 ms	$39.79

A detailed write up of the pricing considerations, service area, the preliminary impact on the Financial Plan is attached.

2. Does UC2Bprovide any email accounts?

No.

3. Does UC2B provide any web hosting?

No.

4. Is there an extra charge for more than 1 public IP address? And if there is what will they cost?

Yes. The following pricing is recommended:

Proposed Business/Commercial Pricing

IP Addresses	Monthly Price
1 IP Address	Included in the monthly price
2 to 5 IP Addresses	$14.95
6 to 10 IP Addresses	$34.95
11 to 15 IP Addresses	$59.95

This is in addition to the Internet pricing outlined below under Question 5.

5. Is there different pricing for Businesses and Anchor Institutions? If so, what are those tiers and how do we differentiate between the three groups?

The following tiers would be available for Businesses and Anchor Institutions:

1. Small Business and Non-profit Pricing. The pricing would be the same for small business and non-profit pricing as the residential rates above. In order to qualify for the non-profit status, the business must show the Federal forms designating it as a non-profit.

Small businesses qualify for this pricing if the following conditions are met:

a. The business does not require additional IP addresses.

b. The business has less than $1 Million in annual revenues.

c. The business has less than 10 employees.

2. Business and Anchor Institution Pricing:

The following pricing is suggested for Business and Anchor Institutions:

Name of Tier	Advertised Speeds		Average Speeds		Average Latency	Pricing Plan $ Per Month
	Downstream Mbps	Upstream Mbps	Downstream Mbps	Upstream Mbps	@ end-user CPE milliseconds	

Business and Anchor Institution						
UC2B 20/20Internet CNS	20	20	20	20	<10 ms	$114.80
UC2B 40/40Internet CNS	40	40	40	40	<10 ms	$213.80
UC2B 60/60Internet CNS	60	60	60	60	<10 ms	$312.60
UC2B 80/80Internet CNS	80	80	80	80	<10 ms	$411.00
UC2B 100/100Internet CNS	100	100	100	100	<10 ms	$509.00
Private VLAN 10 Mbps	10	10	10	10	<10 ms	$100.00
Private VLAN 100 Mbps	100	100	100	100	<10 ms	$400.00
Private VLAN 1 Gbps	1,000	1,000	1,000	1,000	<10 ms	$1,200.00

If a customer wants more than one Public IP address they must pay the Business Rates in addition to the extra charges for the additional Public IP addresses.

A detailed write up on the competitive analysis, pricing justification, and the preliminary impact on the Financial Plan etc. is provided along with this response.

6. Is there a minimum term for residential service?

The pricing for the UC2B grant area is extremely competitive and should only be offered to the (11) Census Block areas within the grant coverage area. It is recommended that in order to receive this pricing, a two year term is required. The contract may be worded leniently if the customer needs to cancel prior to the two year term; however, in order to reduce the cost of churn, and because this pricing is extremely competitive, it is recommended to have a term contract in place.

7. Will an equipment deposit and/or the first month's service charge be required to be paid at the time of signing the service agreement?

It is recommended that UC2B require an equipment deposit. The cost to UC2B for the ONT is $389.

The demographics of the UC2B FTTP Residential service areas include a large number of lower income families and students. A large, one-time deposit on the equipment may be difficult for a lower income household to absorb. An equipment deposit may create a barrier for new customers to sign up. There is risk for UC2B however; as the equipment is expensive and will need to be returned at the end of the service agreement or when a customer terminates service. UC2B should have a policy in place to ensure that the equipment is returned.

Therefore, the following recommendations could help mitigate the risk and yet not create a barrier for signing up for the service:

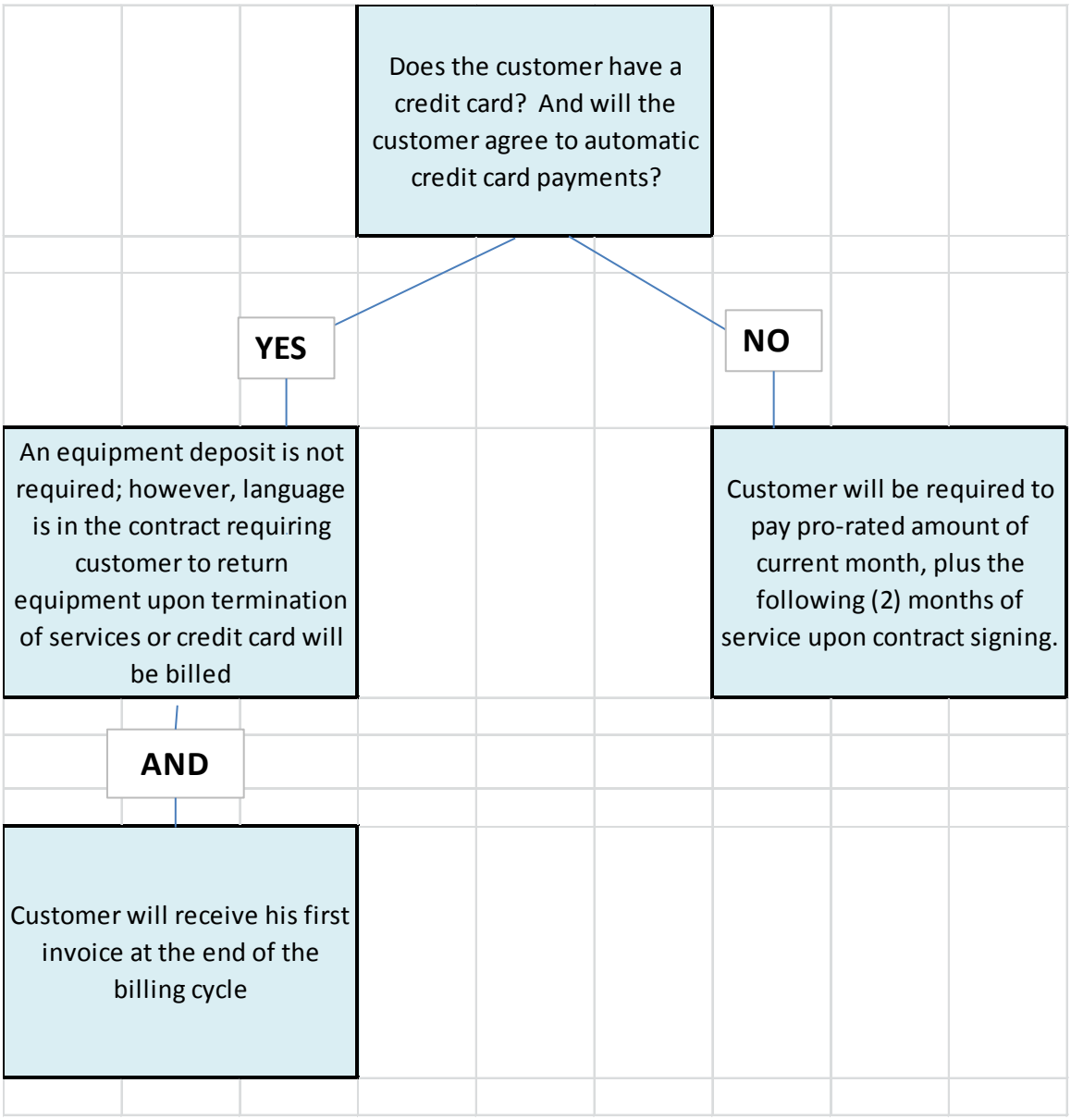
- The deposit on the equipment could be in the form of a credit card payment that is "held" but not charged unless the customer does not return the equipment, or does not pay their bill.
- Or another consideration could be to spread the costs of the deposit over a 3-month or 6-month timeframe.

Regarding credit card billing and billing in advance for services:

Billing One-Month in Advance. This is common practice in the telecommunications and cable TV industry. The first month billing would include a pro-rated portion of what is left of the month, plus the following month's service. The customer is essentially billed in advance for services. This payment would not necessarily be needed to be paid at the time of the customer signing up, if the customer has a credit card and agrees to automatic credit card payment.

Credit Card Billing. In order to have service with UC2B, it is recommended that the customer be required to have a credit card on file and have the credit card billed automatically monthly. This eliminates much of the collection efforts and costs associated with billing and collections. This does not eliminate the collection efforts entirely; however, much of the costs are diminished.

It is understood that many of the potential customers of UC2B may not have access to a credit card or have a checking account. This will be a challenge for UC2B, as again, the demographics of the customer base are of a low-income bracket. If this is the case, i.e. the customer does not have a credit card or a checking account, UC2B could require that the customer pay in cash for the pro-rated portion of what is left of the month, plus the following (2) months of service.



8. How will UC2B services be billed?

Emailed invoice.

9. Where can UC2B bill be paid in person?

Champaign City Finance Department

10. Will customers be able to pay for UC2B services on-line with a credit card?

We hope so. Again, it is recommended that if the customer has a credit card, then automatic payments will be set up for the customer. If the UC2B Policy Board does not agree with automatic credit card payments, then, it is desirable for the customer to have the ability to pay online with a credit card.

11. Will we offer a discount for direct bank draft or auto credit card?

It is not recommended to offer a discount for direct bank draft or automatic credit card payments.

12. What will happen if a monthly payment is late?

The following is recommended for temporary and permanent shut off of service.

If payment is not received within 7-10 days after the payment due date, UC2B can shut off service temporarily. If payment is not received after 14 days, the service can then be permanently shut off. This practice often facilitates timely payment for services.

13. How will we work with landlords of MDUs and MTUs?

A more detailed write up regarding the primary issues in dealing with Landlords of Multi-dwelling Units is attached for your review.

It is recommended to do the following in working with landlords of MDUs and MTUs:

For UC2B, the vision was to run fiber into each apartment unit, and to be able to treat each tenant as if it was a single family home. This strategy will eliminate the very likely risk of needing to use sub-par inside wiring. As the grant will pay for the ONTs and the installation costs, this seems to be an excellent strategy. To UC2B's network management system, the unit at the MDU would have the same appearance as a single family home, and therefore, there would be no need to establish different operational and trouble resolution processes for MDU's.

Bulk Pricing. The primary advantage of offering a Bulk Rate Program is that UC2B could obtain 100% take rate or in other words, would receive 100% of the customers within the multi-dwelling unit. UC2B would bill the landlord or HOA directly for the base pricing for 100% of the tenants in the building.

If UC2B cannot negotiate an agreement for 100% of the tenants, then perhaps UC2B negotiates to receive no less than 80% of the tenants within the building.

