Request for Information
Urbana-Champaign Big Broadband

Expansion of Fiber-to-the-Premises Network Throughout Champaign, Urbana, and Savoy, Illinois

Issued: August 14, 2012

All responses to this Request for Information must be received, via email in PDF format, by 2:00 p.m. prevailing time on October 26, 2012 to teri.legner@ci.champaign.il.us or on compact disk or flash drive to Teri Legner, Interim UC2B Consortium Coordinator, City of Champaign, 102 N. Neil, Champaign, IL 61820.
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I. Purpose of this RFI

Urbana Champaign Big Broadband (UC2B) is an intergovernmental consortium comprised of the University of Illinois and the Cities of Urbana and Champaign. UC2B is dedicated to building and operating an open-access fiber-optic broadband network throughout all of the Champaign-Urbana-Savoy area.

This Request for Information (RFI) arises from UC2B’s interest in partnering to build community-wide fiber-to-the-premises (FTTP) with a highly motivated and high-caliber private sector partner. UC2B seeks input from potential partners regarding the terms and conditions under which partners would construct, own, and operate a high-speed broadband data network to connect over fiber optics to residents and businesses throughout the Illinois communities of Champaign, Urbana, and Savoy.

UC2B seeks a partner who will collaborate to build and operate the proposed broadband network throughout the identified service areas. In return, UC2B pledges its support and facilitation of any necessary processes and potential grant opportunities, access to existing UC2B fiber resources and other community assets, commitment to providing right-of-way access and assistance with permitting, and access to existing UC2B infrastructure and customers.

To be clear, UC2B seeks proposals from entities that can finance the network themselves or can identify alternative sources of funding. For purposes of this RFI, the UC2B consortium members will contribute in-kind assets and support but not funding. The private partner UC2B may select as a result of a future RFP process or other means will build the network with its own funds. UC2B will strongly endorse the partner, support the development of any necessary grant applications, and provide highly valuable in-kind support to enable the successful construction of the proposed network.

UC2B believes that this arrangement represents a fair and equitable distribution of risk and reward. The private partner will invest in the proposed open access network, and in turn receive UC2B’s full cooperation and assistance with network design and build-out, full ownership and operational rights to the network it builds, and a significant entry into the attractive telecommunications market of Urbana, Champaign, and Savoy.

II. Background Regarding UC2B

The first phase of the UC2B initiative was made possible by a $22.5 million grant from the U.S. Department of Commerce’s National Telecommunications and Information Administration (NTIA) under the American Recovery and Reinvestment Act (the Recovery Act). The State of Illinois provided a $3.5 million grant, and local matching funds added an additional $3.4 million to fund the project.

The foundation of the UC2B network is the fiber-optic backbone infrastructure that is under construction with the grant money. The grant also provides fiber-to-the-premises (FTTP) connectivity directly to more than 150 community anchor institutions (CAI) throughout Champaign, Urbana, and Savoy and to households in several underserved neighborhoods in Champaign and Urbana.
This direct connectivity will enable improved access/support to health care, educational and recreational institutions, public safety and government agencies, and social service and religious organizations, as well as increased access to public computing centers. Training, entertainment, and social networking opportunities will also be enhanced.

III. Technical Description of the Existing UC2B Infrastructure
When completed later this year, UC2B will have some 128 miles of backbone ring fiber organized on seven co-tangent rings that connect to two major telecommunications nodes at the University, which sits in the middle of Urbana and Champaign. Each of those seven rings has 216 strands of fiber, and there are 1,296 total strands of fiber between the two core nodes on two diverse pathways.

The rings were designed to provide gigabit service to more than 200 CAIs, as well as serve as the backbone for the FTTP service areas that were constructed with the Recovery Act funds. Those rings are also designed to provide the backbone for a FTTP deployment for the rest of the community – every home, business and CAI.

The seven UC2B fiber rings perform multiple functions today and allow for unlimited flexibility in the future. Within each of the seven fiber cables there are actually 216 strands, and with Wave Division Multiplexing (WDM) technology, each single strand can support dozens of separate physical networks. So within each of the seven fiber cables there is the capacity for thousands of separate networks.

All of the rings travel through two central telecommunications nodes on the University of Illinois campus. That allows any location on any ring to be connected to any other location on any ring by simply patching or splicing the right fiber strands to each other in one of those nodes. With each fiber strand having access to each of the two nodes, UC2B’s redundant core electronics can service each ring, which helps protect against a localized power outage or other problem in one of the nodes.

