






The logo for UC2B is contained within a blue rectangular border. It features the text "UC2B" in a blue, sans-serif font at the top. Below the text is a stylized orange graphic consisting of a large rectangle with a smaller rectangle inside it, and three horizontal lines connecting the inner rectangle to the outer one, resembling a ladder or a structural frame.

UC2B

Urbana-Champaign
Big Broadband
Below & Above Ground
NTIA BTOP Applications

August 20, 2009

Order of Contents

- 1  Below Ground
Infrastructure Application
- 59  Above Ground
Public Computing Centers Application
- 135  Above Ground
Sustainable Broadband Adoption Application
- 187  Infrastructure Attachments & Maps
Combined Letters of Support
- 435  Above Ground
Combined Attachments

Items submitted with more than one application are only provided here once.

The logo for UC2B is contained within a blue-bordered square. At the top of this square, the letters "UC2B" are written in a large, blue, sans-serif font. Below the text, the square is divided into a grid of cells by orange lines. The grid consists of a top row, a middle row, and a bottom row. The middle row is further subdivided into three horizontal sections by two additional orange lines. The cells in the middle row are of varying widths, with the central section being the widest.

UC2B

Urbana-Champaign
Big Broadband
Infrastructure

Answers to NTIA On-Line Forms



**Broadband Infrastructure Application
Submission to RUS (BIP) and NTIA (BTOP)**

Submitted Date: 8/20/2009 4:17:28 PM		Easygrants ID: 1724	
Funding Opportunity: Broadband Initiatives Program and Broadband Technology Opportunities Program		Applicant Organization: Board of Trustees of the University of Illinois	
Task: Submit Application - Infrastructure Programs		Applicant Name: Ms. Kathy Young	

1-C. Other Required Identification Numbers	
i. Organizational DUNS:	04-154-4081
ii. CCR # (CAGE):	4B808
iii. Funding Opportunity Number:	1
iv. Catalog of Federal Domestic Assistance Number:	BTOP CFDA Number: 11.557 BIP CFDA Number: 10.787 BTOP CFDA Title: Broadband Technology Opportunities Program BIP CFDA Title: Broadband Initiatives Program

1-D Eligible Entities

Please classify your organization. (Note: If there are multiple organizations involved in the project, designate the lead applicant that would enter into a Loan or Grant agreement with the Agency and assume operational and financial responsibility should an award be made). **Local, State, or Other Government Entity**

1-E. RUS Borrower Status

No

1-F. Applicant Federal Debt Delinquency Explanation

Is the Applicant Delinquent On Any Federal Debt? **No**
Federal debt delinquency Explanation:

2. Project Description & Project Title

2-A. Project Title: Urbana-Champaign Big Broadband - Below Ground (UC2B Middle Mile & Last Mile Infrastructure)

2-B. Project Description: UC2B is an intergovernmental consortium of the University of Illinois and the cities of Urbana and Champaign providing fiber-optic broadband connectivity to the community's anchor institutions, fiber-to-the-home connectivity in underserved neighborhoods, improved access/support to public computing centers, and a sustainable adoption and educational outreach program for vulnerable populations.



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<p>Additional BTOP Factors Selected By Applicant</p> <ul style="list-style-type: none"> • Conformity with Statutory Purposes • Cost Sharing/Matching • Reasonableness of Project Budget
The project advances at least one of the statutory purposes for BTOP
Applicant has provided documentation that the project would not have been implemented during the grant period without federal grant assistance.
Applicant has provided a budget that is appropriate to the proposed technical solution and only includes eligible costs.

- **Demonstration the Project Could not be Implemented But For Federal Grant Assistance**
Applicant is providing matching funds of at least 20 percent towards the total eligible project costs?
Yes

7-k. Cost Sharing/Matching Fund Explanation

C. Executive Summary

Executive Summary of Project for BIP and BTOP:

8. Infrastructure Projects Executive Summary

Although the University of Illinois at Urbana-Champaign has an international reputation for technology leadership and innovation, within a half-mile of the campus are neighborhoods where the promise of information technology has yet to be realized. Through a three-pillar



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approach, the Urbana-Champaign Big Broadband (UC2B) Consortium seeks to leap frog the most vulnerable populations in our community to the head of the technology line with fiber-optic Big Broadband connectivity. We see the three proposals as both individually and collectively necessary, as they complement each other in many ways.

While this proposal is primarily a Middle Mile project, it has a Last Mile, Fiber-to-the-Home (FTTH) pilot project component. The proposed funded service area for this Middle Mile fiber-optic project is the community surrounding the University. In addition to the cities of Urbana and Champaign, the service area also includes portions of Champaign County and the Village of Savoy.

The Urbana-Champaign community has a rich history of making computing facilities available to the public. The Don Moyer Boys and Girls Club, the Bethel A.M.E. Church, the Independent Media Center and three local library facilities all have heavily used computer labs. However budgets have not kept up with demand for computer access and for bandwidth.

