Strategies for Sustainable Broadband Adoption: The Case of UC2B

Final Reporting Document

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Executive Summary

Through Federal programs and private sector investments, there has been considerable effort since 2010 to build next generation broadband networks that provide ultra high-speed access to the Internet and help improve digital inclusiveness across communities in the United States. The Department of Commerce's Broadband Technology Opportunity Program (BTOP) funded 123 CCI projects to build new gigabit speed, fiber-optic infrastructure[i]. For example, in addition to such cities as Chattanooga, Lafayette, LA, Wilson, NC and other early adopters of gigabit broadband, Google is building gigabit speed networks to reach residences, businesses, and community anchor institutions in Kansas City, Austin, and Utah. Other providers such as AT&T, Verizon, and Century Link are building new fiber networks to offer gigabit service.

Communities across the United States are carrying out strategies to expand broadband access and adoption. Through the American Recovery and Reinvestment Act, the Department of Commerce's National Telecommunication and Information Administration provided $4.7 billion to support the deployment of broadband infrastructure, enhance and expand public computer centers, encourage sustainable adoption of broadband services, and develop a nationwide public map of broadband services. Broadband adoption, however, varies considerably and there remains a great need to understand the social and economic impact of various initiatives to build ultra-high speed broadband networks.

The goal of this study is to examine the social and economic impact of UC2B, a BTOP comprehensive community infrastructure middle-mile project, and the only project in the U.S. that included a last-mile infrastructure to residences. The University of Illinois is leading the intergovernmental consortium known as the Urbana-Champaign Big Broadband ("UC2B") project, and received $22 million in funding through NTIA's Broadband Technology Opportunity Program to construct a 187-mile fiber-optic broadband network. This ultra-high speed network provided affordable Internet access for approximately 294 community anchor institutions and 1,058 households in underserved neighborhoods. The report outlines major impacts on households, community anchor institutions, and businesses. Other components include a year-by-year look at activities by the UC2B team and a look at the future of UC2B.

- **Key goals for UC2B network included**: access to improved broadband services in unserved and underserved areas[ii]; access to broadband training and digital literacy education; and increased demand for broadband, economic growth, and job creation.
- **Major accomplishments of UC2B include:** affordable pricing for underserved households; an open-access network; connected community anchor institutions,

many for the first time; increased competition with local ISPs; and the transition of the network to a private partner.

- In May 2014, the UC2B not-for-profit announced a private-public partnership with iTV-3, an Illinois-based company and subsidiary of Family Video. The company will take over all operational aspects of the network and invest millions to expand the network to the greater Champaign-Urbana area.
- Funding for the UC2B project was designated for the construction of a fiber-optic network and not for sustainable adoption or public computing centers.
- After community canvassing efforts, it was determined that affordability was a major barrier to broadband adoption. Therefore, the UC2B team shaped an adoption strategy around price and service.
- UC2B provided service to businesses located in grant-eligible neighborhoods, with physical infrastructure passing 218 businesses. Of these, UC2B provided service to 75 businesses, 30 of which were first-time subscribers.
- Internet access to community anchor institutions (CAI) in both cities was impacted by the UC2B project. Public forums were conducted to understand community needs and almost 300 CAIs were connected.
- Specific CAIs impacted include: various public safety agencies, the mass transit district, the sanitary district, public libraries, local schools, medical facilities, and faith-based organizations.
- UC2B established the Community Benefit Fund to provide resources to meet goals of improving digital equality in Urbana and Champaign.[iii]

Overview of Goals of UC2B

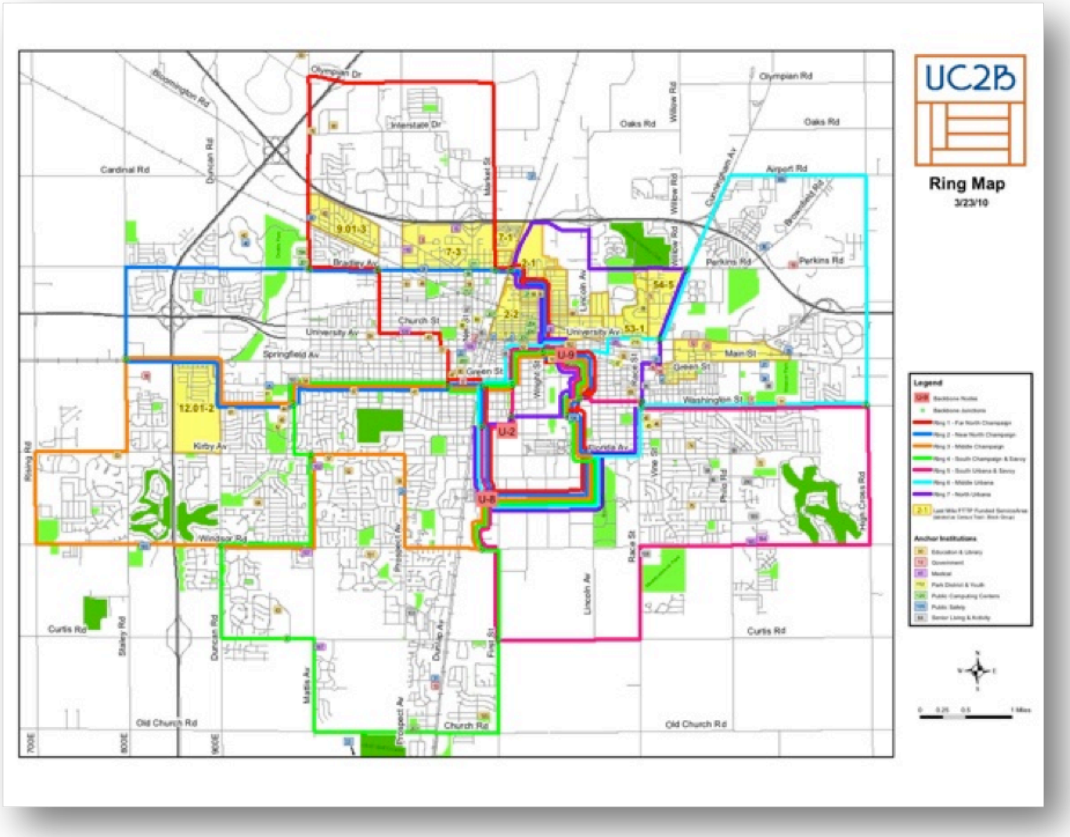
This report examines the social and economic impact of the Urbana-Champaign Big Broadband (UC2B) ultra-high-speed Internet network and service. UC2B is among a small group of municipal-based Internet networks in the US that uses fiber-optic technology to connect households, businesses and community anchor institutions to the Internet at 1 Gbps or faster, making Urbana-Champaign one of the nation's newest "gigabit cities". Other cities with this level of Internet connectivity include Chattanooga, Lafayette, LA, Wilson, NC, Bristol, and Kansas City, with many newly announced next-generation networks planned or underway for over 32 cities across the United States.

The building of municipal gigabit broadband networks offers great promise to improve access to the Internet; nurture new levels of economic and human development and growth; and sow the seeds of innovation for many generations to come. For UC2B, the investment made through grant funding from the American Recovery and Reinvestment Act of 2009 has helped to build a next-generation broadband network in Urbana-Champaign to "spur job creation, stimulate long-term economic growth and opportunity, and narrow gaps in broadband deployment and adoption"[iv] that would not have been possible otherwise. However, achieving these goals is not easy. Building broadband is a complex process at the municipal or community level. After attending the 21st Century City Forum held on October 21, 2014 in Santa Monica, a meeting convening elected officials from cities in the US building gigabit broadband networks, an elected official from Urbana, IL representing UC2B observed, "although thirty-two cities were represented at the meeting, turns out that there are thirty-three different ways to build a broadband network"[v]. Cities building broadband networks face uncertainty about: understanding the Internet demand among the public; planning, designing, and constructing the network; staying up with the technology changes for building the network and consumer use; adjusting to related public policy issues such as changes in the authority to build and operate broadband networks, net neutrality, and open access.

This report shares the story of UC2B and how the new network provides affordable and reliable Internet service to neighborhoods with households, businesses, and community anchor institutions that were falling further behind the digital divide, with a 40% or higher non-adoption rate. The network also serves as a data sharing and communication platform that is enabling the local governments to save money and utility; for transit companies to utilize smart technologies for operations and public safety; school districts to teach using digital technologies and content; faith-based community to serve the public with digital literacy education; and business owners to more efficiently reach customers with greater digital access.