If Urbana grows to the north or Champaign grows to the southwest, spare fibers on the existing rings can be used to create additional sub-rings that reach further out into the surrounding area. Most homeowners and many businesses and anchor institutions do not require self-healing ringed connectivity today, but for those that do, the fiber rings are an important element of the UC2B infrastructure design. The rings also allow for redundant connections to the neighborhood equipment cabinets providing FTTP services.

IV. History of Broadband Efforts in Champaign and Urbana
This community has a long history of seeking better, faster and more affordable broadband. It is proud of this history and intends to remain at the forefront of broadband planning and deployment through this effort to secure gigabit services for every household and business in the community.

This history began in the mid-1990s, when the Champaign County Chamber of Commerce created a subsidiary corporation called CCNet, which engaged local businesses and partnered with private sector service providers on deploying new technology.
The first partner was Time-Warner Cable, which deployed very-early cable modems in two-dozen locations. These 1st generation cable modems utilized the cable infrastructure for downstream bandwidth, and a traditional telephone modem for the upstream link. While they were more useful for consuming information than providing it, they sensitized community leaders early on to the value of better broadband.

The next partner was Ameritech, which deployed 144 Kbps symmetric ISDN in some 200 locations in the community. This was Ameritech’s only ISDN deployment in Illinois outside the metropolitan Chicago area. By today’s standards that was meager bandwidth, but then it was 3-4 times faster than what was available over the existing 28K and 56K telephone modems.

C-U has also been home to leading projects in community networks and wireless. Prairienet was founded in 1993 as a Free-Net that offered dial-up Internet connectivity to email, Usenet and community resources. Continuing until 1998, Prairienet evolved to offer web hosting for community groups and training to bridge the digital divide. It was widely supported by the local newspaper, the Urban League, the public libraries, the University and community college.

C-U was also home to CUWiN, an open source community wireless platform that deployed innovative mesh networking. CUWiN started in 2000 as a project of the U-C Independent Media Center and continues today under its new name Commotion as a project of the New America Foundation. CUWiN received National Science Foundation funding and deployed testbed networks in C-U and around the world from the Mesa Grande Indian Reservation to Ghana. C-U residents have always been on the cutting edge and been fast adopters of cutting-edge technology. This community believes open access fiber with gigabit community connectivity is the next frontier.

In 1997, a local ISP proposed that the communities build a fiber network called “C-Unet2000” on the assumption that it would take only three years to get built. That concept was ahead of its time and the idea faded for a while.

The University of Illinois played an important role in the next stages of local broadband deployment. It allowed some 100 off-campus registered student housing units (fraternities, sororities and private residence halls) to connect to the University’s network via an early PairGain HDSL system that the University provisioned and operated by leasing dry pairs from Ameritech. At the same time, the University issued an RFI seeking private providers to provide fiber or wireless solutions that could carry more bandwidth than the PairGain HDSL modems to those same off-campus housing units.

McLeodUSA responded to that RFI in two important ways. First it built $6 million worth of fiber and copper infrastructure on the Champaign side of campus – linking some 70 fraternities, sororities and private residence halls with fiber. McLeodUSA initially deployed Alcatel hardware that could support up to four 8 Mbps Ethernet channels (and 24 POTS lines) to each location on a ringed single strand of fiber. Later they added 100 Mbps fiber transceivers to the mix for the larger housing units.
At the same time, McLeodUSA used its CLEC status to locate Alcatel DSLAMs in our two local Central Offices and leased loops from Ameritech/SBC for Alcatel’s “full-rate” ADSL services. That ADSL delivered 7 Mbps downstream, and 1 Mbps upstream and there was a waiting list for the 200 ports that were available. Those services were widely deployed in Urbana and in areas of Champaign that were outside McLeod’s campus fiber footprint.

McLeodUSA moved onto Copper Mountain DSLAMs and eventually SBC deployed its own DSLAMs, while the cable system - then under the ownership of Insight, now Comcast – deployed cable modems that used the cable infrastructure for both directions of data transport.

In January of 2009, it became known that the Stimulus legislation would include funding for broadband. Local planning went into high gear and on the day that President Obama signed the ARRA legislation, 150 local leaders and technologists gathered to consider how this community might take advantage of the opportunity.

The two cities and the University formed the UC2B Intergovernmental Consortium and filed its Broadband Technology Opportunities Program (BTOP) infrastructure grant application in August of 2009. This BTOP application was funded in March of 2010, and the State of Illinois helped with $3.5 million in matching funds. Another $3.4 million was raised locally from public and private sources. Since then, UC2B has worked to build what it promised.