The users of these and other public computing facilities deserve and require technology and bandwidth on par with what students and staff at the University take for granted. At this time, in our Age of Information, many necessary services are only available to those with access to adequate computer and networking resources: jobs require online application, payroll, benefits, banking information are on-line, healthcare resources are on-line, and the list will continue to grow.

The UC2B Public Computing Center proposal is half of our "Above Ground" proposals, and the second pillar in the suite of UC2B proposals. It will address the human and technology needs for Public Computing Centers, while this Middle Mile proposal will economically deliver fast public Internet bandwidth that is guaranteed for the next five years.

The third pillar of the UC2B set of proposals is for a Sustainable Broadband Adoption program in our vulnerable communities. The University of Illinois has long sponsored programs in the local community and throughout the state to help span the digital divide. In the early days of the Internet, many Champaign County residents of all income levels were first exposed to the Internet and email via a free-dial-up account on Prairienet, the groundbreaking public Internet service sponsored by the University. Throughout the last decade, the National Center for



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Supercomputing Applications (NCSA) - where the Mosaic web browser was created - has sponsored national and local educational outreach programs for k-12 students, teachers, and administrators.

The UC2B Sustainable Broadband Adoption proposal provides the opportunity for educators and researchers from the University to collaborate with clergy and with other community leaders to craft an education program that will ensure that no citizen lacks the skills necessary to participate in a digital society. Equipped with the newly acquired skills, potentially 2,500 underserved households within the community will be served for decades to come as a result of the FTTH component of the UC2B Middle Mile proposal.

This brief overview of the two additional UC2B proposals illustrates how we intend to build upon the work defined by this proposal - the UC2B Middle Mile Below Ground proposal. The remainder of this discussion will detail this proposal.

The proposed funded service areas include:

- The entire UC2B Below Ground project including Middle Mile and Last Mile: 110 contiguous census block groups in Urbana, Champaign and Savoy.
- Four Last Mile (Fiber-to-the-Home) service areas: Eleven total census blocks spanning Urbana and Champaign
- One service area comprised of eight contiguous census block groups
- Three service areas comprised of single stand-alone census block groups

We are in active discussions with four potential providers of Internet Protocol (IP)-based services over the UC2B FTTH system. While some providers are only interested in delivering Internet bandwidth, other providers are interested in Internet as well as television and phone services. We fully expect the households and businesses in the proposed service area to have competitive service plan options from commercial providers. Letters of support from two of those providers are attached in our collection of supporting letters.

Thanks, in part, to a donation of \$60,000 per year for five years by the University's Office of the Vice Chancellor for Public Engagement, we will purchase public Internet bandwidth in Chicago at wholesale rates and transport it to this community with unused capacity on the University's fiber network, ICCN, which links its three campuses in Chicago, Springfield and Urbana-Champaign. As a result, we will offer a consortium-provided "Community Network



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Service" (CNS) for households that fall below a certain income threshold. The UC2B CNS will provide 5 Mbps of symmetrical bandwidth to the public Internet and 100 Mbps of "on net" connectivity to the targeted low income households and to all of the Critical Institutions at a monthly cost of \$19.99.

The UC2B Network will be an open access network and will actively seek multiple providers of IP-based services. Our interconnection and non-discrimination policies will go beyond the minimum obligations desired by the Federal Communications Commission and NTIA. They are already posted at: www.UC2B.net

The University of Illinois has long maintained a local peering point referred to as "CMI-Hub" (named after the FAA designation for our local airport.) ISP's are able to peer with each other and with the University at the CMI-Hub via BGP4 protocols. The performance and cost efficiencies brought about by local peering are substantial. The network design for the UC2B Network will allow all ISP's to peer at layer 3 while serving their customers on the UC2B fiber infrastructure via layer 2.

The UC2B Network will be an all IP network. We believe that IP will continue to be the foundation of all telecommunications and that over the next two decades more services will be developed and offered across IP-based infrastructure. The specific technology we have chosen for the delivery of IP services to homes and businesses is a Wave Division Multiplexed Passive Optical Network (WDM-PON.) This technology has already been commercially deployed in countries such as South Korea, where residents served by WDM-PON enjoy much faster speeds at much lower costs than what Americans typically have available.

WDM-PON provides many of the cost and operational savings of a Gigabit Passive Optical Network (GPON) and its many variants, but offers a single solution that is both secure and scalable on a customer-by-customer basis. In order to have a sustainable business model while primarily serving low-income households, we realize reducing complexity and operating expenses is an important factor. We believe WDM-PON offers our community a technology that we will not outgrow for decades at a reasonable cost per subscriber. Future customer electronic refreshes will be able to increase capacity without the need to change central equipment.



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The total cost of this proposal is \$31.2 million, which covers the cost of the Middle Mile and Last Mile fiber infrastructure, the WDM-PON electronics at both ends, and the routers, switches and other systems needed to design and install the infrastructure, maintain and support the framework, and to facilitate or provide the services utilizing the infrastructure.