Base Service Pricing. The same pricing would be available to MDU/MTU buildings as would the general public. UC2B may negotiate which service level (i.e. 20 Mbps, 30 Mbps or 40 Mbps) as the Base Service Pricing that would be offered through the Bulk Pricing Plan (meaning, billing the landlord for all of the tenants). The benefit to the landlord would be that UC2B would install the service (i.e. the fiber, ONT and upgrade the inside wiring) for free, in addition to the benefits received and detailed in the attached write-up.

Upgrades and Customer Service. The customer relationship for customer service, billing upgrades, trouble resolution would be between UC2B and the end user (mitigating the primary disadvantage of Bulk Rate Programs.) UC2B would bill the landlord or HOA directly for the base pricing for 100% of the tenants, or whatever percentage UC2B would be able to negotiate with the landlord. Customers who elect to upgrade their Internet Service and/or obtain additional services would be billed directly by UC2B. Additional services may be wi-fi, a community intranet, a computer concierge service or through a partnership with a VoIP/IPTV player, voice and TV services. It may be negotiated with the landlord

which services are incorporated into the Bulk Rate Program in addition to the base Internet services. Obviously bulking as many services as possible through the Bulk Rate Program is an advantage for UC2B. These negotiations are usually on an individual case basis; the same program for one apartment/MDU program may not always be replicated with a different landlord.

We believe the benefits of Fiber to the Home, UC2B's competitive price offer to tenants, and bringing fiber to each unit are more than sufficient reasons for the landlord to grant building/apartment access to UC2B and engage in negotiations of Bulk Pricing.

14. When will the first services be installed?

May

15. What other services, if any, will be available in addition to UC2B Intranet/Internet?

None that we know of at this time.

NEO Fiber
Evaluation and Recommendations for Pricing and Positioning Strategies Best Practices for Retail Service Offerings Residential and Business Services

Submitted by:

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Background Information

Purpose of Market Analysis Section.

The purpose of this section is to provide market information and analysis, data and insight into competitive service and pricing offerings in the marketplace, and to provide strategies and best practices for retail residential and business service offerings and pricing considerations for UC2B.

This report will address the following questions:

- Provide recommendations on current pricing proposals and associated bandwidths with particular attention paid to offerings in the FTTH areas.
- Provide an evaluation of and recommendations for UC2B's options for pricing retail services for business v. residential customers.
- Should UC2B consider non-profit pricing alternatives?
- Provide alternatives, advantages and disadvantages, and recommendations for UC2B to consider related to FTTH equipment deposits.
- Identify the terms and conditions for consideration and inclusion in retail customer service agreements for all types of customer classifications, i.e. business, residential, non-profit. Provide draft agreements for UC2B to consider.
- Identify UC2B's options, the associated advantages and disadvantages, and recommendations for addressing/providing service to multi-use or multi-family structures. Should UC2B contract with landlords or the tenants? Provide draft customer service agreements if different than above.

Methodology

NEO has access to a comprehensive, broadband Internet transactions database. This database is the result of collecting and analyzing over a half a billion Internet transactions from all over the country. We use proprietary analytical modeling, which includes demographic information, speed tests, Internet order information, the physical addresses of subscribers and the IP addresses of subscribers. These transactions come from hundreds of sources including e-subscription services, and various other sources where the consumer submits their address information and the database captures the consumer's IP address which the database tool then discriminates between residential carriers and business carriers.

For this study, NEO analyzed database data for all of the zip codes and census tracts by block in the Champaign-Urbana area from January through September 2011. The Champaign-Urbana communities represent over 48,761 households and 1,760 businesses. The sample data was

scrubbed for duplicate transactions (in other words, we eliminated the returning customer data records in information regarding churn rate) and then we analyzed 5% of the total households (1,845 discrete sample households) and 5% of the businesses (77 discrete sample businesses) to determine providers or carriers, type of services, pricing information. A slightly smaller sample (1,111 households and businesses) was analyzed to determine actual speed tests.

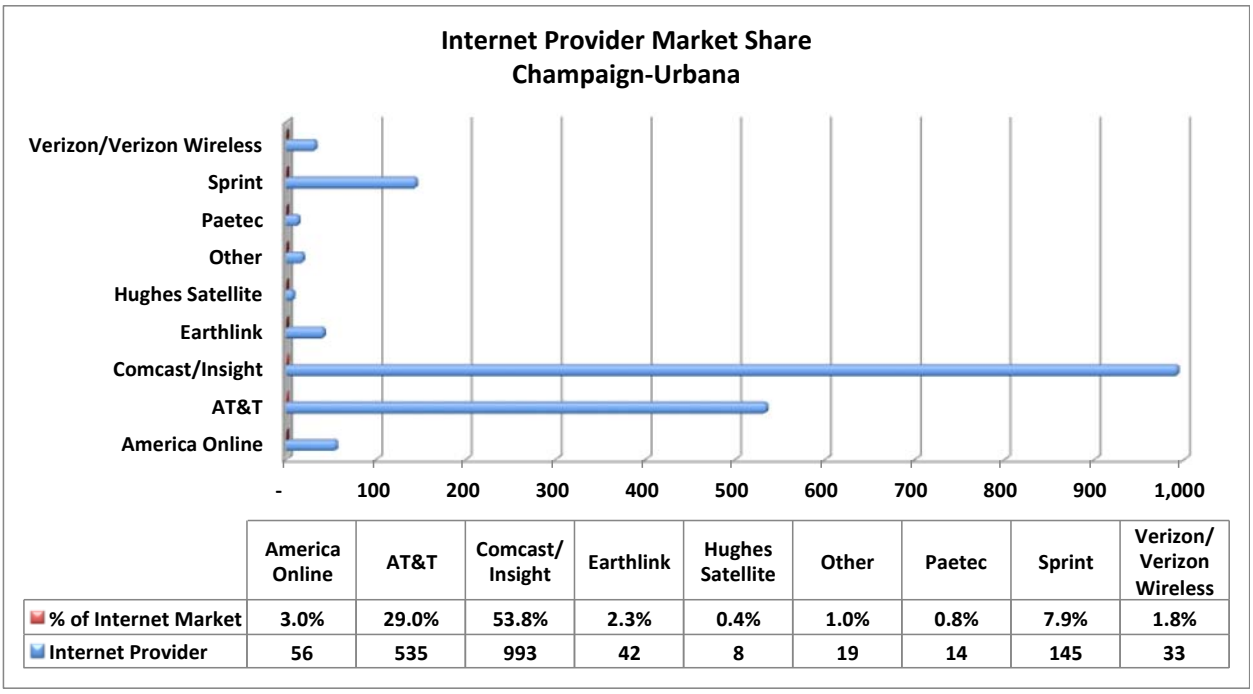
On the following pages, actual market data in the Champaign-Urbana area was captured. This data was used to make intelligent pricing, product, positioning and marketing recommendations.

Market Analysis

Existing Providers and Market Share

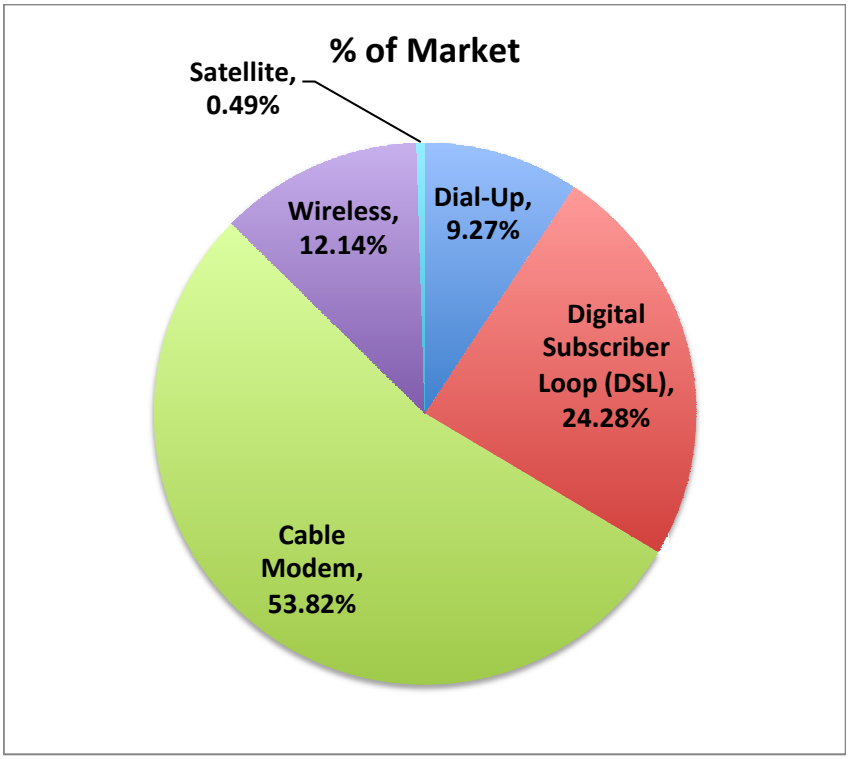
Provider	Internet Provider	% of Internet Market
America Online	56	3.0%
AT&T	535	29.0%
Comcast/Insight	993	53.8%
Earthlink	42	2.3%
Hughes Satellite	8	0.4%
Other	19	1.0%
Paetec	14	0.8%
Sprint	145	7.9%
Verizon/Verizon Wireless	33	1.8%
Total	1,845	100%

Comcast is the market leader with 53.8% of the market share. AT&T follows Comcast with 29% of the market share. Third party providers such as America Online, Volo, Juno, Earthlink and others make up over 6.4% of the market. Third party provdiers use DSL/Cable partners and fixed wireless to deliver network access. Approximately 1.8% currently relies on wireless as their sole Internet access service.



	America Online	AT&T	Comcast/ Insight	Earthlink	Hughes Satellite	Other	Paetec	Sprint	Verizon/ Verizon Wireless
% of Internet Market	3.0%	29.0%	53.8%	2.3%	0.4%	1.0%	0.8%	7.9%	1.8%
Internet Provider	56	535	993	42	8	19	14	145	33

Type of Service Delivery



Service	Subscribers	% of Market
Dial-Up	171	9.27%
Digital Subscriber Loop (DSL)	448	24.28%
Cable Modem	993	53.82%
Wireless	224	12.14%
Satellite	9	0.49%
	1845	**100%**

With Comcast/Insight having 54.6% of the market share, it makes sense that a similar percentage of the service delivery is cable modem.