V. The Communities Seek to Expand UC2B Community-Wide
UC2B is asking potential private partners to provide a gigabit open-access FTTP solution for the entire community. UC2B already has a FTTP pilot project. The next logical step is to provide FTTP to the remaining households and businesses that are not included in the grant-funded service areas. UC2B is ready for this next phase, and believes that the necessary infrastructure is in place to enable a private partner build and to activate a network quickly and efficiently.

UC2B is an intergovernmental Consortium, all of whose members are committed to expanding UC2B to reach all members of the Champaign-Urbana community. And, although not yet decided, the communities are considering (and the UC2B Policy Committee, the City of Champaign and the University have already accepted) a recommendation to evolve into an independent non-profit under the appropriate provision of the Internal Revenue Code. Whatever the organizational structure, the members of UC2B are committed to provide its private partner with significant installed fiber resources, an established customer base, and a community that is eager for its services.

UC2B expects the private partner to build fiber-to-the-curb in all the incorporated areas of Urbana, Champaign and Savoy other than those that UC2B has already built or will build in the coming year as a result of the grants from the federal and state governments. The area still to be built includes 52,286 households (46.9% of which are in MDUs), 7,596 businesses, and several hundred community anchor institutions.

Figure 1 is a map of the proposed service areas. In addition to the existing 12 grant-funded service areas, UC2B has defined an additional 137 fiber service areas of roughly 450 homes each. These areas are defined by man-made and natural boundaries and attempt to also respect
homeowners’ association and condominium association boundaries. The fiberhoods will need to be further refined through detailed engineering, but are good starting points for that work. These maps were created on an ESRI Arc GIS-based system, and that data will be made available to the private partner should a future process result in an agreement between a private entity and UC2B.

Figure 1: Proposed Service Areas
(This map is also included as a high definition stand-alone 22x34 PDF file)

VI. The UC2B Communities Offer Great Value to Potential Partners
The Communities foresee a true public-private partnership. Much will be expected of the private partner, but at the same time, significant support will be provided:

1. **Widespread Community Support.** All of UC2B’s member entities have supported this RFI. The Champaign and Urbana City Councils both expressed support for an RFI/FRP process and adopted a list of community values, such as open access, to facilitate the formation of any future partnership. The University of Illinois is solidly committed to this effort as well.
2. **Existing Fiber.** UC2B is prepared to provide the selected partner, through a $1 five-year IRU, as much dark fiber on the seven backbone rings as is needed to enable FTTP services in every corner of the community.

3. **Existing Customers and Operations.** UC2B has an existing FTTP deployment and has spent the last year creating buzz throughout the community about gigabit fiber connectivity. It is hard to drive anywhere in town without seeing UC2B yard signs or bus signs or someone sporting a UC2B t-shirt. Hundreds of low-income families that have never had broadband connections before will get their first taste of the Internet through UC2B fiber. That is a great story that will tell itself over and over in the months to come.

4. **Future Customers Who Have Put Up Funds to Demonstrate Commitment.** UC2B has created a pre-commitment plan for residents and businesses that has generated 532 commitments in less than a month – in which these residents and businesses have contributed funds toward any potential future buildout in return for service discounts over time and with the assurance that their funds will be refunded if no private partner is identified. UC2B was taking pre-commitments and defining “fiberhoods” before Google coined the phrase and announced a similar pre-commitment process. Should UC2B identify a private partner and negotiate a mutually satisfactory deal, it is anticipated many more customers will sign up, once they can see the details of the partner’s services and know the buildout is assured. More information about the pre-commitment program is available on the UC2B website at www.UC2B.net/expansion.

5. **Immediate Revenues.** The selected private partner can start generating service revenue immediately. There will be close to 2,700 existing customers once the grant-funded buildout is complete. A new partner can start delivering services to these existing customers as soon as an agreement is completed.

6. **Swift Construction to Realize Revenues in New Build Areas.** In new construction areas, the private partner can start generating revenue within 60 days of beginning construction. The backbone fiber is built. The two redundant core nodes are built and have access to major carriers both here and in Chicago. There is space in those nodes for additional core equipment if needed. One “fiberhood” at a time, the selected partner will be able to turn up gigabit fiber services in new neighborhoods. All that is needed is a neighborhood cabinet that redundantly links to a UC2B backbone ring and FTTP fiber infrastructure in the neighborhood. Everything upstream from the ring is already operational.