The UC2B Last Mile network will make fiber-to-the-home a possibility for up to 4,650 households and 218 businesses. Due to the subsidized cost of residential installation and the subsidized UC2B Internet service, we expect higher than typical residential adoption rates. By the end of the three years, we project 54% residential adoption and 29% business adoption.

The construction phase of the UC2B Middle Mile project will require thirteen 3-person crews to build the seven fiber rings and the fiber to the curb over 12 months spread over the 2010 and 2011 fiber construction seasons. The final phase of bringing fiber from the curb to the home and installing the household electronics will require another 6 crews of three people each, which will also be working for 12 months spread over the two years. Operationally, this infrastructure will require 2 full-time networking professionals, and 6 full-time help-desk / customer service employees. 59 jobs will be created during construction, with at least 8 jobs continuing through operations.

Description of BTOP Project Purpose (BTOP Applicants Only Next Three Questions)

9. BTOP Statutory Purpose:



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Provide improved access to broadband service to consumers residing in “underserved” areas of the United States.
Provide broadband education, awareness, training, access, equipment, and support to schools, libraries, medical and healthcare providers, community colleges and other institutions of higher education, and other community support organizations by or through these organizations.
Provide broadband education, awareness, training, access, equipment, and support to organizations and agencies that provide outreach, access, equipment and support services to facilitate greater use of broadband service by low-income, unemployed, aged, and otherwise vulnerable populations.
Provide broadband education, awareness, training, access, equipment, and support to job-creating strategic facilities located within a defined economic zone, or community as designated by a State authority, Department of Commerce , HUD or USDA.
Improve access to, and use of, broadband service by public safety agencies.
Stimulate the demand for broadband, economic growth, and job creation.

10. Description of BTOP Project Purpose:

The "Above Ground" and the "Under Ground" Urbana-Champaign Big Broadband (UC2B) proposals address the following statutory objectives of the BTOP program:

- Improved broadband service in "under served areas".
- Broadband education, awareness, training, access, equipment and support to schools, libraries, medical and healthcare providers, higher education institutions, and other community support organizations.
- Equip outreach agencies with tools and knowledge to facilitate greater use of broadband service by vulnerable populations.
- Empower job-creating strategic facilities with broadband tools and knowledge.
- Improve access to and use of broadband service by public safety agencies
- Stimulate the demand for broadband, economic growth, and job creation.

Since the ARRA became law, faculty and staff from the University of Illinois, city staff members from Urbana and Champaign, and a host of community leaders and volunteers have



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been meeting to discuss how community Big Broadband may address many of the historical technological, social and economic inequalities in our community. These meetings clearly revealed many efforts already moving toward an advanced community network infrastructure and a high level of readiness for immediate action.

In three public forums with scores of attendees, we listened to a wide spectrum of the community and heard a lot of different thoughts about broadband availability and what the community's definition of broadband should be. Ideas included the need for better connectivity for our "Critical Institutions", the need for more public computing centers, and the need for education and training to assure that the most vulnerable among us were equipped with the knowledge and the skills to use broadband to its fullest advantage.

The initial vision for UC2B was that it would be a single comprehensive grant proposal that addressed all of the above and more. For good reasons, the NOFA required us to subdivide our plans into "Above Ground" and "Below Ground" proposals, but intellectually and financially the three UC2B proposals are interlaced. Part of the revenue from the Middle Mile and Last Mile services detailed in this proposal will fund and provide sustainability for the Public Computing Centers and the Sustainable Adoption program after the BTOP grants have ended.

This specific proposal is designed to provide 100 Mbps connectivity to more than 135 Critical Institutions in the greater Urbana-Champaign community, which includes the Village of Savoy and parts of Champaign County. (Throughout this application we will use the term "Critical Institutions" from Attachment H to refer to all Anchor Institutions, Public Safety agencies, Public Computing Centers, Schools, Libraries and Senior activity/living centers.)

This proposal gets its strength not only from the fiber rings and advanced WDM-PON technology we seek to deploy, but also from the training and the education that will be made possible by the linked UC2B Sustained Adoption proposal. The 47 public computing centers funded by the UC2B Public Computing Center proposal will get their Internet connectivity from the fiber rings constructed by this proposal. The sum of these three proposals is greater than the individual parts.

Critical Institutions that will benefit from the UC2B Middle Mile fiber rings include: 30 public schools, 8 private schools, 3 public libraries, a Boys' and Girls' club, a Job-Training Center, an



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Adult Education facility, three hospitals, multiple clinics, the U-C Independent Media Center, Parkland College, and the University of Illinois.

Letters of support from the numerous agencies that work with vulnerable populations throughout the communities are included in this application package. The Office of the University's Vice Chancellor for Public Engagement generously donated \$60,000 per year for five years to purchase one Gbps of public Internet bandwidth at wholesale rates. This enables the UC2B Community Network to be a source for economical, high-performance, fiber-based Big Broadband to more agencies in the community that work with low-income families, single mothers, the young, and the old. Coupled with that connectivity will be training and other resources in the form of the traveling "cybernavigators" that are described in the UC2B Sustainable Adoption proposal.