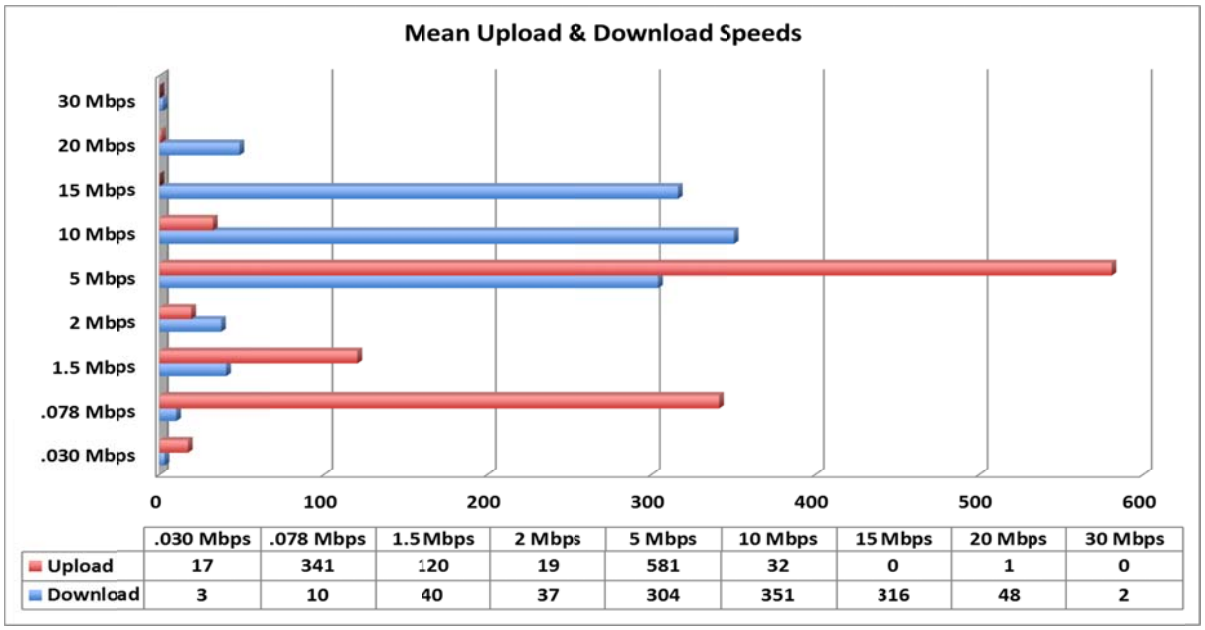
AT&T is offering their service via Digital Subscriber Loop (DSL) services. No one is currently offering services via Fiber to the Home technology. As no other company is currently offering their services using Fiber to the Home technology, UC2B should highlight this as a main selling point and advantage of its service offerings. The benefits and applications only available on Fiber to the Home are provided later in this document.

Service Offerings

Existing Bandwidth and Speeds Available

Mean Speeds	Download	Upload
.030 Mbps	3	17
.078 Mbps	10	341
1.5 Mbps	40	120
2 Mbps	37	19
5 Mbps	304	581
10 Mbps	351	32
15 Mbps	316	0
20 Mbps	48	1
30 Mbps	2	0
Subtotal Speed Samples	**1111**	**1111**

Existing service offerings are asymmetrical; meaning, the download speeds are not the same as the upload speeds. The competitors are providing service offerings where the upload speeds are much slower than the download speeds. Most of the customers are subscribing to download speeds between 5 Mbps and 15 Mbps. The upload speeds that customers are subscribing to are between less than 1 Mbps up to 5 Mbps.



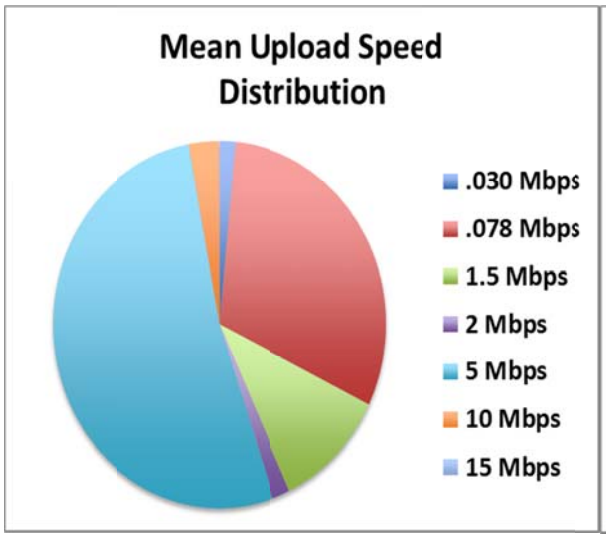
The charts above show what service offerings are being ***subscribed to*** by customers.

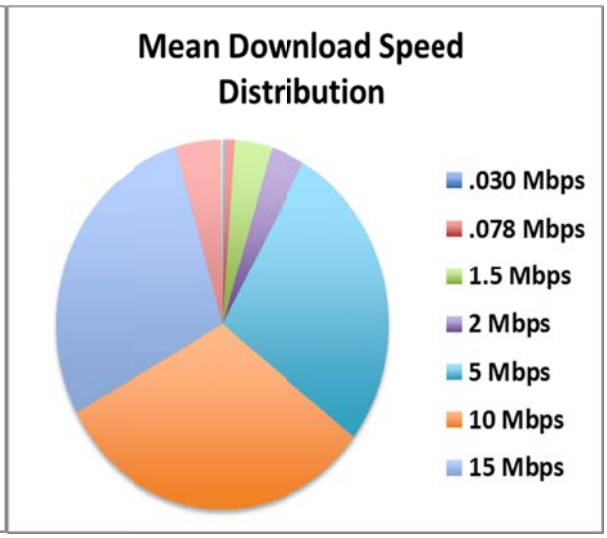
The charts on the following page show what actual speeds are ***available to*** customers.

The actual speed available is less than the advertised speed of the service. Another significant point to be made is that customers are paying for bandwidth that they are not currently getting. This is another differentiator of Fiber to the Home networks; more speed is available for both upload and download applications, and should be emphasized as another selling point of UC2B's service offering.

Mean Upload Speeds	Upload
.030 Mbps	1.53%
.078 Mbps	30.69%
1.5 Mbps	10.80%
2 Mbps	1.71%
5 Mbps	52.30%
10 Mbps	2.88%
15 Mbps	0.00%
20 Mbps	0.09%
30 Mbps	0.00%
Subtotal Speed Samples	**100%**

Mean Download Speeds	Download
.030 Mbps	0.27%
.078 Mbps	0.90%
1.5 Mbps	3.60%
2 Mbps	3.33%
5 Mbps	27.36%
10 Mbps	31.59%
15 Mbps	28.44%
20 Mbps	4.32%
30 Mbps	0.18%
Subtotal Speed Samples	**100%**





Actual speed test samples were taken. The actual mean upload speeds are between less than 1 Mbps and 5 Mbps, with most of the upload speeds at 5 Mbps (52.3%). The actual download speeds range between 5 Mbps (27.36%), 10 Mbps (31.59%) and 15 Mbps (28.44%).

Residential Pricing, Service Offerings

Note: These are mostly Asymetrical Services with a cap of around 5 Mbps upstream.

Residential/SMB	AT&T	Comcast/Insight DOCSIS Cable	OneEleven Wireless	OneEleven DSL	Conxxus DSL	Volo DSL/Wireless	Consolidated DSL	HughesNet Satellite
1.5 Mbps								
6 Month Introductory Price								39.99
12 Month Intorductory Price								
Post Introductory Price			$ 40.00					79.99
Bundled Price								
3-4 Mbps								
6 Month Introductory Price								
12 Month Intorductory Price	$ 19.95							
Post Introductory Price	$ 38.00		$ 50.00	$ 69.95	$ 39.95	$ 32.00	$ 19.95	
Bundled Price								
5-8 Mbps								
6 Month Introductory Price								
12 Month Intorductory Price	$ 24.95							
Post Introductory Price	$ 43.00		$ 75.00	$ 89.95				
Bundled Price								
10-12 Mbps								
6 Month Introductory Price		$ 19.95						
12 Month Intorductory Price	$ 29.95							
Post Introductory Price	$ 48.00	$ 59.95		$ 101.95				
Bundled Price		$ 44.95						
18 Mbps								
6 Month Introductory Price								
12 Month Intorductory Price	$ 39.95							
Post Introductory Price	$ 53.00							
Bundled Price								
20 Mbps								
6 Month Introductory Price								
12 Month Intorductory Price								
Post Introductory Price		$ 69.95						
Bundled Price								
24 Mbps								
6 Month Introductory Price								
12 Month Intorductory Price	$ 49.95							
Post Introductory Price	$ 63.00							
Bundled Price								

UC2B is proposing to offer 20 Mbps for $20 per month. UC2B's initial proposal at the time of the grant applications was to offer 5 Mbps at the $19.95 price. After a more diligent market analysis, it is clear that this offering 20 Mbps of bandwidth for the same price will encourage current subscribers to move to UC2B, especially when it is pointed out that the customer is not always receiving the level of bandwidth from the current providers that the customer is subscribing to. In other words, the customer is not getting what they are paying for from the competition.