7. **Inexpensive Bandwidth.** UC2B is negotiating a dark fiber swap with the State of Illinois that could result in UC2B having its own dark fiber strands into 900 Walnut in St. Louis and into 350 E. Cermak in Chicago. That will allow for diverse upstream Internet connectivity at minimal transport expense. In the meanwhile, UC2B also has access to a protected 10 Gbps lambda to several major POPs in Chicago.

8. **Application-Development Resources.** UC2B is a founding partner in US Ignite and shares US Ignite’s enthusiasm for application development. The first graphical web
browser, NCSA Mosaic, was developed in this community. Eudora was also developed here. This community intends to deliver many of the next great applications, and this infrastructure will help enable that.

The computer science and electrical and computer engineering departments at the University are among the best in the country. The campus network was ranked the best in the country by PC magazine at the time of its last ranking. The local technical talent exists to make a gigabit network sing and to develop the next generation of gigabit applications.

This community is home to local high-tech businesses including Wolfram (makers of Mathematica and Wolfram Alpha); Volition (a video game company that is a subsidiary of THQ); Yahoo!; iCyt (which was recently acquired by Sony); among other publicly traded firms. This is fertile ground for start-up innovation and commercialization. The University of Illinois’ Research Park and Enterprise Works incubator house scores of technology companies, and the local angel investing and venture capital network have coined us the “Silicon Prairie.”

9. **Peerless Partners.** This community will have the one of the fastest non-military supercomputers in the world when the NCSA Blue Waters petaflop machine gets cranked up to full speed later this year. The National Center for Super Computing Applications (NCSA) is where Big Data meets Big Computing to solve Big Problems. UC2B and its selected private partner can add Big Bandwidth to that equation and enable unmatched connectivity to a major supercomputer from any home or business in the community.

**VII. The Communities Require Specific Commitments from Potential Private Partners**

At the foundation of UC2B are three core principles that are also foundational to this RFI and any potential subsequent RFP. The Communities (the Cities of Champaign and Urbana, Village of Savoy, and the University of Illinois) consider these three principles very close to non-negotiable. Even though there are a range of approaches for how to enact the principles, there is absolute agreement among the UC2B members about the three core principles themselves:

1. **The network must be fiber, not alternative technologies, offering high speeds.**
2. **There must be open access to enable fair and open competition forever.**
3. **The network must be built to all members of the community, with no redlining.**

More specifically:

1. **The Communities seek universal fiber infrastructure and symmetrical, high-speed services**

   A. The partner will build fiber infrastructure to the curb of every residence and business in Champaign, Urbana, and Savoy within a timeframe to be determined through negotiations.
B. In the event that the expansion effort is canceled or reduced, or if the selected partner ceases to operate or is sold, the escrow contributions will be refunded to those contributors that have not had fiber built to their designated locations.

C. The partner may manage and support the existing UC2B fiber infrastructure and customers.

D. All subscribers will have gigabit access to local UC2B/the partner’s customers and to local community resources, per the original vision for UC2B.

2. The Communities seek open access and competition on an on-going basis

A. The new fiber infrastructure will be operated on an open access basis on-going.

B. Other service providers will be given opportunity to purchase capacity at reasonable wholesale rates over all fiber infrastructure.

C. Layer 2 open access shall be available to all locations connected by the partner over the fiber. If a customer wishes to purchase services from a service provider to a location already connected by the partner, the partner shall provision a virtual LAN from the location to an interconnection location on the network. If a customer wishes to purchase services from a service provider to a location passed but not connected by the partner, the partner shall connect that customer, install Layer 2 electronics at the site, and provision the virtual LAN from the location to an interconnection location on the network. If the customer desires, it may have multiple VLANs provisioned to its location.

D. Layer 1 open access (fiber leasing) shall be available for service providers to who wish to use this option to serve institutions and large businesses. If an eligible customer passed by the network wishes to purchase from a service provider a service provided over a leased fiber, the partner shall connect a pair of fibers from the customer to the nearest active electronics hub location on the network. This will typically be done by splicing existing fiber to a fiber drop at the premises. If a Layer 1-served customer wishes to change to another service provider, the customer may have the fiber reassigned to the other service provider.

E. An implementation document will be developed jointly with the selected partner to establish open access procedures in more detail.

F. A contract with the selected partner will provide for a continuation of open access in the event the partner goes bankrupt or sells to another company.

G. There should be strict fiscal, financial separation between the wholesale business and retail business so there is a level playing field for retail providers.