UC2B's impact is also seen in how it accomplished the project working through a public-private partnership, employing participatory methods to engage the public in planning and decision-making, and stimulating economic development with the private sector through contracting and procurement practices as well as in fulfilling the goals of building an open access network and other Federal, state and local public policy goals. A map of the project is described in Figure 1.

Figure 1 - UC2B Network Map with Grant Eligible Neighborhoods Highlighted



UC2B Accomplishments

Through the American Recovery and Reinvestment Act of 2009 (Recovery Act), the Department of Commerce, National Telecommunication and Information Administration (NTIA) established the Broadband Technology Opportunity Program (BTOP). The Recovery Act appropriated $4.7 billion to BTOP, who would support three categories of projects: Broadband Infrastructure (CCI), Public Computer Centers (PCC), and Sustainable Broadband Adoption (SBA).

NTIA established several key priorities for the BTOP Comprehensive Community Infrastructure (CCI) projects that governed the UC2B project[vi]:

- Extend broadband access to unserved areas;
- Improve access to underserved areas;
- Expand broadband access to a wide range of institutions and individuals, including vulnerable populations;
- Offer the potential for economic growth and job creation;
- Provide benefits to education, health care, and public safety;
- Commit to open Internet principles of nondiscrimination and interconnection obligations for the design and operation of the broadband infrastructure.

The University of Illinois serves as the principal investigator for the BTOP award and received $29,280,837 in funds to build a new fiber optic broadband network infrastructure with federal funds from BTOP and matching funds from state and local government sources. The BTOP Comprehensive Community Infrastructure program awarded the University of Illinois $22,534,776. BTOP also required awardees to provide matching funds. UC2B received an additional $6,746,061 in state and local matching funds. As a comprehensive community infrastructure project, NTIA awarded UC2B the only middle-mile broadband infrastructure project that included last-mile coverage to residences and CAIs. UC2B applied for an additional BTOP award for "above ground" programs to support broadband adoption and training, however, it did not receive funding from the PCC or SBA program. Therefore, UC2B focused on building a new broadband infrastructure to supply broadband Internet services without federal funding for complementary digital training programs or the operation of public computer centers.

The University of Illinois organized the UC2B project as a public-private partnership with local stakeholders through an intergovernmental partnership with the City of Champaign and City of Urbana. The project partners who provided local match funding include:

- Champaign Telephone Company
- Champaign Unit 4 Schools

- Champaign-Urbana Mass Transit District
- City of Champaign
- City of Urbana
- Lincoln Trail Library System
- State of Illinois
- University of Illinois
- Urbana-Champaign Sanitary District
- Urbana Unit 116 Schools

In its proposal, UC2B expected to build the new fiber-optic network to improve broadband services in underserved and unserved areas, improve broadband training, education and access in the community, and to stimulate the demand for broadband, economic growth and job creation. UC2B proposed to:

- Build a fiber-based physical infrastructure, provide access at Layer 1 and Layer 2 services (an Internet-only network for the grant-funded build);
- Provide improved Internet connectivity to approximately 143 Community Anchor Institutions spread across the Urbana-Champaign community, as well as to 57 businesses and 2,500 households that are located in 11 "underserved" Census Block Groups;
- Give subscribers access to a 1 Gbps community intranet;
- Offer subscribers access to the Internet in tiers of service based on their needs and budgets;
- Build an entirely fiber-based open access network;
- Build the network with all of the fiber buried underground

Accomplishments:
Upon the completion of the grant, UC2B constructed 187 miles of fiber-optic broadband network to provide high-speed connectivity to area community anchor institutions and fiber-to-the-home services in eleven underserved neighborhoods. The project connected 294 community anchor institutions, including 38 K-12 schools, social service agencies, 34 medical and healthcare facilities, 31 public safety entities, youth centers, 4 public libraries, and 1 community college, 12 public housing facilities, 1 higher education institutions, 80 community support organizations, 93 government facilities[vii]. Many institutions received their first high-speed Internet connection via the project. The project also created a fiber-to-the-home network for 1,058 underserved households. The network provided an open network for ISPs to connect to other households and businesses in Champaign and Urbana. Four providers use the network.

UC2B offers various pricing packages to make high performance Internet service affordable to the community members.
Among the grant-eligible residents, survey research showed that affordability was one of the main reasons people did not subscribe to the Internet. With direct

feedback from the community on pricing structures, UC2B set service rates at $19.99 for 20 Mbps, $29.99 for 30 Mbps, and $39.99 for 40 Mbps, making high-speed Internet affordable and available to the households, businesses, and Community Anchors Institutions. Other pricing is available for business class service for higher speeds and multiple IP addresses.

UC2B adapted its strategy to connect additional Community Anchor Institutions to expand Internet service to vulnerable populations.
In addition to the standard categories of "Community Anchor Institution" defined in other BTOP projects, UC2B leveraged the language in the ARRA legislation, connecting with organizations that serve vulnerable populations. In the "middle-mile" component of the project, UC2B completed 114.12 route miles of backbone and lateral fiber that connect 294 Community Anchor Institutions, which are 113 more Anchors than the projected number in the grant application. These Community Anchor Institutions are able to serve more vulnerable populations including but not limited to low-income families, the homeless, battered women and their children, people with disabilities, early education, youth, and crisis centers, and multiple senior living facilities.

UC2B facilitate cost-effective Gigabit connections to advance Champaign's public service.
Besides local households, businesses, and Community Anchor Institutions, the City of Champaign takes advantage of the UC2B open access network as well. Champaign's dark-fiber IRU with UC2B has allowed the City to be totally connected in less than two years, and was done at 17% of the original projected cost. Champaign now has Gigabit and 10-Gigabit connections between its facilities, and its annual recurring cost for fiber maintenance is less than the leased T-1 lines that the fiber replaced. Its internal bandwidth between its buildings is now 600 times greater than before. Now that the City has fiber between its buildings, it has further saved money by consolidating backup and disaster recovery services

UC2B built an open access network to meet the NTIA policy for nondiscrimination and interconnection to improve the competitiveness of the ISP market.
The open-access network infrastructure of UC2B makes deploying high performance network service more feasible for local ISPs. In the "last-mile" component of the project, UC2B passed 4,838 locations with Fiber-to-the-Curb, and connected 1,058 households and 75 businesses with Fiber-to-the-Premise (FTTP). UC2B also negotiated and collaborated with four other local ISPs with IRU dark-fiber lease agreement. These local ISPs can provide additional Internet connectivity through UC2B's open access network for the last-mile component.

UC2B entered into a contract to extend fiber build-out in the community.

In February 2014, the UC2B NFP Board of Directors entered into a contract with private provider iTV-3 to build out the remaining 90% of the community with Fiber-to-the-Premise connectivity. Subject to NTIA's approval, iTV-3 will leverage the existing UC2B fiber infrastructure and invest $50 million of its own money to build out the entire community with FTTP. By the end of 2016, Champaign-Urbana could be of the few communities in the country with universal coverage and open access for competing providers.

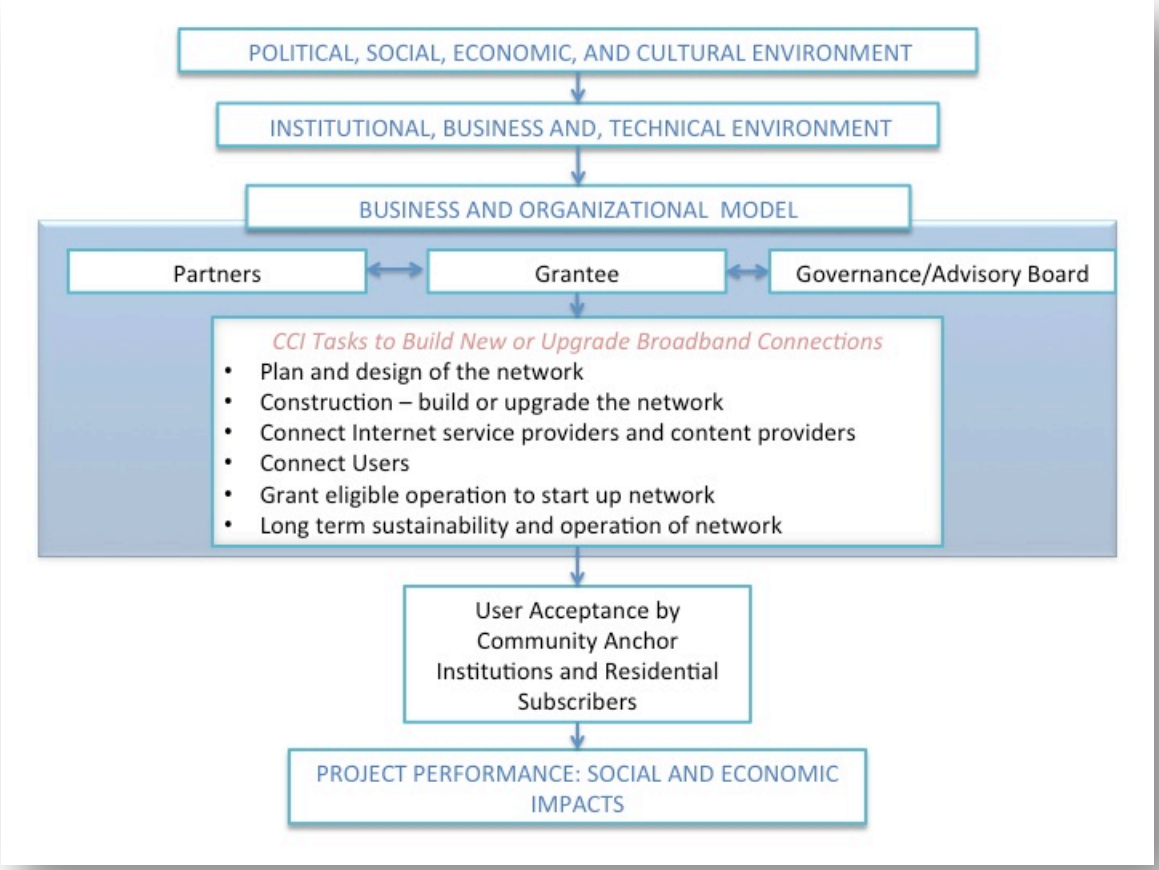
Impact of UC2B – How Did UC2B Build Its Network?