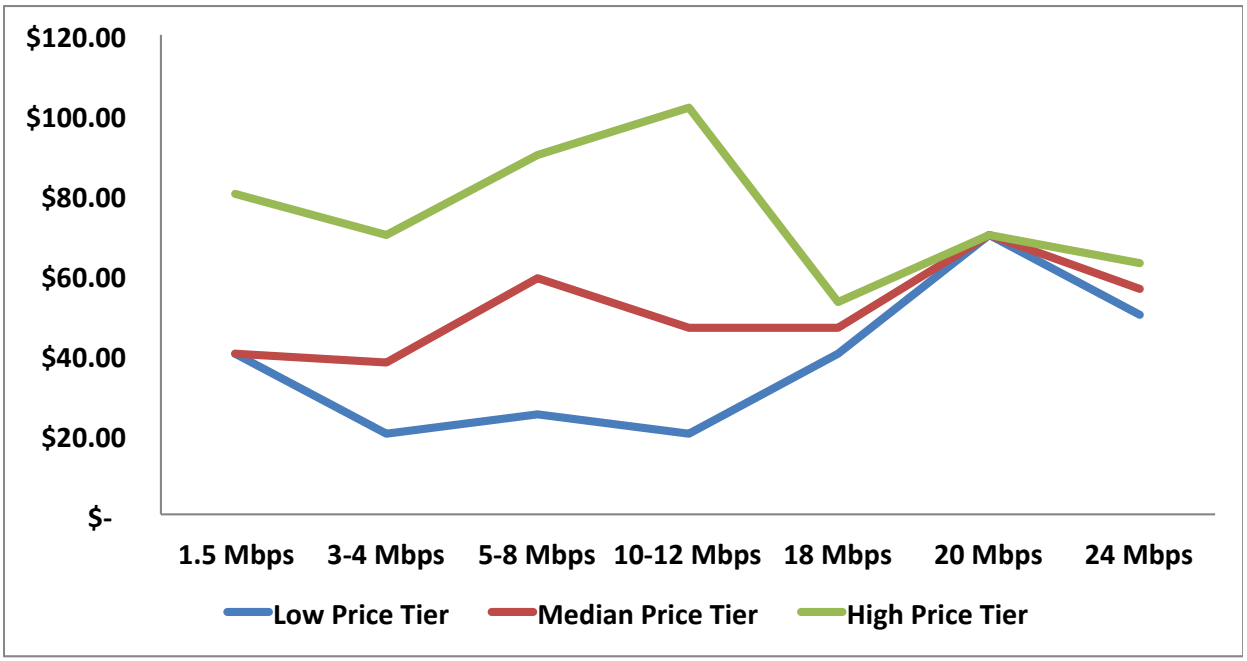
With UC2B offering 20 Mbps for $20 per month; the competition is offering the same amount of bandwidth for 2-3 times this price. AT&T is offering 18 Mbps for $39.95 initially; with the price increasing to $53 per month after 12 months. Comcast/Insight is offering 20 Mbps for $69.95. Most of Comcast's customers are on the 10-12 Mbps offering, receiving 5 Mbps of service for a price of $19.95 for six months, then jumping to $59.95 per month. Other competitors are offering 3-4 Mbps for $19.95 to $69.95.

Consumer	Basic Services Best Effort Upstream	Upgraded Upstream 1-2 Mbps Max	Upgrade Upstream 2 to 5 Mbps Max
Price/Service Tie	**Low Price Tier**	**Median Price Tie**	**High Price Tier**
1.5 Mbps	$ 39.99	$ 40.00	$ 79.99
3-4 Mbps	$ 19.95	$ 38.00	$ 69.95
5-8 Mbps	$ 24.95	$ 59.00	$ 89.95
10-12 Mbps	$ 19.95	$ 46.48	$ 101.95
18 Mbps	$ 39.95	$ 46.48	$ 53.00
20 Mbps	$ 69.95	$ 69.95	$ 69.95
24 Mbps	$ 49.95	$ 56.48	$ 63.00
Upstream	<700 Kbps	1 to 2 Mbps	2 to 5 Mbps
Low	**$ 19.95**	**$ 38.00**	**$ 53.00**
Median	**$ 39.95**	**$ 46.48**	**$ 69.95**
Max	**$ 69.95**	**$ 69.95**	**$ 101.95**

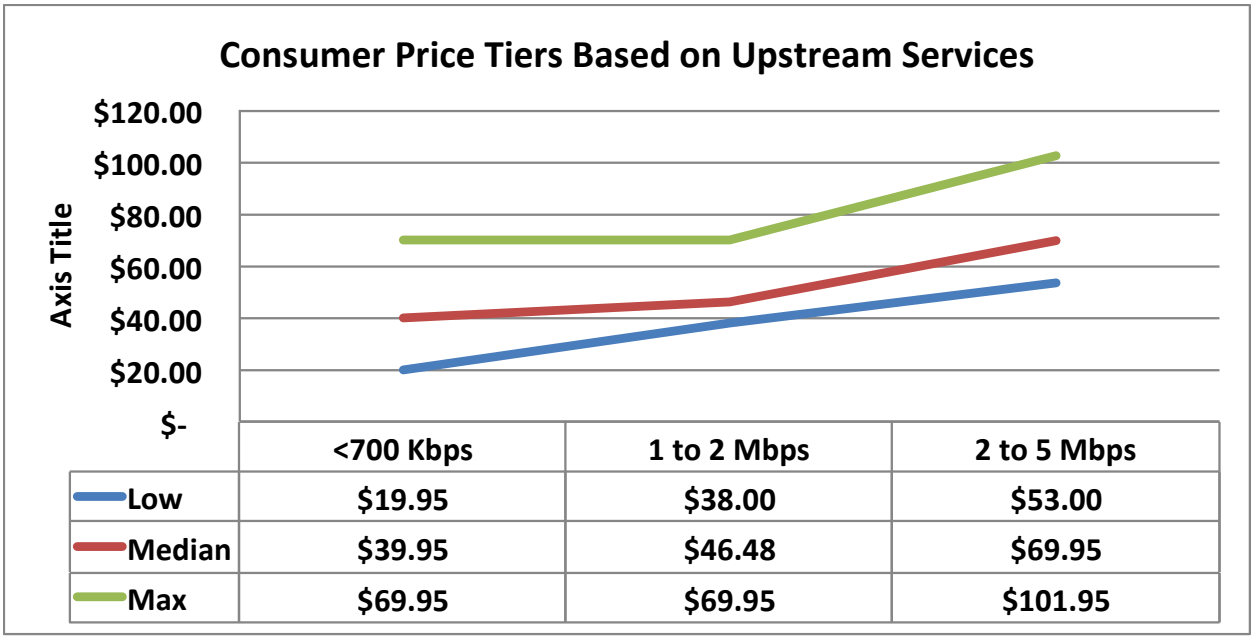
All of the service providers offer a "best effort" service; meaning, they will make their best effort, yet do not guarantee the level of service or the amount of bandwidth the customer will actually receive. To receive a higher level of service and to upgrade the available bandwidth for uploading data, the existing service providers charge the customer more. This could be a differentiating feature of UC2B's service offering. With Fiber to the Home, the minimum bandwidth received by the customer could actually be guaranteed by UC2B.

UC2B should be aware that many of the consumers of broadband are currently purchasing bundled services from cable/DSL providers. Comcast currently offers a bundled Triple play service at $99 which is the predominate bundle within the underserved community. Since UC2B is competing with bundled and unbundled services it will have to consider that the bundled offerings will be tougher to compete with unless there is a VoIP/IPTV alternative. Comcast

unbundled VOIP/TV will increase in price to as much as $112 for VoIP/TV without the data component making the UC2B and Cable package more expensive for the existing consumers of these services. Comcast has already announced that it will be lowering its price for bundled services.



What is interesting is that there are currently very few high bandwidth providers and only one above 18 Mbps. So, the convergence of low, medium and high pricing at the 20 Mbps service level around $66 per month is based on the fact that there is no competition above 18 Mbps. In addition, there is a wide variance in pricing across the Cable, DSL and Wireless providers.



	<700 Kbps	1 to 2 Mbps	2 to 5 Mbps
Low	$19.95	$38.00	$53.00
Median	$39.95	$46.48	$69.95
Max	$69.95	$69.95	$101.95

Summary of salient points:

- Comcast/Insight is the market leader with 53.8% of the market share. AT&T follows Comcast/Insight with 29% of the market share.
- With Comcast having approximately 54% of the market share, it makes sense that a similar percentage of the service delivery is cable modem. AT&T is offering their service via traditional Digital Subscriber Loop (DSL) services as well as U-Verse, which bonds DSL copper pairs for greater bandwidth. No one is currently offering services via Fiber to the Home technology. In addition, Comcast/Insight and AT&T have not upgraded their data cable network infrastructure to support the next tier of services (100 Mbps). UC2B should market the advantages of its Fiber to the Home offering, being the only service provider using this technology.
- 97% of the Upload Speeds are less than 5 Mbps. Over 35% of the download speed is less than 5 Mbps, now considered underserved. Approximately 64% within the urban setting have speeds greater that 5 Mbps, 12% lower than the national average. The actual speeds are typically 20 to 30% less than advertised and because of oversubscription, often are less than 50% of the advertised rates at peak periods. No other provider is marketing symmetrical services or any kind of service level agreement. This is an advantage for UC2B.
- Customers are paying for a service level that they are not actually receiving. All of the other service providers are offering their service as a "best effort." In order to actually receive the advertised bandwidth, especially for uploading data, the customer needs to pay higher rates. UC2B could offer a guarantee on service levels as a differentiator in the marketplace.
- Comcast has a 6-month introductory price of $19.99; after than it reverts to $59.99 or a bundled price of $44.95 for bandwidth speeds of 10 Mbps of download,

asymmetrical of 5 Mbps or less upload. AT&T has a 12-month introductory price of $29.95; after that it reverts to $48.00.

- Comcast/Insight does provide bundled services (Triple Play) that reduce the overall cost based on the uptake of the additional product offers. Both Comcast and AT&T will be able to offer bundled rates, simplifying the "triple play" decision and providing the appearance of lower rates for similar services. As UC2B does not have this capability, this is a disadvantage for UC2B. UC2B could partner with other VoIP/IPTV providers to mitigate this disadvantage. Groups like Roku, Boxee, and others are building a portfolio of Over-The-Top applications to compete with the local cable operators. UC2B will continue to negotiate with companies such as Netflix and Google as peering partners to offer movies and content on demand.

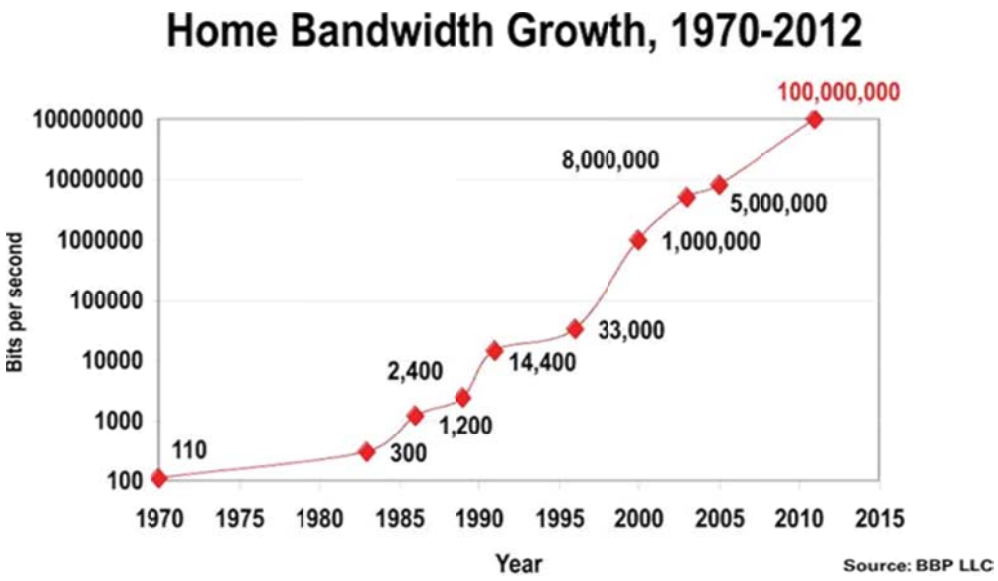
Recommended Positioning and Pricing Information to Consider including in Sales Materials

Positioning, Fiber to the Home Benefits

Advanced Fiber-To-The-Home (FTTH) Networks

There are many advantages that UC2B can provide as the only company that is offering Fiber to the Home as a network service delivery technology. These advantages include:

- The future demand for more bandwidth is expected to increase to over 1 Gbps within three years (by 2015). Fiber to the Home is the only service delivery that will be "Future Proof," offering virtually unlimited capacity for accommodating "bandwidth hungry" emerging technologies and consumers. With You Tube and Skype, cable modem and DSL are not adequately meeting the bandwidth needs of today, let alone the projected need for bandwidth in the near future.