The UC2B Last Mile network, a WDM-PON fiber-to-the-home (FTTH) pilot, will invest in underserved areas of town that private telecommunications providers tend to pass by with new technology. The vulnerable populations, where benefit is maximized, will not only be the first in the community to have the advanced technological capabilities but will also have educational opportunities available via the 47 public computing centers that will be funded by the UC2B Public Computing Centers proposal.

Public safety will be improved by connecting city and rural volunteer fire stations as well as the University-owned Willard Airport (CMI) to other local safety agencies via the fast, reliable and redundant fiber-based network. This application includes a letter of support from METCAD, which is the PSAP for Champaign County.

We have found some unexpected partners with unexpected uses for Big Broadband. The Champaign-Urbana Mass Transit District (CU-MTD) operates an award-winning bus system throughout the community. The CU-MTD has provided part of the UC2B local matching funds, because they want to connect to the main off-campus bus shelters, so they can provide up-to-date information on when a particular bus will arrive. Additionally they plan to install security cameras in the bus shelters to increase the safety of their riders. The CU-MTD is about to deploy this system in their campus area shelters, and UC2B will allow them to expand these services throughout the community.



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At the campus bus shelters, the University is also providing campus Wi-Fi access for the convenience of students, faculty, and staff. As UC2B fiber is built out to the community bus shelters, the UC2B will work with the CU-MTD to make Wi-Fi coverage available in those shelters as well.

Another unexpected investor in UC2B services is our local sanitary district. The Urbana-Champaign Sanitary District (UCSD) operates two main waste treatment plants at opposite corners of the community and a number of pumping stations. Keeping the pumping stations synchronized with the treatment plants has typically required dedicated T-1's or dial-up circuits that have not always been adequate. UC2B fiber connectivity will bring necessary bandwidth to the two treatment plants and 7 primary pumping stations. UCSD's plans for using fiber give an entirely new meaning to "Critical Institution" and are another example of how the local community has already recognized the potential that UC2B can deliver.

The established association between the University and NTIA is extensive. Notably, the digital archives of NTIA's original TOP program are housed at the University's Graduate School of Library Science (GSLIS). The UC2B Project will preserve this affinity and will produce an educational model. University students and scholars are already studying and documenting the successes and lessons learned so that this model can be disseminated and improved upon in any community in the United States.

The WDM-PON technology that we are proposing is new, but well established outside of the United States. Every other community we have talked to about our project has told us that they are considering it for their communities. We foresee organizations from around the country converging on this community to see how well WDM-PON has met our needs and to learn from our experiences. We welcome and encourage that. The fundamental purpose of the University is to not only create and share knowledge, but to provide vehicles to expand education. Big Broadband will be one of those vehicles.

11. BTOP Enhanced Services for Health Care Delivery, Education, and Children:

Within the UC2B Middle Mile proposed funded service area are two regional hospitals with 433 total beds, eight multi-specialty medical clinic facilities, and a public health center that provides care to low-income families. The low-income residents who live in the Last Mile proposed funded service area, do not typically turn to broadband technology for assistance with health issues, because up until now broadband technology has not been available at affordable



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rates.

The UC2B Community Network Service will change that equation. Network-connected remote diagnostic equipment will be feasible. High definition network-connected web cams will allow patients and medical staff to bridge physical space constraints for consultations. Even the lowest income patient on the UC2B Community Network will have a 100 Mbps connection to these medical facilities. Carle Hospital has embraced this value, as evidenced in their letter of support, and are developing plans to utilize this enhanced connectivity to better serve their patients at lower costs. As more and more of the community become connected, medical organizations will also expand their broadband-based capabilities.

Public school students from the lowest economic background in our community live in the proposed Last Mile FTTH service area. Broadband will level the field in the classroom, and will enable our high school graduates to access more opportunities. Teachers and students will utilize innovative broadband-dependent communications technologies in ways we are only beginning to imagine, but that we are poised to explore, test and deliver.

The University's Community Informatics Initiative sponsors the Youth Community Informatics program for community disadvantaged youth to explore how informatics can and does impact them, their schools, their homes, and the community. This group has been meeting and producing community-based projects for nearly two years and are thus prepared and qualified to lead the way. The enhanced teacher-to-student and teacher-to-parent communication via broadband will be a tremendously positive development.

The proposed UC2B Middle Mile plan connects 38 public and private elementary, middle and high schools. Because of the "schools of choice program", Champaign students could attend a neighborhood school or they could attend a school several miles across town. Every school in the community will be connected to the UC2B Community Network Service via the UC2B Middle Mile proposal. With inexpensive web cams, schools can offer interactive help with homework directly to students living in the proposed Last Mile service area, a service that is increasingly being seen as a necessity given the mounting concerns over likely absences due to the potential H1N1 flu pandemic.

Also, the University has plans to build a "TeacherTube"-like searchable and bookmarkable



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repository of HD video-based educational objects. Providing such high quality resources over the community broadband network will change both formal and informal education by providing broadcast quality video resources, free and available anywhere on the network--- school, libraries, community centers, home, or hotspots.