Building a broadband network to meet the information needs of the public is challenging. Broadband is a "general purpose" technology that may reduce the associated information costs of a community. Prior research concludes that broadband drives growth based on investments in human capital, integration with complimentary technologies, co-invention of new processes and services by end users, support of network openness and competition locally, and introduce strategies to overcome uncertainty. Figure 2 conceptualizes the various factors that may influence the construction of broadband networks.

First, increasingly, Internet service providers face pressure to find ways to offer affordable service packages that meet the needs of the broader public and particularly low-income households. The FCC's National Broadband Plan set a goal of ensuring that "affordable broadband is available everywhere and everyone has the means and skills to use valuable broadband applications". Among the many goals of the National Broadband Plan, at least 100 million U.S. homes should have affordable access to actual download speeds of 100 Mbps and actual upload speeds of at least 50 Mbps by 2020.

For many low-income households, finding ways to afford broadband Internet is another challenge. Various Internet service providers offer standard high-speed Internet services of 4 to 6 Mbps for an average of $41 per month. While this level of service is adequate for many households, there are approximately 90 million Americans that are not connected to the Internet at all and even more that are connected at slower speeds. Many American households may be slow to adopt broadband Internet because of the costs of the service and the related costs of owning a computer or finding help to learn how to use the computer and the Internet.

Figure 2 - Factors that Influence the Strategy for Building Broadband Networks



UC2B's Organization Structure

The Urbana-Champaign Big Broadband Consortium is a collaboration of three public entities: the University of Illinois at Urbana-Champaign, the City of Urbana, and the City of Champaign, that unanimously approved an Intergovernmental Agreement to form the UC2B Consortium. That intergovernmental agreement allowed for additional entities to join, forming a public-private partnership endorsed by multiple local stakeholders. The Consortium serves to manage the ongoing operations of the UC2B network with one of the three founding organizations always functioning as the lead agency. For purposes of administering the three UC2B BTOP grants, the University functions as the lead agency, while the two cities function as the lead agency for the business operations of the UC2B network—providing legal, accounting, human resources and business systems assistance. Two

boards govern the UC2B Consortium: the University of Illinois Board of Trustees and, the UC2B Policy Board. An appointed member leads the UC2B Policy Board, formed to oversee and make policy decisions for all aspects of the Consortium operations, from each of the three founding entities. The board is comprised of nine members representing the three partners, the University of Illinois, City of Champaign, and City of Illinois. Each entity appoints three members to the board for a two-year term. UC2B's board has two sub-committees, the UC2B Technical Committee and Marketing Committee.

Throughout project construction, and during the first phase of operations, experienced University networking staff operated the UC2B backbone network infrastructure that delivers services to residential users, CAIs, and Layer 2 customers. The Wide Area Network (WAN) team is composed of 6 network engineers, who maintain and support the University's Urbana-Champaign campus network and connects the University's three campuses to each other, to research networks, to peering partners and to the public Internet. The University's team installs, configures, and maintains the UC2B infrastructure and coordinates with potential service providers to provision their services across the UC2B infrastructure to their corresponding subscribers[viii].

For UC2B fiber-to-the-premise construction, the UC2B Policy Board issued a request for proposals to identify and hire professional services and construction services to meet several project goals, including: hiring and training local contractors; creating sustainable fiber construction and installation employment; and, maximizing the employment of minority and female workers. Organizations were able to bid on the various phases of construction in part or in whole. In total, four contractors and subcontractors were awarded the fiber-to-the-premise installation agreement. The University's staff oversaw the fiber construction design and construction in both cities, as well as on the University's campus.

UC2B's Principal Investigator and leadership team supervised the daily operations and development of the project. Along with installation construction and network development, canvassing and outreach assumed a pronounced role in day-to-day operations.

To assist with construction planning and customer acquisition, a major component of this project involved learning the digital habits and needs of citizens who lived in the qualifying installation areas. The UC2B Canvassing & Outreach team was tasked with canvassing each census tract to collect data on Internet trends, technology access, adoption willingness, readiness, and barriers; to sign-up households and community anchor institutions for broadband services; as well as to record property details for construction preparation and mapping. Several canvassing campaigns took place over the course of the grant period, with an outcome of 19,000+ door-to-door visits and programming/involvement of over 50 outreach events. The canvassing management team developed a GIS database to develop walking maps for canvassers; and canvassing the areas also doubled as a refining of both cities official GIS database. The team set-up and customized UC2B's customer relationship management (CRM) tool, Salesforce, to manage and help bridge the project from grant-funded to business operational.

Figure 3 - UC2B Door-to-Door Canvassing Operations

The goals of this data-driven approach were threefold: 1) Identify households, community anchor institutions, businesses and other organizations that would like to receive broadband services; 2) Assess why these entities may be slow or not likely to adopt broadband and develop strategies to sustain the adoption of the UC2B broadband service; and, 3) Collect information to support the installation of the broadband service by identifying service preferences, equipment bundles for wired or wireless connections and identify connection points for the fiber, from the curb to the home.

The Canvassing Operations Team developed a paperless information system to manage this project. This system was used to collect information about subscribers, track subscribers' transactions, and to support construction, construction planning and customer acquisition. The system integrated information collected through Apple iPads in the field to a database wirelessly to organize the data through a GIS interface and a data infrastructure used by members of the UC2B team.

The Canvassing Operations hired and managed a group of community outreach ambassadors, who were organized with a canvassing coordinator and 15 part-time canvassers to conduct in-person interviews delivered on Apple iPads. Most of the canvassers were from the grant-funded neighborhoods, and had deep neighborhood level knowledge that was very advantageous. Many of the canvassers were

bilingual. Canvassing door-to-door was a labor-intensive process for collecting data and is very similar to the approach used to conduct the Census.

The canvassers made four service encounters with each premise:

1. Initial contact – engaged with residents or businesses to learn about initial interest in receiving broadband service and educated the community about the new network service;
2. Customer acquisition – signed up customers through door-to-door canvassing and community outreach events
3. Installation contact – collected information to support installation process including connection locations at the premise and lateral connection layout from the curb to the premise; provide information about installation process and timing; answer questions;
4. Post-installation contact – provided assistance using the UC2B broadband service at the home, business or community anchor.