- The current trends are already beginning to push the boundaries of existing home area networks and will continue to drive the applications bandwidth and home consumer services beyond the limits of the existing provider networks. The average in home user profile is more than one stream of video and basic applications.
- FTTH architecture eliminates all "last mile" copper limitations; bottlenecks.
- Using an all fiber network extended directly to the end-user premise will deliver higher customer satisfaction and superior performance surpassing anything in the Cable or DSL experience today. A survey conducted by the market research firm, RVA, LLC found that overall satisfaction amongst FTTH users is far greater (74% stating "very satisfied") than cable modem users (54% stating "very satisfied") and DSL users (51%).
- Greater bandwidth speeds, for both uploading and downloading data can be provided only by Fiber to the Home. Comcast/Insight and AT&T have not upgraded their network technology to accommodate the higher bandwidth applications that are being seen in the marketplace today. Fiber to the Home can accommodate 100 Mbps – 1 Gbps speeds; DSL and cable modem networks cannot support these speeds.
- This investment in technology will enable the delivery of new products and content while delivering cost savings through reduced operational and maintenance expense for UC2B. UC2B can then pass on the reduced operational and maintenance expenses to their customers. With regard to cost of service relative to download connection speed, the RVA national survey results showed FTTH subscribers paying $2.91 a month per megabit of bandwidth, compared to $3.83 for cable subscribers, $16.40 for DSL, and $49.38 per megabit for fixed wireless services. It is understood that fixed wireless services in the Champaign-

Urbana area are more competitively priced; these results reflect national survey information.

- With FTTH, customers will be able to more easily telecommute, with a direct connection to the business' data applications. Many of UC2B's customers will be anchor tenants (the University, hospitals, major employers, the City and government offices) with a direct connection to the Fiber to the Home network. Having the ability to connect directly to UC2B's network over a fiber optic connection gives the appearance to the computer user that they are simply an extension or "on" the corporate or university network, given speeds and access as if they were working in the corporate or university office.

Fiber to the Home can more readily support Symmetrical Service; Why Do We Care About This?

There is a significant emergence of advanced, bandwidth-intensive applications that not only require large availability for download speeds, but also upload speeds as well. Customers are creating videos, pictures, and CAD files that need to be uploaded, requiring large bandwidth upload speeds. **In addition, over-the-top TV applications, gaming and cloud-based services are driving up the need for available capacity and the move towards expanded two-way communications. These over-the-top frameworks are also increasing the need for attaching and sharing home/business access creating the need for greater two-way service access.**

The Fiber to the Home Council, a non-profit organization whose mission is to promote and educate about the need for more Fiber to the Home connections, cites research concluding that consumer demand for symmetrical bandwidth, with the increasing use of applications such as cloud computing and a host of essential services in the areas of education and healthcare will "easily exceed 25 Mbps within just five years."

What are the applications that are available only on a Fiber to the Home network?

Application	Rate
Personal communications	300 to 9,600 bits/sec or higher
E-mail transmissions	2,400 to 9,600 bits/sec or higher
Remote control programs	9,600 bits/sec to 56 Kbits/sec
Digitized voice phone call	64,000 bits/sec
Database text query	Up to 1 Mbit/sec
Digital audio	1 to 2 Mbits/sec
Access images	1 to 8 Mbits/sec
Compressed video	2 to 10 Mbits/sec
Medical transmissions	Up to 50 Mbits/sec
Document imaging	10 to 100 Mbits/sec
Scientific imaging	Up to 1 Gbit/sec
Full-motion video	1 to 2 Gbits/sec

Service	Bandwidth	Number of Devices	Bandwidth Home Area Network	Bandwidth Residential Gateway to Network
TV	2 to 20 Mbps	3.5	2 to 70 Mbps	2 to 70 Mbps
DVR	2 to 20 Mbps	2	2 to 40 Mbps	0
Home Theater	1 to 6 Mbps	1	1 to 6 Mbps	0
Internet Browsing	1 to 20 Mbps	1 to 5	1 to 100 Mbps	1 to 10 MBPS
Printer	.5 to 1 Mbps	1 to 5	.5 to 5 Mbps	0
Digital imaging	1 to 20 Mbps	1 to 3	1 to 60 Mbps	0
On-line Gaming	.2 to 1 Mbps	1 to 3	.2 to 3 Mbps	.2 to 1 Mbps
Video Capture	.1 to 1 Mbps	1 to 10	.1 to 10 Vbps	.2 to 3 Mbps
Portable Audio	.1 to 20 Mbps	1 to 3	.1 to 60 Vbps	0
Total	**70 to 100 Mbps**		**12.5 to 354 Mbps +**	**4 to 84 Mbps +**

New Tools Enable Innovation

The average household in the Champaign-Urbana area is 2.3 persons. The average service consumer is becoming a multi-tasker and a mobile user of devices in the home. The estimated home user has multiple active devices as shown in the table above and depending on the applications is estimated to consume 70 to 100 Mbps in the near future requiring on average 4 to 84 Mbps services through a residential gateway. As technology such as 3D takes hold it is entirely possible that the Home Area Network and certainly the residential gateway will become the limiting factor to the delivery of these new services.

Fiber to the Home can also support Potential Partnering with Triple Play Services, Bundling of Services

The benefit of having one provider for voice, Internet and cable TV, and "bundling" these services into one invoice, with the added incentive of additional savings for cable TV and voice services is often an advantage for subscribers. UC2B, as the network owner, may decide to utilize the network to support triple play services, as well as a number of other applications. This may be provided through compensated access agreements and partnerships with alternative service providers to offer a bundled, triple play service.

As a neutral network owner, UC2B could also partner with the power and other utility companies to provide automated meter reading, load balancing, and remote energy management services. UC2B could also partner with the local police for security monitoring and video surveillance services. There are a number of applications that can be supported on UC2B's FTTH network and our meetings with key stakeholders can help in the discovery of potential partnership opportunities for UC2B. This ability to be a neutral provider and not a typical service provider is an excellent advantage for UC2B. UC2B has the unique ability to look at what behavior they would like to incent; i.e. what areas of influence could UC2B provide in terms of automated meter reading, energy management, healthcare initiatives, public safety,

and economic development initiatives? As many of these anchor tenants will be directly connected to the UC2B network over a fiber optic connection, what other applications could be packaged with UC2B's Internet services to help solve many of the communities' problems or initiatives?

What Price/Service Offering will get Residential Customers to Change?

Typically, a 25-30% price reduction will incent a residential customer to change providers, if all other things are equal. If the price reduction is coupled with greater bandwidth speeds, enhanced services, and symmetrical bandwidth, this may provide an even greater incentive for customers to make a change to UC2B.

UC2B's initial thoughts regarding pricing and bandwidth offerings are provided on the following chart, along with a side-by-side comparison of pricing and bandwidth offerings available from the competition:

Comparison of UC2B Pricing vs. the "Market"				
Consumer	Symetrical	Basic Services Best Effort Upstream	Upgraded Upstream 1-2 Mbps Max	Upgrade Upstream 2 to 5 Mbps Max
Price/Service Tiers	UC2B's Pricing	Low Price Tier	Median Price Tier	High Price Tier
1.5 Mbps	NA	$ 39.99	$ 40.00	$ 79.99
3-4 Mbps	NA	$ 19.95	$ 38.00	$ 69.95
5-8 Mbps	$ 19.99	$ 24.95	$ 59.00	$ 89.95
10-12 Mbps	$ 29.99	$ 19.95	$ 47.95	$ 101.95
18 Mbps	NA	$ 39.95	$ 46.48	$ 53.00
20 Mbps	$ 39.99	$ 69.95	$ 69.95	$ 69.95
24 Mbps	NA	$ 49.95	$ 56.48	$ 63.00
30 Mbps	$ 49.99			
40 Mbps	$ 59.99			
Upstream		**<700 Kbps**	**1 to 2 Mbps**	**2 to 5 Mbps**
Low		**$ 19.95**	**$ 38.00**	**$ 53.00**
Median		**$ 39.95**	**$ 47.95**	**$ 69.95**
Max		**$ 69.95**	**$ 69.95**	**$ 101.95**

Conclusion and Recommendations

UC2B has an ambitious goal of gaining 50% market share in the underserved areas within six months. As an initial introductory and incentive program, offering a price/service delivery of 20 Mbps symmetrical service for $20 per month would seem to be an aggressive and impressive offering that would incent customers to change to UC2B. The service offering is 2-4 times better than the 5 Mbps – 15 Mbps "best effort" service offering for 50-75% of the price.

The initial feedback from UC2B's door-to-door canvassers is that between 50% and 60% of all the people they have talked to are interested in the service and want a follow-up "sales" visit. "20 Mbps for 20 bucks" would help close those sales. If UC2B hits a 50% penetration level, UC2B's financial model shows positive earnings, and positive IRR. The model works because the grant is funding the build. If UC2B expands the network to other areas, the pricing may need to be modified for the expansion areas.