The local Public Broadcasting affiliate, WILL-TV-AM-FM, which currently streams its AM and FM radio stations over the public Internet, has committed to streaming its four digital television signals over the UC2B Community Network. Through programs offered by the Public Broadcasting Service, WILL-TV will provide access to a growing library of archives from 40-plus years of local and national PBS programming on-line. Full programs in High Definition, and short segments as searchable and reusable Learning Objects, will be available on demand. Additional multimedia materials, which have never before been broadcast will be available on-line and will enable teachers to find essential video segments, images, or audio clips for any given lesson.

D. Proposed Funded Service Area

12. Proposed Funded Service Area Maps:

12-A. Service Area Map (Reference Number): **CF63-2C41-41F2-9328**

12-B. Is the applicant is seeking a waiver for providing less than 100% coverage of a census block. **No**

13. Proposed Funded Service Area (BIP - Last Mile Projects):

Please refer to section M at the end of document.

14. Proposed Funded Service Area (BTOP - Middle Mile Project):

Please refer to section M at the end of document.

15. Non-Funded Service Area(BIP Only):

16. Coverage Waiver:

Applicant is seeking a waiver for providing less than 100% coverage of a census block.

No

For Response of "Yes" please refer to upload section for additional supporting documentation.



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17. Methodology for Area Status:

Champaign-Urbana Community Internet Survey, 2009
Methodology Report

Introduction

The Champaign-Urbana Community Internet Survey, 2009 was conducted to estimate the number of households that have broadband Internet access in certain areas of the cities of Champaign and Urbana, Illinois.

The target population for the survey was defined to be all occupied housing units in each of 38 census block groups identified based upon characteristics of lower socioeconomic status. A random sample of household addresses stratified by block group was selected, and face-to-face interviews were conducted with adult residents who were located and willing to participate.

Sampling Frame

Data files containing all street addresses within the 38 pre-identified block groups were obtained from information technology personnel for the cities of Champaign and Urbana. Duplicate records and non-residential addresses were removed. Residential addresses were identified by county property codes.

Face-to-face Interview Survey Methodology

A fourteen-question survey instrument was developed jointly by stakeholders in the project. Selected households were mailed letters prior to receiving first contact by interviewers in the field. Face-to-face interviewers were trained in standard interviewing techniques and procedures. Most interviews were conducted in English, but a subset of interviewers was trained to conduct interviews in Spanish. Face-to-face interviews were conducted between July 29 and August 1, 2009. Cases were rotated through a maximum of three visit attempts on different days at different times of day.

Weighting

Weights were calculated to adjust for unequal selection probabilities and non-response. Also, the frame total for each stratum was adjusted by the final estimated eligibility rate for each stratum. Two final weights, in units of households, were constructed: one summing to the population estimate, and one summing to the completed sample size.



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18. Middle Mile Benefits

The attached maps shows the UC2B Middle Mile proposed funded service area (shaded in light blue) and the Last Mile (fiber-to-the-home pilot) project in the underserved census block groups (shaded in yellow). The Middle Mile proposed funded service area, which includes 137 "Critical Institutions", can best be described as all of Champaign and Urbana, Illinois with additional small portions of Champaign County and the Village of Savoy.

The Champaign County 2000 Census Tract Block Groups that make up the Middle Mile proposed funded service are: 1-2, 1-2, 1-3, 1-4, 2-1, 2-2, 3-1, 3-2, 3-3, 3-4, 4-1, 4-2, 4-3, 5-1, 5-2, 5-3, 5-4, 6-1, 6-2, 6-3, 6-4, 7-1, 7-2, 7-3, 8-1, 8-2, 9.01-1, 9.01-2, 9.01-3, 9.02-1, 9.02-2, 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 11-1, 11-2, 11-3, 11-4, 12.01-1, 12.01-2, 12.01-3, 12.01-4, 12.03-1, 12.03-2, 12.03-3, 12.03-4, 12.04-1, 12.04-2, 12.05-1, 12.05-2, 12.06-1, 12.06-2, 13.01-1, 13.01-2, 13.01-3, 13.01-4, 13.01-5, 14-1, 14-2, 51-1, 52-1, 52-2, 52-3, 53-1, 53-2, 53-3, 53-4, 53-5, 54-1, 54-2, 54-3, 54-4, 54-5, 54-6, 54-7, 54-8, 55-1, 55-2, 55-3, 55-4, 55-5, 55-6, 55-7, 56-1, 56-2, 56-3, 56-4, 56-5, 57-1, 57-2, 57-3, 57-4, 57-5, 57-6, 58-1, 58-2, 58-3, 58-4, 58-5, 58-6, 59-1, 59-2, 59-3, 50-4, 60-1, 60-1, 60-2.

The UC2B Community Network Service will offer public Internet access to low-income families connected to the UC2B Network via the Last Mile FTTH project. The Middle Mile project interconnects homes in the 11 census block groups where FTTH will be initially offered with the "Critical Institutions", which includes anchor institutions, schools, public safety agencies, libraries, senior living facilities and more.