The UC2B team completed the following activities:

Year 1

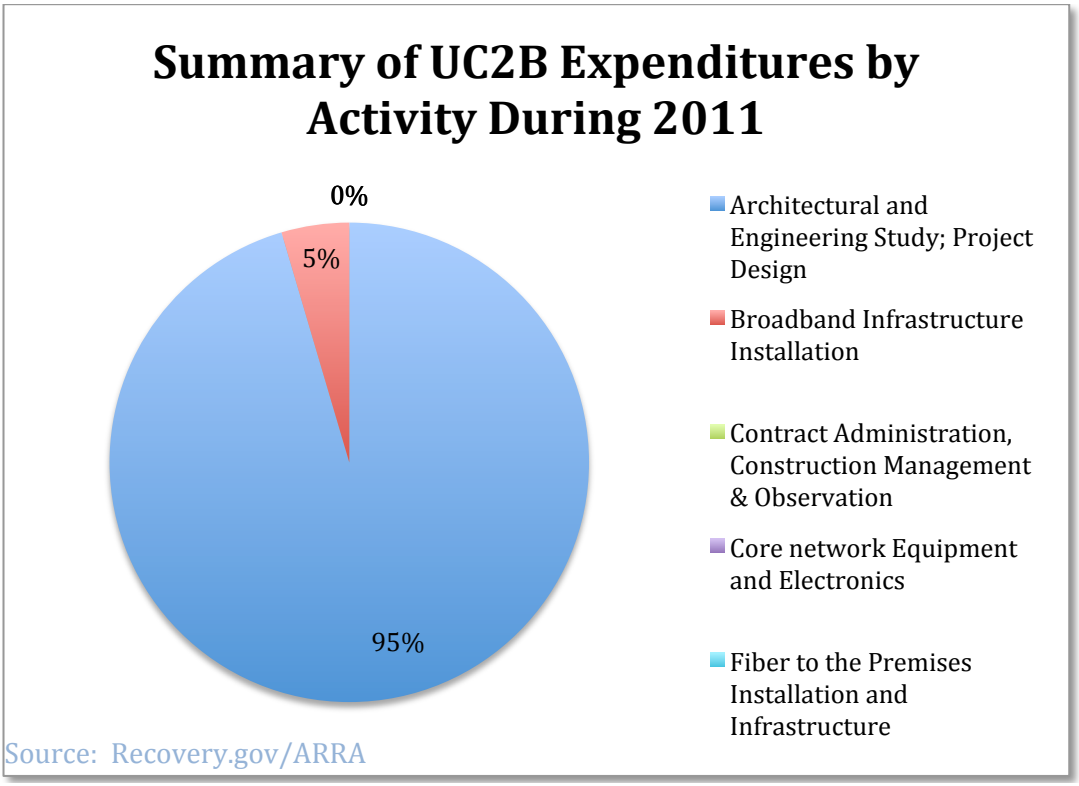
The University of Illinois launched the project in 2010. The first year of the grant focused on setting up the UC2B organization, performing a broad range of planning, design and engineering activities to prepare for constructing the broadband network, and completing the required environmental assessments:

- Setting up the UC2B organization and governance structure;
- Obtaining approval of the environmental assessment for constructing the physical network infrastructure;
- Hiring of the project team. Hired a Geographic Information Systems Specialist to assist with the Environmental Assessment and to prepare for the detailed engineering;
- Planning for various procurements; setting up a procurement system through each of the three partners for services and equipment and engineering;
- Planning for the sub-awards: The University of Illinois established as the principal investigator for the BTOP award to administer the grant and be the fiscal agent responsible for compliance to the BTOP regulations and policies. The University allocated funding to the two partners, the City of Champaign

and City of Urbana, through sub-awards. Each city managed its sub-award and made further disbursements for products, services and staffing;

- Finalized the design of the UC2B middle-mile backbone rings;
- Hire an engineering firm after a competitive evaluation process;
- Purchased Fiber-to-the-Premise electronics in compliance with procurement policies at the University of Illinois and State of Illinois procurement office.

Figure 4 - UC2B Activities, Year 1 of Grant



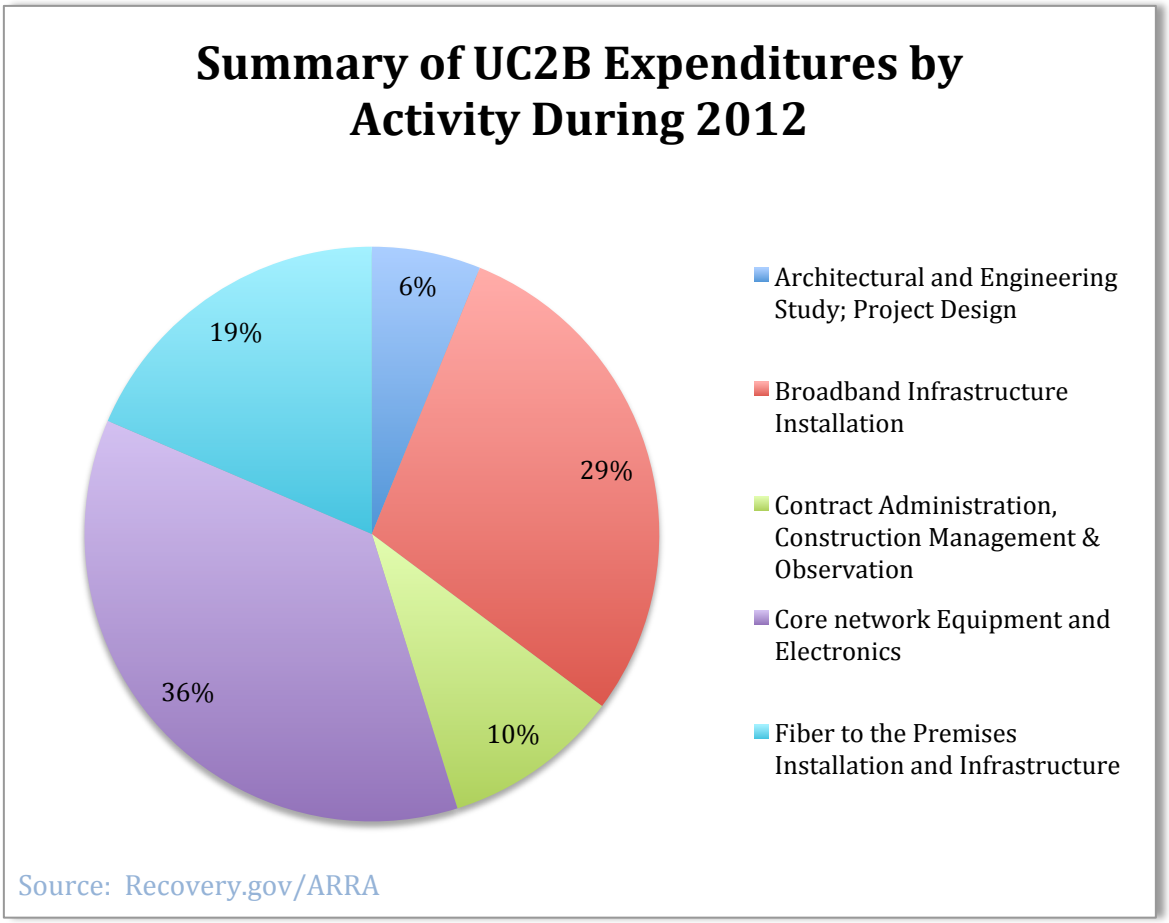
Year 2 – 2011

The primary activities of the second year of the project focused on constructing the backbone middle-mile infrastructure and the last mile Fiber-to-the-Premise network.

- The fiber designs for the seven middle-mile backbone rings and for the last-mile Fiber-to-the-Premise (FTTP) areas were completed.

- The construction bid requests were released in May in three separate packages. The University of Illinois bid the construction that will take place on the University campus and in some small areas of both Urbana and Champaign that surround the campus. The City of Champaign bid the construction that will take place in the majority of the City of Champaign, some contiguous areas of Champaign County and the Village of Savoy. The City of Urbana bid the construction that will take place in the majority of the city of Urbana and some contiguous areas of Champaign County.
- Procured a fiber management system.
- Started work on the design of the database that was used to track the door-to-door canvass of households and businesses in the FTTP areas.
- Started network construction, focused on installing conduit, handholes, and manholes while waiting for manufacturers to supply fiber for the network. This construction helped to provide interconnection points throughout the network to fulfill the open access policies to support multiple ISPs to provide Internet services using the UC2B network;
- Finalized the construction contracts with two contractors;
- Staged the groundbreaking ceremony that was opened to the community;
- Began marketing and outreach to the households, businesses and community anchor institutions in the grant eligible census tracts for Fiber-to-the-Premise services;
- Continued the procurement of equipment and electronics for network;
- Completed the construction of seven-ring fiber backbone network.