The following pricing is recommended for the grant area for residential services:

Name of Tier	Advertised Speeds		Average Speeds		Average Latency	Pricing Plan $ Per Month
	Downstream Mbps	Upstream Mbps	Downstream Mbps	Upstream Mbps	@ end-user CPE milliseconds	
Residential						
UC2B 20/100Internet CNS	20	100	20	100	<10 ms	$19.99
UC2B 30/100Internet CNS	30	30	30	30	<10 ms	$29.99
UC2B 40/100Internet CNS	40	40	40	40	<10 ms	$39.79

The pricing for the UC2B grant area is extremely competitive and should only be offered to the (11) Census Block areas within the grant coverage area. It is recommended that in order to receive this pricing, a two year term is required. The contract may be worded leniently if the customer needs to cancel prior to the two year term; however, in order to reduce the cost of churn, and because this pricing is extremely competitive, it is recommended to have a term contract in place.

Coupled with the other benefits mentioned above, we at NEO believe this is an excellent price/service delivery to introduce into the marketplace to meet UC2B's goal of gaining as much market share as soon as possible within a relatively short amount of time. We recommend a term agreement is needed to secure this pricing to reduce churn and to lock-in customers. Something else to consider may be to offer this service and pricing coupled with other initiatives that UC2B would like to incent, working in partnership with UC2B's anchor tenant community. This may be another way to lock in a customer in the long-term and gain market share quickly. This second option may take longer for UC2B to put in place; however, having the ability to be a neutral player and not a typical service provider, coupled with the fact that UC2B is a local provider that can focus and provide a hyper-local offering, will be an excellent competitive advantage over what other providers can offer in the marketplace.

Business and Commercial Services

Pricing Strategies for Business and Commercial Services

Pricing is typically significantly higher for business services versus residential services, and this is certainly the case with the Champaign-Urbana market.

The following is the existing pricing and service delivery offered in the marketplace:

Commercial	Speed Tier	Bronze Low-end Internet/Voice	Silver High-End Internet/Voice	
AT&T Ethernet	100 Mbps	$ 475.00	$ 475.00	
	1 Gbps	$ 850.00	$ 850.00	
	CIR-100 Mbps	$ 700.70	$ 818.26	Have seen combine servies for health and education as low as $650 for 100 MBPS PORT/CIR
	CIR - 1 Gbps	$ 1,004.25	$ 1,189.68	Have seen combine servies for health and education as low as $1,100 for 1000 MBPS PORT/CIR

		Low-end Internet/Voice	High-End Internet/Voice
Paetec Ethernet	100 Mbps	$ 425.00	600
	1 Gbps	$ 1,530.00	2000

		Low-end Internet/Voice	High-End Internet/Voice
Comcast	22/5 Mbps	$ 399.00	$ 899.00
	50/10 Mbps	$ 489.00	$ 948.00
	100/10 Mbps	$ 650.00	$ 1,048.00

		Quote
High Speed Solutions	10/10 Mbps	$ 1,076.00
	20/20 Mbps	$ 1,326.00
	50/50 Mbps	$ 1,888.00
	100/100 Mbps	$ 2,735.00

Side-by-Side Comparison, Commercial Services

Mbps	Low-End AT&T	High-End AT&T	Low-End Paetec	High-End Paetec	Low-End Comcast	High-End Comcast	High Speed Solutions
10							$ 1,076.00
20					$ 399.00	$ 899.00	$ 1,326.00
50					$ 489.00	$ 948.00	$ 1,888.00
100	$ 1,175.00	$ 1,293.68	$ 425.00	$ 600.00	$ 650.00	$ 1,048.00	$ 2,735.00
1000	$ 1,854.25	$ 2,039.68	$ 1,530.00	$ 2,000.00			

UC2B's desire is to offer reliable and affordable Internet connectivity for businesses to attract businesses to Champaign-Urbana. UC2B could most certainly break from tradition in its pricing strategy by offering a similarly priced offering to small businesses as it is offering to the residential market, as its entry point in the market. Will a small 8-person office with a 20 Mbps connection use more bandwidth than a two-parent two-kid household with a 20 Mbps connection? Probably, but their demands will be at different times of the day with only overlap in the late afternoon. The demand placed on the UC2B network by business users during the day will not impact how UC2B sizes its upstream connection. It will be the residential users' evening demand that will determine that. Larger businesses that require additional IP addresses, or higher bandwidth needs would be priced competitively in the marketplace.

UC2B's vision for the UC2B network is to be one that does not slow down whenever the kids are home from school or late at night. If a customer is a customer, no matter if they are a family, a home business or a business in its own building, UC2B does not have to care about what the customer does with its Internet connection. The customer signs up for as much bandwidth as is needed (or can afford) and UC2B does not spend any time worrying about whether someone is running a business on a residential connection. There is no gaming the system, because there is no system to game.

NEO recommends the following pricing and qualifications:

1. Small Business and Non-profit Pricing. The pricing would be the same for small business and non-profit pricing as the residential rates above. In order to qualify for the non-profit status, the business must show the Federal forms designating it as a non-profit.

Small businesses qualify for this pricing if the following conditions are met:

a. The business does not require additional IP addresses.

b. The business has less than $1 Million in annual revenues.

c. The business has less than 10 employees.

2. Business and Anchor Institution Pricing.

The following pricing is suggested for Business and Anchor Institutions:

Name of Tier	Advertised Speeds		Average Speeds		Average Latency	Pricing Plan $ Per Month
	Downstream Mbps	Upstream Mbps	Downstream Mbps	Upstream Mbps	@ end-user CPE milliseconds	
Business and Anchor Institution						
UC2B 20/20Internet CNS	20	20	20	20	<10 ms	$114.80
UC2B 40/40Internet CNS	40	40	40	40	<10 ms	$213.80
UC2B 60/60Internet CNS	60	60	60	60	<10 ms	$312.60
UC2B 80/80Internet CNS	80	80	80	80	<10 ms	$411.00
UC2B 100/100Internet CNS	100	100	100	100	<10 ms	$509.00
Private VLAN 10 Mbps	10	10	10	10	<10 ms	$100.00
Private VLAN 100 Mbps	100	100	100	100	<10 ms	$400.00
Private VLAN 1 Gbps	1,000	1,000	1,000	1,000	<10 ms	$1,200.00

If a customer wants more than one Public IP address they must pay the Business Rates in addition to the extra charges for the additional Public IP addresses.

UC2B is providing one IP address included in the $19.99 price. If the customer only has one IP address, then the customer qualifies for the residential package of 20 Mbps for $20. With additional IP addresses, the customer receives the higher priced business rate. Many businesses will need additional IP addresses, and the pricing could be structured in tiers, something similar to the following:

Proposed Business/Commercial Pricing

IP Addresses	Monthly Price
1 IP Address	Included in the monthly price
2 to 5 IP Addresses	$14.95
6 to 13 IP Addresses	$34.95
14 to 29 IP Addresses	$59.95

NEO also suggests offering businesses the option of subscribing to more bandwidth, again with a tiered pricing approach. The tiered pricing approach would also narrow the gap between what UC2B is offering versus what the competition is offering.

This pricing would narrow the gap between what UC2B is offering and what the competition is offering, and it is still very competitively priced. It also meets the requirement of covering the potential operating expenses for outsourcing customer services, and gives a discount on bandwidth with more volume of bandwidth.

Assumptions	
$15.00	Monthly cost of providing support and billing to a customer
$5.00	Starting point for cost of Bandwidth for a 10 Mbps For-Profit business customer
60%	Discount for Non-Profits
$150	Monthly Add-On for Ringed Service
$0.01	Per Mbps rate reduction for 20 Mbps
$0.02	Per Mbps rate reduction for 30 Mbps
$0.03	Per Mbps rate reduction for 40 Mbps
$0.04	Per Mbps rate reduction for 60 Mbps
$0.05	Per Mbps rate reduction for 80 Mbps
$0.06	Per Mbps rate reduction for 100 Mbps
$0.07	Per Mbps rate reduction for 125 Mbps
$0.08	Per Mbps rate reduction for 150 Mbps
$0.10	Per Mbps rate reduction for 200 Mbps

Bandwidth In Mbps	Monthly Support & Billing	For-Profit Bandwith Charge	Total For-Profit Business Monthly Rate	Non-Profit Bandwidth Charge	Total Non-Profit Organization Monthly Rate	Ringed Customer Bandwidth and Redundancy Cost	Total Ringed Business Customer Monthly Rate
20	$15.00	$99.80	$114.80	$39.92	$54.92	$249.80	$264.80
40	$15.00	$198.80	$213.80	$79.52	$94.52	$348.80	$363.80
60	$15.00	$297.60	$312.60	$119.04	$134.04	$447.60	$462.60
80	$15.00	$396.00	$411.00	$158.40	$173.40	$546.00	$561.00
100	$15.00	$494.00	$509.00	$197.60	$212.60	$644.00	$659.00
125	$15.00	$616.25	$631.25	$246.50	$261.50	$766.25	$781.25
150	$15.00	$738.00	$753.00	$295.20	$310.20	$888.00	$903.00
200	$15.00	$980.00	$995.00	$392.00	$407.00	$1,130.00	$1,145.00

UC2B is also considering pricing for a direct connection or Private VLAN connection on the network. Anchor tenants would be charged this pricing for Ethernet connections to other customers on the network.

Private VLANs are used for connecting multiple locations of an organization to each other. This is sometimes referred to as "Metro Ethernet". There is no Internet connectivity or Community Network Service connectivity included in the Private VLAN Service. In this model, organizations would typically centralize Internet connectivity, and then use the Private VLAN to distribute Internet and organizational data to all remote locations.

UC2B is planning to offer the following pricing:

Business and Anchor Institutions, Private VLAN, Layer Two Service			
	Downstream Mbps	Upstream Mbps	Pricing Plan per Month
Private VLAN 10 Mbps Location	10	10	$ 100
Private VLAN 100 Mbps Location	100	100	$ 400
Private VLAN 1 Gbps Location	1000	1000	$ 1,200

This pricing seems to be competitively priced as well. AT&T is offering a Private VLAN product for health and education applications of $650 for 100 Mbps (UC2B is offering this at $400 per month) and $1,100 for 1Gbps. UC2B may want to adjust their pricing to be more competitively priced with AT&T (UC2B is planning to offer this at $1,200).

Other Issues regarding Contracting, Deposits, and Best Practices

The demographics of the UC2B FTTP service areas include a large number of lower income families and students. There is significant risk of non-payment of invoices. In order to mitigate this risk, the following strategies could be put in place:

1. Deposits on Equipment. It is recommended that UC2B require an equipment deposit. The cost to UC2B for the ONT is $389.