The UC2B Network, which includes both the Middle Mile and Last Mile networks, will utilize the same WDM-PON technology. Thus, a "Critical Institution" directly connected to one of the seven Middle Mile fiber rings can receive the same services or even connect directly to another "Critical Institution" that is located in the Last Mile service area.

The primary benefactors of the UC2B Middle Mile network will be the clients and patrons of the 137 Critical Institutions that will be connected to Big Broadband. Attached to this application are dozens of wonderful letters of support from organizations that support youth, battered women, senior citizens, people with disabilities and a host of minority populations. They all understand the importance of having access to Big Broadband in their community centers and where they live. Because UC2B has both above Ground and Below Ground



**Broadband Infrastructure Application
Submission to RUS (BIP) and NTIA (BTOP)**

Submitted Date: 8/20/2009 4:17:28 PM	Easygrants ID: 1724
Funding Opportunity: Broadband Initiatives Program and Broadband Technology Opportunities Program	Applicant Organization: Board of Trustees of the University of Illinois
Task: Submit Application - Infrastructure Programs	Applicant Name: Ms. Kathy Young

components, they see the opportunity for lasting change in their communities.

Schools are Critical Institutions, and the Illinois Century Network (ICN), a state agency providing public Internet services to public institutions, has many educational subscribers in this community and also has a major Point of Presence (POP) on the University campus. Unit 4 schools in Champaign and Unit 116 schools in Urbana will be able to use UC2B fiber to facilitate direct Ethernet connections with ICN's routers in Scott Hall, which will enable better public Internet connectivity and will ultimately provide access to enhanced educational tools for 9,300 students in Unit 4 and 3,752 students in Unit 116.

METCAD is an intergovernmental agency that is the PSAP for Champaign County, handling 911 calls and dispatching first responders. METCAD has a radio system for contacting first responders and coordinating between various public safety agencies.

It becomes a public safety concern whenever that radio system fails. As the attached letter of support indicates, METCAD is eager to have increased reliability by way of the UC2B Middle Mile fiber, which will provide a back-up system for their critical radio towers. This level of availability is essential for all public safety entities as it could easily impact matters of life and death.

The Lincoln Trail Libraries System (LTLS) provides circulation services to 117 member libraries spread over 9 Illinois counties. Typically those member libraries transfer data to and from the LTLS office in north Champaign via ICN. Legacy T-1 circuits cannot deliver the current LTLS data needs. UC2B fiber will help LTLS in two ways.

First, LTLS will be able to use the UC2B Middle Mile fiber to connect directly via Ethernet to ICN. This alone will improve the responsiveness of the circulation systems in its 117 member libraries, most of which are outside the proposed funded service area, by eliminating the T1 bottleneck at the main facility.

Second, both the Urbana Free Library and the Champaign Public Library will be able to utilize UC2B fiber to make direct Ethernet connections to LTLS and move their traffic totally off the ICN link. By doing so, their data traffic will no longer be competing with inter-library traffic over congested links, which will impact thousand of users every week. This will also improve



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network performance for the patrons of the other 115 LTLS member libraries, for those two large libraries will not longer be contending for bandwidth on the LTLS ICN connection.

We have had preliminary discussions with 4 service providers about providing commercial services on the UC2B network. The two who have shown the most interest - Consolidated Communications - an ILEC, and Champaign Telephone Company - a CLEC have written letters of support that are included with this application.

E. Proposed Service Offering

19. Broadband Service Offerings for Last Mile Project:

Please refer to upload section at the end of the document.

20. Service Offerings for Middle Mile Project:

Please refer to upload section at the end of the document.

Competing Service Providers

21. Existing Broadband Service Providers and Services Offered:

Please refer to upload section at the end of the document.

Non-Discrimination, Interconnection

22. Description of Network Openness:

UC2B: An Open Access Infrastructure

In accordance with FCC 05-151, the FCC's Broadband Policy Statement, UC2B will be a non-discriminatory, open access network where service providers can competitively provide services including, but not limited, to data and video. As a result, UC2B subscribers will have competitive options for accessing lawful Internet content, applications and services via devices of their choice.

The open access framework allows for small, local providers as well as the tier 1, global



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providers to deliver services and content without discrimination of traffic type or performance degradation resulting from traffic manipulation, to any UC2B subscriber. There will not be any performance advantages provided via traffic shaping for specific content or for a particular ISP.

Layer 2 network devices, which will aggregate service providers, create an economical, simple, and equal mechanism from which services & content can be offered. Additionally, Layer 3 network devices will provide peering opportunities for all UC2B providers, which ultimately save on bandwidth charges for all parties. The goal is to provide an economical, easily accessible path for service providers to deliver exceptional, competitive services to any UC2B subscriber.