Figure 5 - UC2B Activities, Year 2 of Grant



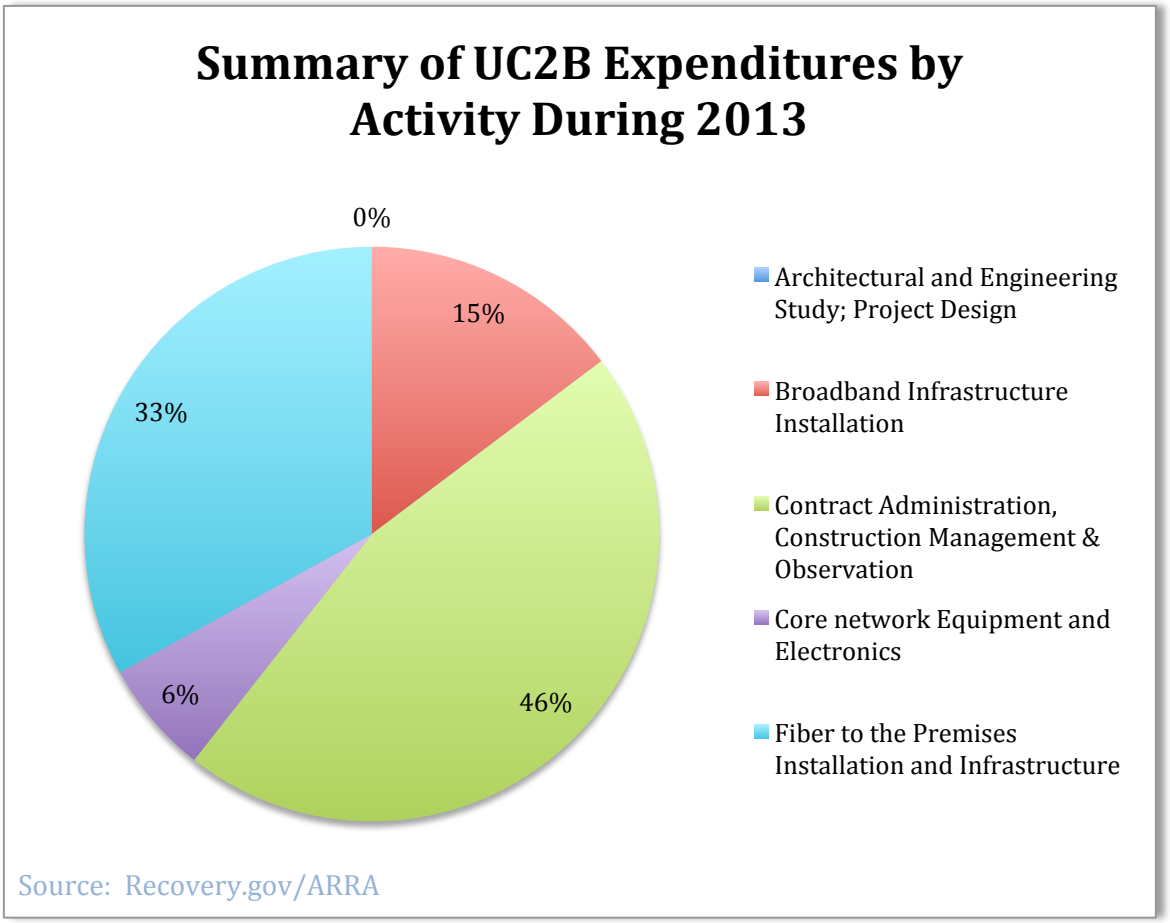
Year 3 – 2013

The final year of the UC2B project continued the construction of the seven middle mile rings and expanded the construction of the FTTP last mile network.

NTIA awarded UC2B a project extension to complete the network construction and service installation to the homes, community anchors and businesses in the grant eligible census tracts.

- Received a project extension;
- Construction focused on completing the FTTP services;
- Recruited additional household and CAI subscribers for the network; added 61 more CAIs to the project for service than originally proposed.

Figure 6 - UC2B Activities, Year 3 of Grant



Source: Recovery.gov/ARRA

Social and Economic Impact of UC2B

Impact on Households

Broadband adoption is challenging and the reasons influencing whether or not a household or organization uses broadband vary considerably. The FCC's National Broadband Plan set a goal of ensuring that "affordable broadband is available everywhere and everyone has the means and skills to use valuable broadband applications". Among the many goals of the National Broadband Plan, at least 100 million U.S. homes should have affordable access to actual download speeds of 100 Mbps and actual upload speeds of at least 50 Mbps by 2020. The adoption of broadband Internet is very uneven across households in the US economy. Recent studies report that the digital divide continues to separate who is using the Internet from those that are not based on income, education level, disability status and race/ethnicity[ix]. Many American households may be slow to adopt broadband Internet because of the costs of the service and the related costs of owning a computer or finding help to learn how to use the computer and the Internet.

Prior research suggests that broadband adoption is most likely to occur when a comprehensive strategy is in place. It is expected that access to the Internet along with positive support for digital literacy and development of skills for using various resources available through the Internet may lead to individuals achieving important life-changing outcomes. This will depend on the extent to which each individual perceives the relevance of the Internet, develops skills for living a part of his or her life in digital form via the Internet, and the availability of easy and affordable access[x].

In order to meet its goals, UC2B implemented a business development strategy to ensure the adoption of broadband in this program. UC2B expected to connect broadband Internet service to the premise of 2,700 households and businesses in low-income neighborhoods along with over 230 community anchor institutions spread across Urbana-Champaign starting in late-Spring 2012.

However, UC2B is limited in the resources it has available to support the adoption of broadband services. The UC2B grant is designated to construct the middle mile and fiber to the premise infrastructure. This funding supports customer acquisition, construction and construction planning. The UC2B project did not receive funding support through NTIA for sustainable broadband adoption programs or public computing centers.

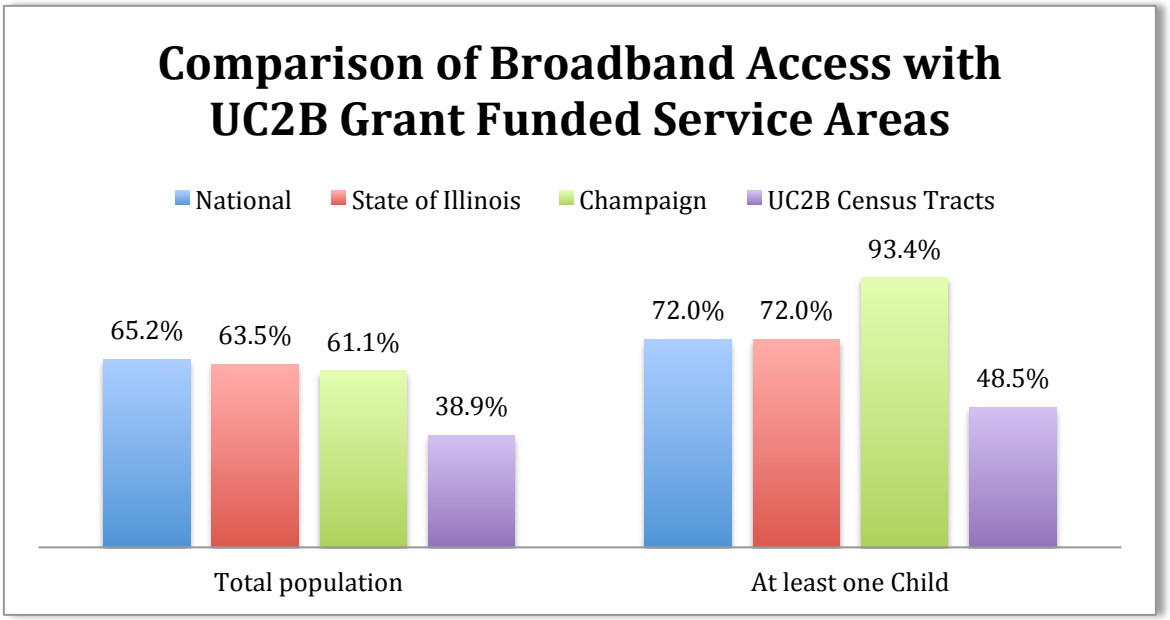
UC2B shaped its broadband adoption efforts based primarily on price and service. For many low-income households in the UC2B service areas, finding ways to afford

broadband Internet was a challenge. Various Internet service providers offer standard high-speed Internet services of 4 to 6 Mbps for an average of $41 per month.

Prior to the grant, the Champaign-Urbana community was deeply divided in the extent of broadband availability and access. Although broadband adoption rates in Champaign-Urbana are comparable to the State of Illinois and the US, Figure 7 shows that the broadband adoption rates among the households living in the grant funded areas is significantly lower. Slightly more than 61% of the households in Champaign-Urbana had adopted broadband by 2010. However, nearly 39% of the households in the grant-funded neighborhoods used broadband Internet service.

A starker digital divide exists among families with children. 93% of households with at least one child in Champaign-Urbana had broadband Internet access and only 48.5% of households with at least one child in the UC2B neighborhoods had broadband access. This reveals a significant gap in broadband use that may contribute to the digital divide among children in school in terms of the extent to which each child has access to the Internet outside of school.