H. Open Access requirements should survive any sale of assets by the partner or any bankruptcy.
3. **The Communities seek a partnership of mutual benefit**

   A. The selected partner and the Cities of Champaign and Urbana, the Village of Savoy, and the University of Illinois will enter into non-exclusive agreements.

   B. The Cities, University, and UC2B will make available some existing UC2B fiber infrastructure.

   C. UC2B will continue to own the assets that were obtained through Federal, State and local funding.

   D. The Cities, University, and Village will make available the rights-of-way that they control.

   E. The University will make available via rental agreements appropriate rack space and access to the two telecommunications nodes that house UC2B’s core electronics.

   F. The partner will pay an annual fee to the Cities and Village, based on a percentage of its local total gross revenue from all services provided over infrastructure located in that jurisdiction.

   G. The partner will contribute to the UC2B Community Benefit Fund a percentage of its local total gross revenue from all services provided over infrastructure located in the Communities. That fund is administered by UC2B to provide training and other programs to narrow the digital divide and promote digital inclusion.

   H. The partner will maintain a local customer service presence.

   I. The partner is strongly encouraged to hire and train a local workforce, or contract with existing local providers, to build, maintain, and operate the network.

   J. Any video product provided by the partner must also include local Public Access, Education, and Government channels.

4. **To ensure that these goals are met, UC2B will have a right of first refusal on any purchase of the assets, including in the event of the selected partner’s bankruptcy**

VIII. **Information Required to Respond to This RFI**

UC2B’s goal is, in plain language, to determine whether potential partnerships exist that will deliver the required functionality in the desired timeframe, under the core values and key requirements of the communities described above.

UC2B requests the following information—in as much detail as is practicable—from respondents:
1. **Agreement with the Communities’ requirements.**
   a. Affirm that you are interested in this partnership under the core values and requirements listed above.
   b. If you cannot meet any of those requirements, indicate the requirements to which you take exception and provide an explanation of the exceptions.

2. **Proposed source of funding.**
   a. What is your plan to fund construction of the network envisioned herein.

3. **Proposed technology and business model.**
   a. How do you plan to meet the Communities’ needs as they are described above.
   b. If you currently operate communications facilities, inform us as to whether they are operated on an open access basis or not.

4. **Proposed buildout schedule.**
   a. What is your proposed buildout plan and schedule?
   b. Provide a timeline with key milestones.

5. **Requirements of the Cities, Village, and University**
   a. What are your requirements necessary for the Cities, Village, and University to meet in order for you to partner with UC2B on this project?
   b. What are the financial requirements you have of the Cities, Village, and University. If you do not address this question as to financial requirements, it will be assumed that you are interested in the partnership and have no financial requirements whatsoever of the Cities, Village, and University.

6. **Proposed service offerings.**
   a. What services do you plan to offer over this network (for example, data only, voice and data, a triple play of voice, data and cable television, etc.)?

7. **Past performance, capabilities, and organizational readiness.**
   a. Provide evidence that demonstrates that you are the best partner for this project.

8. **Commitment to local job creation and supporting local contractors.**
   a. Describe your interests and plans to hire locally in Champaign, Urbana, and Savoy.
   b. Describe your relationships with local businesses in Champaign, Urbana, and Savoy as well as your interest and plans to engage them in this project.
   c. Describe your relationships with socially and economically disadvantaged small businesses in Champaign, Urbana, and Savoy as well as your interest and plans to engage them in this project.

IX. **The Process**
UC2B expects to take the following steps to address submissions pursuant to this RFI:
1. Gather all complete submissions received as of the deadline noted herein.
2. Following an internal review process, present the results of this RFI process to the City Councils of Champaign and Urbana and the UC2B Policy Committee.
3. If deemed necessary, request in-person follow-up meetings with representatives of some of the responding entities.
4. Depending on the outcome of the above process, consider releasing an RFP in follow up to this document.
All questions must be made in writing and directed to Teri Legner at teri.legner@ci.champaign.il.us prior to noon prevailing time, Friday, August 31, 2012.

To be considered by UC2B, potential partners must submit completed responses, via email in PDF format, by 2:00 p.m. prevailing time on October 26, 2012 to teri.legner@ci.champaign.il.us or on compact disk or flash drive to Teri Legner, Interim UC2B Consortium Coordinator, City of Champaign, 102 N. Neil, Champaign, IL 61820.

Additional maps of UC2B’s existing fiber infrastructure are included with this RFI in high-definition 22x34” PDF format.