Service providers (video, Internet, etc) connect to the UC2B infrastructure via Layer 2 aggregation switches. Each provider is assigned dedicated VLANs that facilitate the distribution of services to their respective subscribers. To assist service providers in cutting costs, Layer 3 (L3) peering routers will provide direct, "on-net" access between providers. In other words, for potential applications like distance learning or telemedicine, a subscriber of ISP #1 can access another entity subscribing to ISP #2 via L3 peering. In doing so, traffic sent "off-net" to the public Internet is reduced, which reduces bandwidth costs for participating ISPs and improves network performance for subscribers.

In summary, the UC2B infrastructure is an open access network based upon the following principles:

- * UC2B Network subscribers will benefit from the innovation created through service provider competition.
- * Providers of lawful Internet applications or content will not be discriminated against. All traffic will be neutrally routed regardless of origin or packet type.
- * When choosing a service provider, UC2B Network subscribers should be able to make informed decisions. Thereby, all UC2B service providers will be required to display network management policies in a prominent location on their web page. UC2B's network management policies are already on-line at: www.UC2B.net



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* UC2B Network subscribers will have access to public Internet service offerings.

* Providers can interconnect on the UC2B Network. This maximizes the service choices for UC2B Network subscribers.

By creating and enforcing an open access infrastructure, UC2B subscribers will benefit from maximized choice at competitive rates. Additionally, local and global service providers are given equal, non-biased opportunities to expand a subscriber portfolio, which in turn creates economic development momentum.

Non-Discrimination and Interconnection (BTOP applicants only for next three questions)

23. Non-Discrimination Obligations (applicable to Last Mile and Middle Mile Applicants):

Adhere to the minimum non-discrimination requirements as set forth in the NOFA.
Display the nondiscrimination practices in a prominent location on the service provider's web page, and provide notice to customers of changes to these policies.

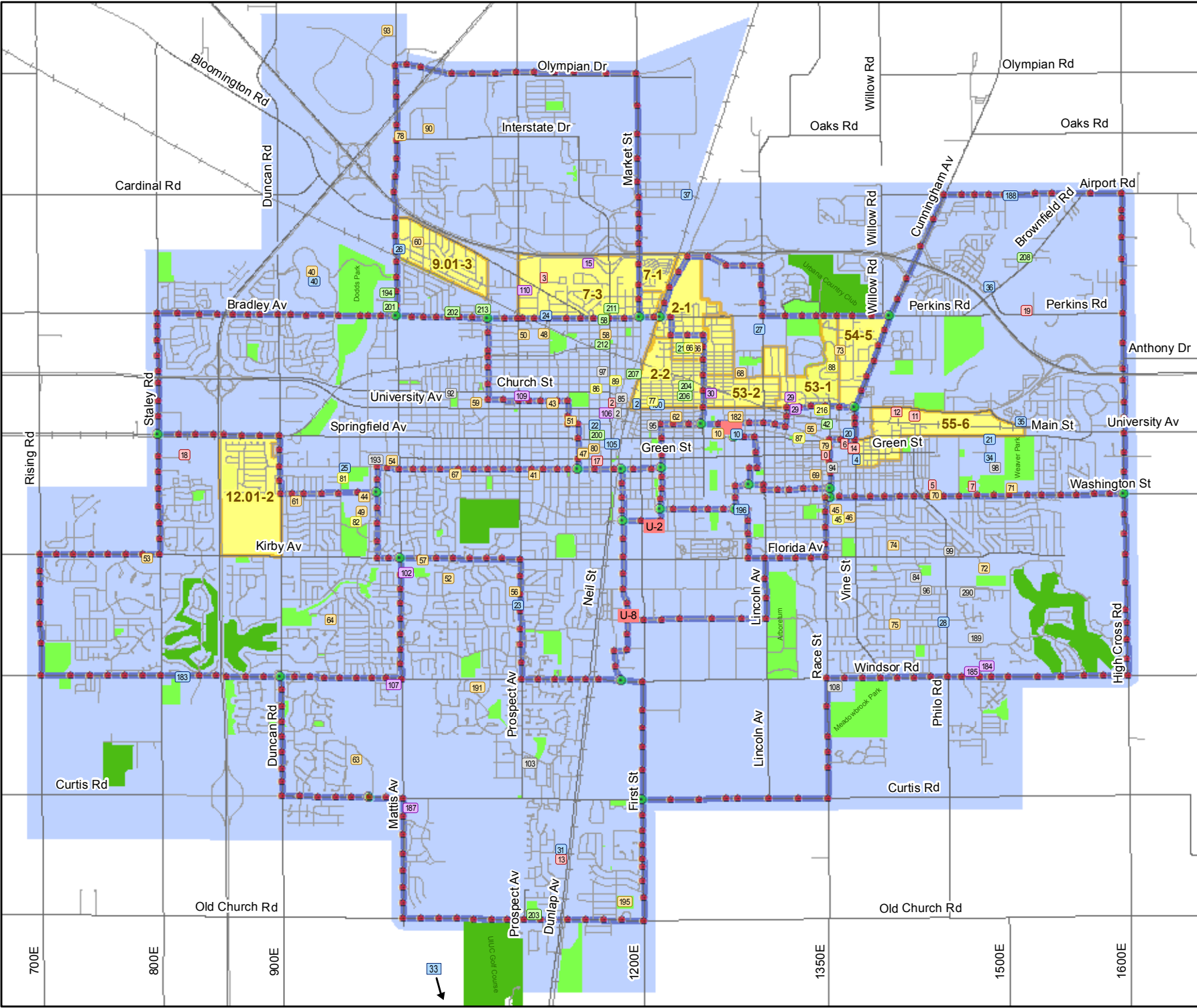
24. Interconnection Obligations (applicable to Last Mile Applicants):