Figure 7 - Digital Divide in Champaign-Urbana in UC2B Grant-Funded Neighborhoods Prior to Grant, 2010



UC2B conducted a second survey in 2011-2012 to gather more information about the computer and broadband use among households in the UC2B grant-eligible neighborhoods. They administered surveys by canvassing door-to-door to each building in the UC2B neighborhoods. There were 5,019 unique addresses in the Champaign County GIS Parcel database. Through the canvassing, it was determined

that approximately 4,800 households, CAIs, and businesses were eligible for broadband service. 19,155 canvassing visits were conducted.

For our 2011-2012 survey of the households in the UC2B grant-eligible neighborhoods, we observed in Figure 8:

- 66% of the households have a working computer with Internet access at home.
- The level of broadband Internet use increased slightly from the 2009 to 2011. In 2011, the overall Internet use among households either at home or outside of the home grew from 38.9% to 45%.

Figure 8 - Internet Use Among Households in UC2B Service Areas, 2011-2012

Overall Internet Use	45%
Internet use only at home	25%
Internet use only outside of home	21%
Have working computer with broadband Internet access at home	66%

Because the UC2B project focused on providing fiber-to-the-home Broadband Internet service to unserved and underserved census tracts in Champaign-Urbana, the team wanted to survey these households to determine their willingness to subscribe to UC2B at different price and service points.

The household was first asked why they do not subscribe to an Internet service. Figure 9reports that affordability was the highest ranked reason for not subscribing, followed by feeling that the Internet is not relevant and lacking a computer at home.

Figure 9 - Top Three Reasons for Not Subscribing to an Internet Service Among Households in UC2B Neighborhoods, 2011-2012

Households without Internet	
Affordability	37.6%
Lacks relevance	23.2%
Lacks computer at home	6.5%

Confirming the 2009 neighborhood survey, Figure 10 outlines that whether or not the household had Internet service, 89% of households overwhelmingly said that the Internet is important. We observed that 25.6% do not subscribe to Internet

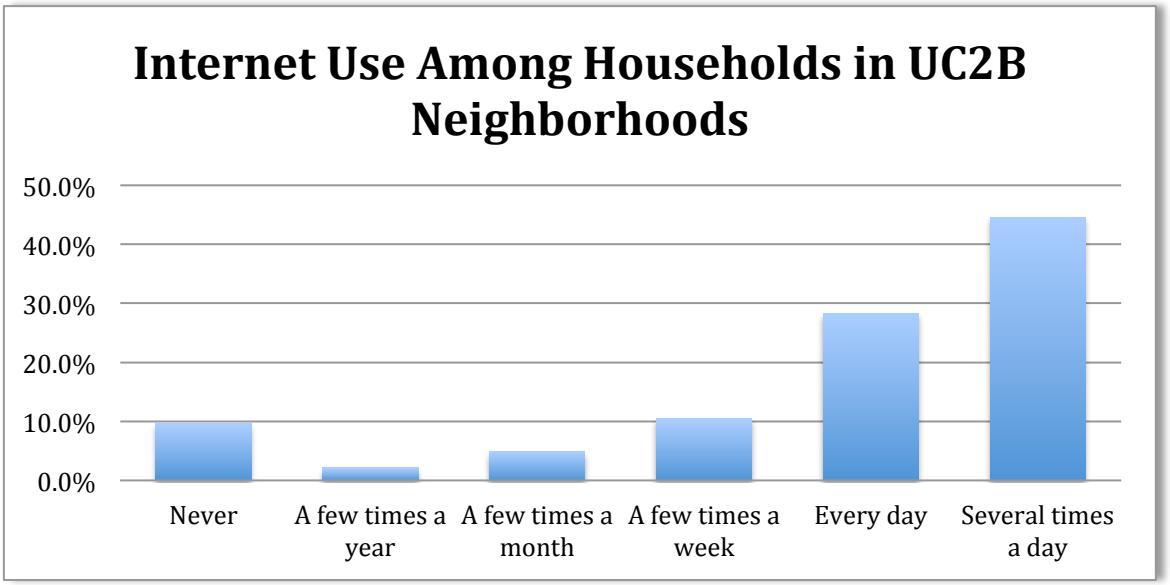
service. Additionally, 70% of households without service said that they would like to subscribe to UC2B if the service costs $19.99 per month. Interestingly, households who did not consider the Internet to be important still indicated a likelihood to subscribe to UC2B. Our survey showed that 19% were likely to subscribe at $19.99 per month.

Figure 10 - Intent of Households without Internet Service to Subscribe to UC2B

Households who feel the Internet is important and reasons why they do not subscribe:	
Feel that the Internet is important	89.0%
Does not have Internet service	25.6%
Likely to subscribe if broadband service costs $19.99 per month	70.0%
Likely to subscribe at $19.99 per month even though Internet is NOT important and do NOT currently have Internet	19.0%
Unable to subscribe to broadband services from any ISP due to affordability	44.5%

Describe Figure 5 here

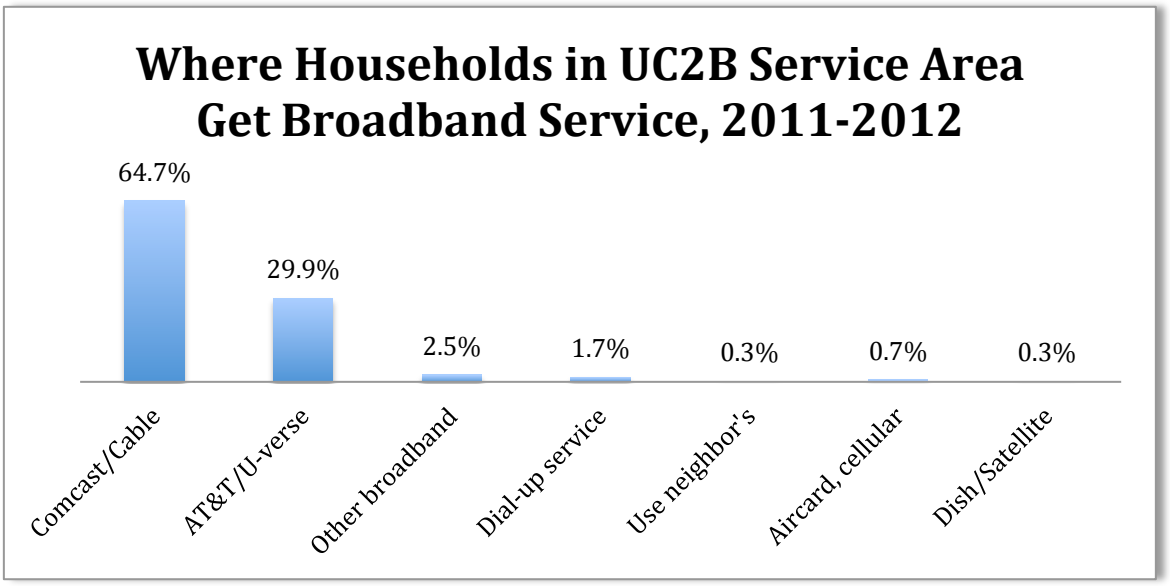
Figure 11 - Level of Internet Use



For Figure 12, Comcast is the largest service provider (42.0%), while AT&T/U-verse is the second largest (22.4%). Among the people who used AT&T/U-verse or Dial-

up service, more people switched to UC2B service. However, for Comcast or other broadband service, people tended to remain with their current service.

Figure 12 – Service Providers in UC2B Service Area, Prior to the UC2B Grant



UC2B Subscriptions

Residential Subscriptions

NTIA funded UC2B as a middle-mile broadband infrastructure project. The goals included building an open-access infrastructure to maximize the number of potential subscribers and to connect as many as possible. Though connecting subscribers was a clear goal, passing subscribers who could be connected in the future when they are ready was also an important goal. UC2B designed and built its broadband infrastructure to pass 4,620 households in the grant-eligible neighborhoods. This would be the first time that the households would ultra high-speed broadband Internet services available.

As reported in Figure 13, UC2B projected to connect 1,420 households. This projection was reduced to 1,150. UC2B adjusted its projection due to issues with reaching a high number of owners of multiple dwelling units located in the grant funded census tracts.

By the end of the grant, UC2B provided service to 1,058 household subscribers. 531, or 50%, of the subscribers are receiving broadband Internet services at their home for the first time. Nearly 78% of the subscribers selected the 20 Mbps Consumer Service plan. 65 subscribers have cancelled service, mostly due to customers moving. UC2B experienced a low rate of delinquent payments and did not have any cancellations due to this during the grant-funded period. UC2B did cancel service for a subscriber who violated copyright infringement policies.