The demographics of the UC2B FTTP Residential service areas include a large number of lower income families and students. A large, one-time deposit on the equipment may be difficult for a lower income household to absorb. An equipment deposit may create a barrier for new customers to sign up. There is risk for UC2B however; as the equipment is expensive and will need to be returned at the end of the service agreement or when a customer terminates service. UC2B should have a policy in place to ensure that the equipment is returned.

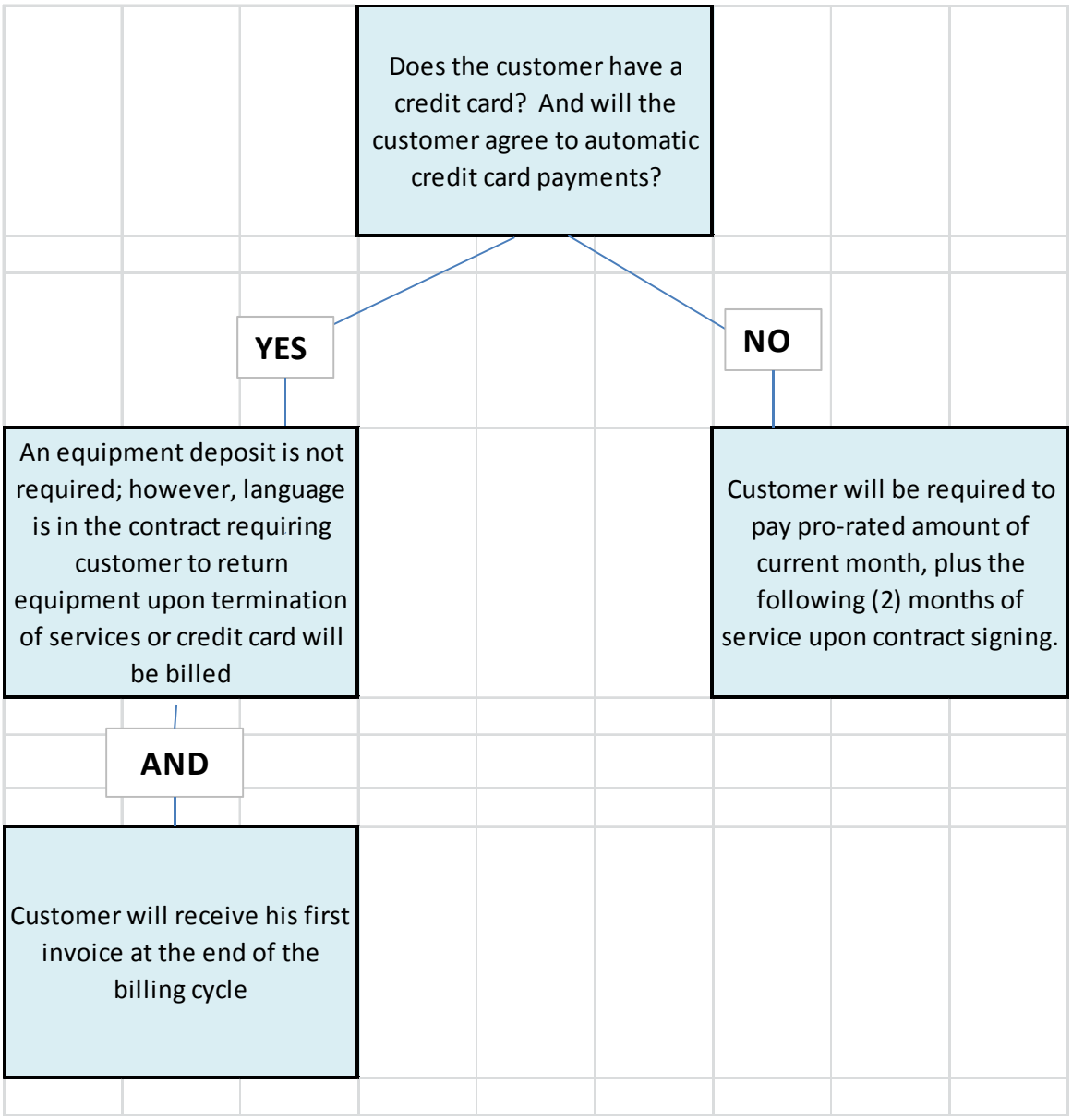
Therefore, the following recommendations could help mitigate the risk and yet not create a barrier for signing up for the service:

- The deposit on the equipment could be in the form of a credit card payment that is "held" but not charged unless the customer does not return the equipment, or does not pay their bill.
- Or another consideration could be to spread the costs of the deposit over a 3-month or 6-month timeframe.

2. Billing One-Month in Advance. This is common practice in the telecommunications and cable TV industry. The first month billing would include a pro-rated portion of what is left of the month, plus the following month's service. The customer is essentially billed in advance for services. This payment would not necessarily be needed to be paid at the time of the customer signing up, if the customer has a credit card and agrees to automatic credit card payment.

3. Credit Card Billing. In order to have service with UC2B, it is recommended that the customer be required to have a credit card on file and have the credit card billed automatically monthly. This eliminates much of the collection efforts and costs associated with billing and collections. This does not eliminate the collection efforts entirely; however, much of the costs are diminished.

It is understood that many of the potential customers of UC2B may not have access to a credit card or have a checking account. This will be a challenge for UC2B, as again, the demographics of the customer base are of a low-income bracket. If this is the case, i.e. the customer does not have a credit card or a checking account, UC2B could require that the customer pay in cash for the pro-rated portion of what is left of the month, plus the following (2) months of service.



4. Temporary and Permanent Shut off of Service. If payment is not received within 7-10 days after the payment due date, UC2B can shut off service temporarily. If payment is not received after 14 days, the service can then be permanently shut off. This practice often facilitates timely payment for services. Another suggestion may be that UC2B customers who pay late may lose their Internet connectivity, but not their Intranet connectivity. This allows children to still do their homework and parents to still be able to work from home; and serves as a gentle reminder that payment needs to be made in order to connect to the Internet.

Draft agreements for end users have been provided to UC2B by NEO.

Dealing with Landlords, MDUs, Apartments, Master Planned Communities

Key Objectives:

The principal objective in negotiating a private communications transaction is to install a high quality Fiber to the Home (FTTH) infrastructure platform capable of delivering a broad array of best-in-class high-speed internet access (HSIA) and communications related services. This FTTH platform will serve as an amenity of the property that will help market the property / community and enhance the pace and revenue associated with occupying units. A secondary objective of the transaction is to derive a mutually beneficial revenue stream from the sale of these communications products and services.

A notable aspect of the arrangement is that the Property Owner is not required to fund the full cost of the infrastructure. The arrangement also ensures that the services provided to the property are of the highest quality, and includes service and performance standards that exceed the best of what is otherwise currently available, as well as provisions for service and system upgrades in light of changing technology and end user demand for greater amounts of bandwidth.

The Product:

High-Speed Internet Access (HSIA)

Typical service tier offerings based on the competitive marketplace for MDU's:

- 5 Mbps download / 1 Mbps upload - basic service, lowest product in marketplace. Good product to bulk.
- 8 Mbps / 2 Mbps - competitive product, usually Cable lowest speed available, also good product to bulk
- 15 Mbps / 3 Mbps - generally highest tier that is typically offered in the marketplace
- 25 Mbps / 5 Mbps - only FTTH providers are able to offer this level of service
- 50 Mbps / 10 Mbps – unmatched in marketplace, super user status; again, only available with Fiber to the Home

The Sales Strategy Options: To provide services on a "Bulk" service plan or not? What are the advantages and disadvantages of a Bulk Plan?

Offering a Bulk Plan typically means contracting with the landlord of the MDU or master planned community for 100% of the tenants in the apartment or community. Usually there is one invoice that is sent to the landlord for 100% of the tenants; the landlord then bills the end

users or the price for services is included in the Homeowners' Association fee or in rent. Generally, pricing is established on a bulk per unit price; however a flat monthly price for the building or for the community is also an acceptable practice. Bulk price discounting typically reflects a 20-30% reduction off of the retail marketplace pricing for like or similar service tiers. Typically as an incentive to offer a Bulk Plan, the landlord receives a percentage of the revenue (i.e. a "revenue share") or an up-front door fee based upon the number of subscribers.

Offering a Bulk Plan – Advantages to UC2B:

- 100% take rate. UC2B eliminates its competition in the building or community.
- The Property purchases the desired HSIA product tier from UC2B in bulk and provides service to individual units as a part of their rent or as a separate service.
- Marketing rights are typically included in the contract with the landlord. UC2B is able to provide marketing collateral to the end user in the community or common areas; and most likely receives move-in customer information, and has exclusive rights to market its services to tenants of the building.
- UC2B has opportunity to up-sell higher tiers of HSIA service or other services directly to end-users. Base pricing could be bulked through the landlord or HOA and customers who elect for higher tiers of HSIA service or other services would be billed directly for the upgraded service.
- Minimal UC2B cost associated with end-user "churn" (move-in/move-outs)
- Minimal UC2B debt collection issues, one primary commercial grade client, one invoice, one collection point
- Limited customer billing requirements and marketing cost
- Potential for the provisioning of other communication services that can be carried on FTTH infrastructure including voice, traditional video and over-the-top, home security, etc.
- Bundling of all products to create higher penetration/ higher margin returns.
- Opportunity to up-sell higher tiers of HSIA service, billing the tenant directly for these upgraded services
- Incremental business from other adjacent commercial clients that require higher bandwidth capacity and incorporating marketplace economies of scale.

Offering Bulk, the Disadvantages to UC2B:

- In many cases, the landlord is not technology-savvy and dealing with the landlord versus working with each individual tenant can be cumbersome. The landlord acts as a gatekeeper to the tenant.

- The Cat 5 wiring within most buildings built over five years ago or longer is often sub-par. If UC2B decides to have one demarcation point and one common Ethernet switch within the building, the existing inside wiring must be upgraded. With the early entrants of Fiber to the Home service providers (i.e. Verizon, Connexion Technologies and Zoomy Communications) the number one trouble issue could be blamed on existing sub-par inside wiring.

- The landlord often has trouble keeping power to the shared Ethernet switch.

Non-bulk or Subscription; Contracting directly with the Tenants – Advantages to UC2B

- Pricing for services is the same as dealing with any other customer. No special pricing is offered to the tenants.

- No "deal" is needed with the landlord; no door fees, or revenue share.

- Individual end-users subscribe with UC2B for the provision of HSIA service. Product is priced at retail rates competitive within the marketplace.