Adhere to the minimum interconnection requirements as set forth in the NOFA.
Display the interconnection policies in a prominent location on the service provider's web page, and provide notice to customers of changes to these policies.
Commit to offering wholesale access to the project facilities at reasonable rates and terms.
Commit to binding private arbitration of disputes concerning interconnection obligations.



Proposed Service Area

3/24/10



Legend

- U-9 Backbone Nodes
- Backbone Manholes
- Backbone Junctions
- Backbone Conduits
- 2-1 Last Mile FTTP Funded Service Area (labeled as Census Tract - Block Group)
- Proposed Service Area

Anchor Institutions

- 30 Education & Library
- 12 Government
- 45 Medical
- 112 Park District & Youth
- 120 Public Computing Centers
- 105 Public Safety
- 84 Senior Living & Activity

Contact: John Kersh
Tel: 217-333-8228
Email: kersh1@illinois.edu
UC2B Anchor Institution

FOR IMMEDIATE RELEASE

(REVISED)

Big Broadband (UC2B) Reaching Out to Community Organizations

When the Urbana Champaign Big Broadband Consortium (UC2B) received funding this past March to construct a fiber-optic broadband network throughout the Champaign-Urbana metro area, its mission was clear: provide high-speed, low-cost Internet to key institutions and underserved households and businesses. Now the group is contacting schools, libraries, and community support organizations to join the network as a major step in making the new broadband network a reality.

“We want to maximize the use of federal grant dollars we received,” according to Brandon Bowersox, member of the Urbana City Council and the UC2B Policy Committee. “We have sent application packets to over 300 organizations in the community—groups that we have identified as potential “anchor institutions.”

Community anchor institutions are organizations such as schools, libraries, medical facilities, senior living centers, public safety organizations, and public support agencies that provide critical services to the community. By participating in UC2B, these institutions can connect with each other much more effectively and with thousands of users who might not otherwise be able to reach them.

“The more organizations and users who adopt broadband the more viable an alternative it becomes for Internet services in the community, which is the whole point of the stimulus grant,” according to Bowersox.

The grant will cover 100% of the cost of providing a fiber-optic connection into buildings of the organizations that successfully complete the application to become Anchor Institutions. This fiber-optic connection would typically cost from \$2,000 to \$10,000. Anchor institutions are responsible for the small recurring monthly charges for service.

To qualify as an anchor institution, an organization must submit the application showing that it meets several criteria: the populations it serves, what kind of programs and/or curriculum it provides, what kind of computing facilities it provides to the public, and what it presently has for Internet connectivity and computer hardware and software.

“If any organizations out there are interested, we would be glad to talk to them about the application process,” Bowersox says. “We encourage everyone to go to our web site and find out more about Big Broadband.”

In addition to submitting the paper application, they may also be submitted electronically by visiting the UC2B web site at www.UC2B.net. Applications are due by September 1, 2010.

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Urbana Champaign Big Broadband

About UC2B and the UC2B Consortium

In March of 2010, the UC2B Consortium was awarded American Recovery and Reinvestment Act (ARRA) grant funding to construct a fiber-optic broadband network throughout the Champaign-Urbana metropolitan area. The UC2B Consortium is the governing body in charge of constructing the fiber-optic network and providing connectivity to, among other entities, the community's Anchor Institutions. It consists of representatives from the University of Illinois, the cities of Urbana and Champaign, and several public and private community partners.

The UC2B network will be an open access network and will accommodate multiple providers of Internet services, including Internet, phone, and TV, security, and storage. Various Internet service providers (ISPs) will compete on price and customer service over this shared fiber-optic infrastructure, which has the potential to result in a win-win for consumers and businesses throughout the community. Furthermore, the direct value to the Champaign-Urbana community is immense, both for short-term economic stimulus and for long-term regional economic development.

For more information, go to the UC2B web site (www.UC2B.net).

Technical Information

The base UC2B service for Anchor Institutions will be a 100 Mbps symmetrical connection to the UC2B network, which will include all other Anchor Institutions, local public and private schools, libraries, the U of I, Parkland College, local governments, and UC2B residential and business subscribers. This base service also will provide a 5 Mbps symmetrical connection to the Internet for \$19.99 a month. Faster local connections and faster Internet connections will be available for higher rates. This monthly fee will be the only financial commitment required of community Anchor Institutions to access the UC2B network.