For many of the households, there were a number of issues with using the Internet at home related to setting up devices to connect to the Internet and so forth:

- Setting up a laptop, desktop or mobile device (including tablets) to use the Internet service at home
- Concerns with setting-up and syncing equipment to ensure functionality
- Concerns with functionality of home equipment with Wi-Fi service
- Setting up the customers wireless network using customer's personal routers and connecting equipment

Community Anchor Institution Subscriptions

With completion of the UC2B project, the UC2B network passed or connected 294 community anchor institutions capable of receiving Internet service[xi]. As reported in Figure 13, UC2B provided Internet service directly or through other ISPs utilizing the UC2B network to 256 community anchor institutions[xii]. UC2B provided new broadband services for the first time for 31 CAIs, more than three times the projected number. UC2B also improved broadband access for 225 CAI subscribers, allowing these CAIs to upgrade their service to higher speeds than what they received through their pre-existing contracts with other ISPs.

UC2B implemented a pricing policy that permitted community anchor institutions to self-select its desired service level. The CAIs vary considerably in their use of Internet based services, organization size, budget, hours of operations, and mission. Nearly 80% of CAIs elected to use the UC2B 20 Mbps service in either the consumer or commercial plans. Among the CAIs that received service from UC2B, 84% chose consumer level services and 16% selected to receive commercial level services.

UC2B exceeded its open-access goals as other IRU holders provided service to 89 CAIs through direct fiber connections from the network. Furthermore, other non-UC2B ISPs provided service to 31 CAIs through Layer 2 services. This exceeded earlier projections of connecting 230 CAIs. Data on the speed tiers for non-UC2B IRU holders or ISPs providing Layer 2 services are unavailable, as this reporting information is not required.

Business Subscriptions

UC2B provided broadband Internet service to businesses located in the grant eligible neighborhoods, as described below in Figure 13. With the final construction of the fiber-to-the-premise network, UC2B's physical infrastructure passed 218 businesses. Because of improvement in the network routing during the construction phase, this exceeded the project proposal of reaching 211 businesses. UC2B provided service to 75 businesses, with 30 businesses becoming first time subscribers to the Internet and 45 businesses improving their Internet services. Businesses benefited from the open access policies as nearly 46% of the businesses received Internet service from ISPs connected to the UC2B network. ISPs with IRU agreements provided Internet services to 24 businesses. Ten additional businesses received Layer 2 business Internet services from other ISPs.

The UC2B service to the businesses, especially for businesses getting Internet service for the first at their operating locations, is making a difference. These businesses using the Internet for the first time are able to advertise using their own website, popular customer review sites, and such social media sites as Facebook. Subscribers have noted the Internet access improves communication with scheduling and sending employees to event locations. Businesses using the Internet for the first time include catering, auto glass services, hair care and beauty, heating and cooling, and auto detail shops. Many of these businesses are exploring how to use the Internet to reach customers, establish business relationships with suppliers and other service providers, and to manage their day-to-day operations. Businesses that upgraded their Internet service with UC2B include auto repair services, pet grooming and training, local fashion and tailoring shops, insurance services, legal and accounting services, major banks, home improvement and construction services, data management services and financial services.

Figure 13 - UC2B Broadband Internet Subscriptions

Number of Community Anchor Institution, Residential and Business Subscriptions by Speed Tier			
Consumer Service	CAIs	Residential	Businesses
20 Mbps Service	94	821	33
30 Mbps Service	3	99	2
40 Mbps Service	15	72	3
Commercial Service			
20 Mbps Service	13		2
40 Mbps Service	3		1
80 Mbps Service	1		

100 Mbps Service	3	1	
200 Mbps Service	2		
Service Provided by IRU Holders	89		24
Other providers via Layer 2 service	31		10
Cancelled Service	2	65	
TOTAL SUBSCRIBERS	256	1058	75
TOTAL ENTITIES PASSED	294	4620	218

Impact on Community Anchor Institutions

In addition to building a broadband network to provide high-speed Internet services to households, UC2B also expanded Internet access to community anchor institutions (CAI) throughout both cities. The UC2B team carried out a participatory process to invite individuals and organizations to share their perspectives on computer and Internet access. The leadership team held three public forums seeking deeper understanding of the community needs for broadband services. It was expected, initially, that the greatest need was to connect to households in areas that were unserved or underserved with broadband Internet access. However, through the forums, the UC2B leadership team heard from many community members that community support organizations lacked adequate access to high-speed Internet services, as well.

Armed with this important community input, the UC2B leadership team implemented a strategy to connect as many CAIs directly to the middle-mile network as possible under the terms of the NOFA[xiii]. The BTOP NOFA defined community anchor institutions as "schools, libraries, medical and healthcare providers, public safety entities, community colleges and institutions of higher education, and community support organizations and agencies that provide outreach, access, equipment and support services to facilitate greater use of broadband service by vulnerable populations, including low-income, unemployed and the aged"[xiv]. CAIs are considered as critical community facilities when they provide "community services essential for supporting the safety, health, and well-being of residents…"[xv].

UC2B exceeded its expectations for the number of CAIs that subscribe to the broadband Internet service.

UC2B connected:

- Local public safety agencies including the City of Champaign and City of Urbana and Willard Airport fire stations;

- UC2B connected METCAD, the primary 9-1-1 Public Safety Answering Point (PSAP) serving Champaign County. METCAD operates a countywide digital radio system to support all public safety (law enforcement, fire and emergency medical services) and public service agencies (public works, highway and utilities). It provides dispatch services for 33 agencies. In 2013, METCAD answered 233,918 calls, received 97,386 9-1-1 calls, and dispatched 160,267 calls[xvi]. The digital radio network uses five tower sites located throughout Champaign County. The networks are connected through a microwave network. METCAD uses the UC2B network to establish a reliable high-speed backup network through a redundant connection between the tower sites. METCAD also use the UC2B network to connect several local-area networks (LAN) into a wide-area network (WAN) to support coordination and communication among the 33 agencies. METCAD's operation center is connected to the UC2B network and relies heavily on the high-speed connection to support several technological innovations such as using predictive weather maps, gather and visualize real-time data on power outages and support emergency response operations for natural disasters, fires, and other homeland security events[xvii].

- Champaign-Urbana Mass Transit District (CU-MTD). The CU-MTD provided local matching funds for the UC2B project. CU-MTD serves more than 12 million riders annually and helps the public save money on their transportation costs, promote healthy lifestyles, help the environment, and develop the Urbana-Champaign community[xviii]. CU-MTD connected all of its bus shelters to the UC2B network to improve service quality and pubic safety. Each bus shelter uses computer-controlled signage to provide real-time arrival information for transit riders. CU-MTD uses the UC2B network to provide a network of security cameras at every facility, including the bus shelters. Connecting to UC2B enables all Internet and data transfer activities to occur much faster. This includes information transmission, STOPwatch real-time bus data, and sharing data publicly through its Application Programming Interface (API)[xix]. Illinois Terminal, MTD's intermodal facility in downtown Champaign, is now connected to the Administration & Operations Building

Figure 14 - Champaign-Urbana Mass Transit District Message Signs Connected to UC2B Network

with speeds 6,500 times faster than before. The cameras provide live feeds from transit terminals that are connected through the UC2B network to the CU-MTD Control Center to improve operations and public safety. CU-MTD is now in the process of connecting video feeds from its kiosks to its operation center. As CU-MTD expands its customer services in the future, it has the network capability to offer public Wi-Fi hotspots at each of its facilities. Figure 15 shows the significant improvement in the Internet speeds at CU-MTD since using UC2B over its legacy service.