Non-bulk or Subscription; Contracting directly with the Tenants - Disadvantages to UC2B:

- Must compete against other providers on property (or wireless carrier) including their introductory or special offers.
- Must support all end-user churn. Apartments can churn at 40% annually, student housing 100%.
- Higher bad-debt from individual users (possible solution is to require auto-pay with use of credit card on file).
- More billable accounts to support and higher marketing cost to attract subscription.

Landlord Deal Strategies / Benefits to the Landlord

- The Fiber to the Home or to each unit becomes another property amenity, providing the best infrastructure (FTTH) and HSIA product in marketplace which will contribute directly to the Property establishing and maintaining higher occupancy levels thus more rent.
- Highly reliable network.
- Offer Service Level Agreement (SLA) superior to incumbents.
- Ability to bundle with other service providers offering better value to end-user.

- Competitive advantage as the Property can market itself with a premiere broadband service offering.

Other common offerings as part of the deal to the Landlord:

- Establish demonstration center / kiosk in community center or leasing office.
- Free service in Business Center.
- Free service to property management office.
- WiFi "hot spots" in common area locations; community centers, pool, fitness center.

Other Common Practices in Dealing with the Landlord.

A common practice in Bulk Subscription Agreements is to offer a revenue incentive where the Landlord has the opportunity to earn incremental revenue based upon the number of subscribers that participate in the program. These revenue incentives are typically structured in the following manner:

- Door Fee (Marketing Assistance Fee), one-time payment per servable unit (door) for the right and privilege to serve property, typically $200 - $300 per door. Higher door fees have been paid (up to $750) for longer deal terms in excess of 15 years. These Door Fees are not covered by the grant; NEO's comments regarding Door Fees are provided below.

- Revenue share incentive. Should be combined with an *Exclusive Marketing Agreement* and tied to service penetration on the property. EXAMPLE revenue share penetration formula (based on 100% of units):

  (Service penetration = Revenue Share)

  0 – 49% = 0%

  50 – 59% = 3%

  60 – 69% = 5%

  70 – 79% = 8%

  80%+ = 10%

NEO's Input and Recommendations

For UC2B, the vision was to run fiber into each apartment unit, and to be able to treat each tenant as if it was a single family home. This strategy will eliminate the very likely risk of needing to use sub-par inside wiring. As the grant will pay for the ONTs and the installation

costs, this seems to be an excellent strategy. To UC2B's network management system, the unit at the MDU would have the same appearance as a single family home, and therefore, there would be no need to establish different operational and trouble resolution processes for MDU's.

Bulk Pricing. The primary advantage of offering a Bulk Rate Program is that UC2B could obtain 100% take rate or in other words, would receive 100% of the customers within the multi-dwelling unit. UC2B would bill the landlord or HOA directly for the base pricing for 100% of the tenants in the building.

If UC2B cannot negotiate an agreement for 100% of the tenants, then perhaps UC2B negotiates to receive no less than 80% of the tenants within the building.

Base Service Pricing. The same pricing would be available to MDU/MTU buildings as would the general public. UC2B may negotiate which service level (i.e. 20 Mbps, 30 Mbps or 40 Mbps) as the Base Service Pricing that would be offered through the Bulk Pricing Plan (meaning, billing the landlord for all of the tenants). The benefit to the landlord would be that UC2B would install the service (i.e. the fiber, ONT and upgrade the inside wiring) for free, in addition to the benefits received and detailed in the attached write-up.

Upgrades and Customer Service. The customer relationship for customer service, billing upgrades, trouble resolution would be between UC2B and the end user (mitigating the primary disadvantage of Bulk Rate Programs.) UC2B would bill the landlord or HOA directly for the base pricing for 100% of the tenants, or whatever percentage UC2B would be able to negotiate with the landlord. Customers who elect to upgrade their Internet Service and/or obtain additional services would be billed directly by UC2B. Additional services may be wi-fi, a community intranet, a computer concierge service or through a partnership with a VoIP/IPTV player, voice and TV services. It may be negotiated with the landlord which services are incorporated into the Bulk Rate Program in addition to the base Internet services. Obviously bulking as many services as possible through the Bulk Rate Program is an advantage for UC2B. These negotiations are usually on an individual case basis; the same program for one apartment/MDU program may not always be replicated with a different landlord.

Although it is common practice to offer the landlord a door fee or a revenue share, the benefits to the landlord of having fiber to each unit may outweigh the need to provide compensation. As Door Fees are not grant eligible, and as UC2B is currently the only Fiber to the Home based service provider in the market, coupled with the fact that UC2B is providing fiber to each tenant (a substantial investment from UC2B; an excellent amenity for the landlord), NEO recommends that UC2B avoid the practice of revenue sharing or Door Fees. We believe the benefits of Fiber to the Home, UC2B's competitive price offer to tenants, and bringing fiber to each unit are more than sufficient reasons for the landlord to grant building/apartment access to UC2B and engage in negotiations of Bulk Pricing.

Agreements typically required to facilitate transaction:

- Construction Agreement (terms of FTTH infrastructure placement)
- Service Agreement (Bulk or Subscription) **SAMPLE AGREEMENT PROVIDED**
- Exclusive Marketing (includes Landlord incentives)
- Right-of Entry / Perpetual Easements (establishes rights to be on property)

Items to be contemplated, mitigated or negotiated:

There are a number of other considerations that need to be "thought through" in terms of implementing strategies with landlords. These items are highlighted below.

- Training for leasing agents and property managers
- Inside wiring - older existing wiring can have limitations:
    - CAT5E or better required. Buildings over 15 years old may require some re-wiring.
    - Business deal could be to offer rewiring as an alternative to door fees or revenue share
    - FTTH building and wiring specifications for distribution to Landlord

  (These issues regarding FTTH specifications and addressing older inside wiring standards are not a concern if, in fact, UC2B installs fiber directly to each unit)
- Student Housing challenges: hacking, gaming, bandwidth utilization, heavy customer transaction activity twice annually associated with beginning and ending of school term.
    - Require a student surcharge; student user application monthly base support fee
    - Put in place strong provider *"Terms & Conditions"* that allow you to shut down any end-user for reasons you deem necessary to protect the network
    - Consider not allowing the use of wireless routers in dorm rooms
- CPE (customer-owned premise equipment), i.e. switches, routers, gaming devices
    - Offer additional maintenance products to support
    - Sell common wireless router that you can support
- WiFi "hotspots"
    - Open or secure requiring authentication?
- Ongoing Client Relations / the Property Support Team
    - Free service to the Property Manager and on-site superintendent

        - Develop program to incent the Property Manager for monthly move-in lists
    - Service Activation Specialist to support new activations
        - Many users will need on-site set-up support
    - Managing Email and Storage requirements
        - Possible outsource to a "gmail" type solution
    - End of *Service Agreement* term alternatives
        - Renew
        - Buy out of infrastructure
    - Competitor use of infrastructure and Compensated access

Indefeasible Rights of Use (IRUs) and Dark Fiber Leases

Dark fiber is optical fiber infrastructure that is currently in place but is not being used. Optical fiber conveys information in the form of light pulses so the "dark" means no light pulses are being sent. To the extent that these installations are unused, they are described as dark.

An Indefeasible Right of Use (IRU) is the effective long-term lease (or often thought of as temporary ownership) of a portion of the capacity of fiber optic cable. IRUs are specified in terms of a certain number of fiber counts for a given segment of a fiber optic network. In most cases, the IRU is a 20- to 25-year agreement to use the fiber count for a segment. Payment for the IRU is typically an upfront fee based upon the fiber count miles. The fiber count miles are the number of miles of the segment times the number of fibers used.

Typically, the per route mile fee can range anywhere between $1,500 to $3,500 per fiber count. These numbers are based upon national statistics. In the State of Illinois, the per route mile fee has ranged anywhere between $500 to $6,500 per fiber count for long-haul fiber routes. For very shorter routes, the per route mile fee can be up to $25,000 per route mile. This large range in pricing is due to a number of factors. Before we discuss these factors, an example of how the pricing for the IRU is shown below.

For example, ABC Company wants a 20-year IRU agreement for a (6) count fiber cable from Location 1 to Location 2. The distance on the network between Location 1 and Location 2 is 100 miles. ABC Company will pay $2,200 per mile. The upfront payment would be:

(6) counts of fiber * $2,200 per mile * 100 route miles = $1.32 Million

Additionally, there is typically an annual maintenance fee in addition to the up-front payment. Annual maintenance fees are typically anywhere from $200 to $350 per mile. In some cases, the annual fee is included in the up-front payment as it is treated as a capital expense from the

buyer. In other cases, the maintenance fee is paid monthly or annually for the term of the agreement. Also, in some cases, the maintenance fee is a simple monthly or annual fee per customer and the number of fiber counts is not taken into consideration.

Assuming the annual maintenance fee is $200; the annual maintenance payment would be:

(6) counts of fiber * $200 per mile * 100 route miles = $120,000 annually or valued at $2.4 Million for (20) years.

Pricing for rural-based and long-haul IRU's are thought to be lower than metropolitan IRU's because a metropolitan lease may bring more customers and more revenue potential. Based upon national pricing, the up-front fee for a rural, long-haul IRU may be $1,500 - $2,500; the pricing for a metropolitan IRU may be $2,500 - $3,500. However, pricing is also dependent upon supply and demand factors. For instance, if there is little fiber available for lease, the pricing will be higher. Many of the incumbent phone and cable companies will not provide IRU agreements, which create a greater demand for IRU's. Pricing for IRUs is also not regulated, and unpublished; and therefore, there is often a large fluctuation of pricing offered to various customers from providers.

In addition to the up-front payment and maintenance fees, additional revenue can be gained through leasing rack-space at UC2B's hub or equipment locations. Collocation is another term used for leasing space for placement of equipment in hub locations along UC2B's fiber network. Collocation fees are typically charged monthly by the rack, by space on the rack, or by chassis or cabinet. Additional fees are typically charged for use of power at the facility. In some cases, additional up-front fees can be charged for make ready use.

UC2B has proposed IRU rates of $1,500 per fiber-strand-mile for a 20-year IRU and has required early IRU customers to purchase entire backbone rings at a time. The rate is well within national averages for similar communities. Requiring full ring purchases increases revenue for UC2B, reduces stranded fiber strands, and encourages best practices in networking with ring-based topologies.

UC2B has proposed an annual maintenance fee of $300 per route mile, which again is within national averages.

NEO has provided sample IRU agreements and language that is often included in IRU agreements to UC2B. NEO also provided feedback for UC2B on its initial agreement with the Illinois Department of Transportation (IDOT).