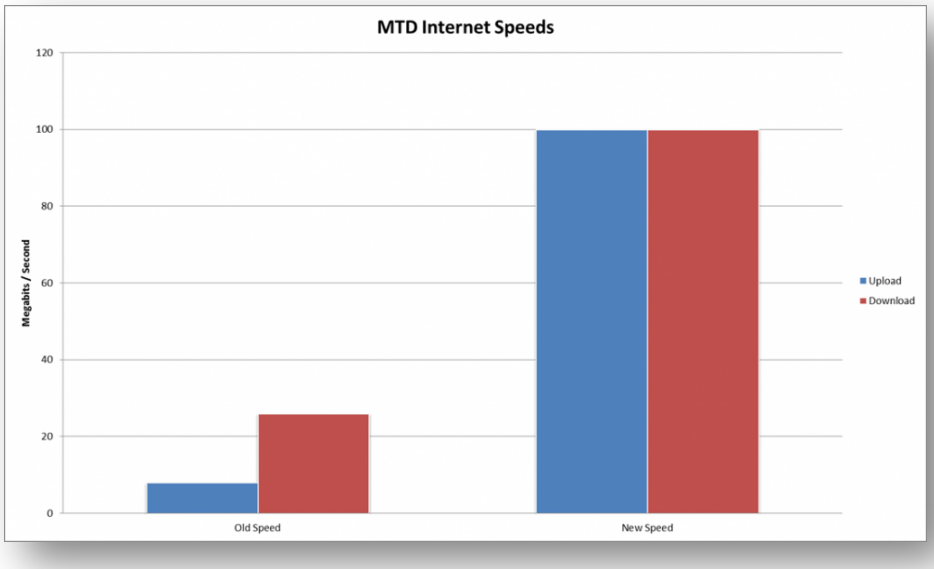


Figure 15 - Comparison of Internet Speeds for CU-MTD Since Connecting to UC2B[xx]

- UC2B provides Internet service to the Urbana-Champaign Sanitary District (UCSD). UCSD provided local matching funds for the project. UCSD provides wastewater treatment for properties in the Cities of Urbana and Champaign, the Village of Savoy, the University of Illinois and the surrounding adjacent developed areas, all within the UC2B middle-mile network footprint[xxi]. UCSD facilities are located in disparate locations with its two waste treatment plants anchoring a service network with 25 pumping stations and sewers that span across Urbana and Champaign. UCSD uses the UC2B network to provide networking capabilities to connect the two wastewater treatment plans and seven primary pumping stations together.

- Public Libraries
  Illinois Heartland Library System (IHLS). IHLS serves a network of 545 libraries with delivery of books and material, library catalog services and grant program services. Through a recent merger of four regional library

systems, IHLS reaches libraries located in central and southern Illinois. The Internet is essential for IHLS to provide these services to its members. The Lincoln Trail Library System (LTLS) served as the regional library system for East Central Illinois, including the libraries in Urbana and Champaign and libraries in nine counties. LTLS was also consolidated with three other library systems, and Lincoln Trail is now a part of the IHLS[xxii]. Prior to the UC2B project, LTS relied on T-1 lines to support circulation services to 117 member libraries. Most of the network communication comprised of circulation transactions and digital catalog services. With the UC2B connection, the Lincoln Trail location is connected to IHLS, the other regional library system and local libraries through the Illinois Century Network at gigabit speeds. UC2B helped to improve the connectivity to the IHLS across the eastern and southern part of the state of Illinois. Additionally, UC2B enabled LTLS to improve its connectivity to the Champaign Public Library System and the Urbana Free Library.

- Public Schools
  Unit 4 Champaign, IL School District The schools are connected directly to the middle-mile network with a fiber-to-the-premise connection. The schools are using the network to improve connectivity between their locations and to reduce costs.

- Medical community anchor institutions
  Christie Clinic. Christie Clinic's ISP contracted for an IRU for dark fiber from UC2B and is using that fiber to improve connectivity for this medical facility.

- Other Community Anchor Institutions
  Faith-based Organizations. UC2B provided Internet service for the first time for many of the faith-based organizations located in the UC2B grant-eligible neighborhoods. As new broadband adopters, many of the churches are exploring ways to leverage the Internet within their church community.

Impact of Meeting Goals of American Recovery and Reinvestment Act (ARRA)

The American Recovery Reinvestment Act of 2009 established the Broadband Technology Opportunity Program, which awarded funding to UC2B as a Comprehensive Community Infrastructure grant. The Recovery Act established BTOP in Title VI. The overall goal of the Recovery Act focused on funding projects to jumpstart the economy as well as to contribute to long-term economic growth[xxiii].

The Recovery Act's areas of focus:

- To preserve and create jobs and promote economic recovery

- To assist those most impacted by the recession.
- To provide investments needed to increase economic efficiency by spurring technological advances in science and health.
- To invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits.
- To stabilize State and local government budgets, in order to minimize and avoid reductions in essential services and counterproductive state and local tax increases.

The three immediate goals of the Recovery Act:

- Create new jobs and save existing ones
- Spur economic activity and invest in long-term growth
- Foster unprecedented levels of accountability and transparency in government spending

The Recovery Act intended to achieve those goals by providing:

- Tax cuts and benefits for millions of working families and businesses
- Funding for entitlement programs, such as unemployment benefits
- Funding for federal contracts, grants and loans[xxiv]

Jobs and Economic Recovery

The UC2B project created a broad range of jobs to carryout the planning, design, construction, and management and administrative support of building the broadband infrastructure. Based on data report in Recovery.gov, Figure 16 shows the number of full-time equivalent jobs created during the grant. This data shows the jobs created directly by the University of Illinois, the City of Champaign and the City of Urbana. The data does not include the number of jobs that the sub-contractors of vendors created. These additional jobs also contributed to the local and regional economy through various high-skilled trade positions, construction jobs, and fiber installation jobs. The project averaged 4.15 jobs. The construction project employed the greatest number of employees of approximately 11 FTEs during the construction phase to build the broadband infrastructure and to install the network components and to install the fiber to the premise. The ARRA data does not include the employment numbers of each contractor. UC2B's management data estimates that 66 employees were hired for vendor or contractor related construction activities.

Figure 17 shows the types of jobs that were created during the grant by each partner.

Figure 16 - Number of Full-time Jobs Created Through UC2B

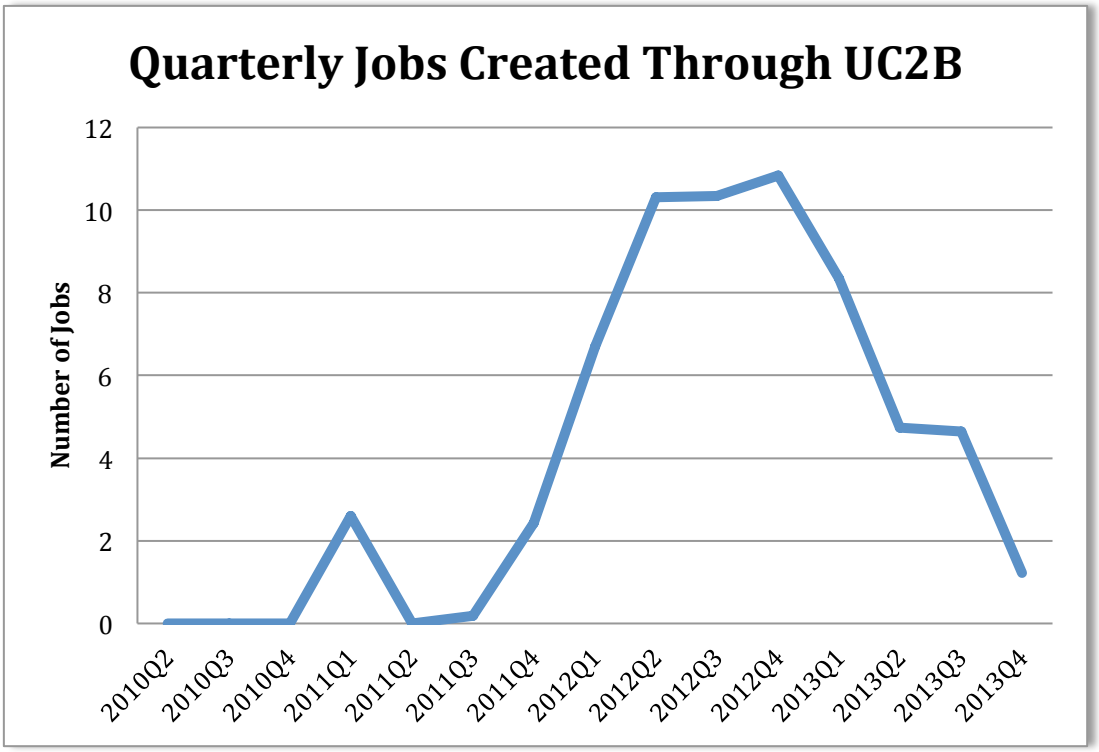


Figure 17 - Types of Jobs Created

University of Illinois	Citiy of Urbana	City of Champaign
•Director of Networking •Manager of Network Services •Hourly Employees •IT Fiber Construction Manager •Urban Planner •Canvassers (Extra Help Staff) •Project Coordinator •Graduate Assistants •Professor •Research Scientist •Director of Public and Media Relations •Senior Network Analyst	•Assistant City Manager •Civil Engineer II •Engineer Tech II •Economic Development Manager •IT Director •Equipment Operator •Electrician •Electrian Supervisor •Traffic Signial Technician •Maintenance Worker •Engineering Technician •Senior Civil Engineer •Seasonal Worker	•Assistant City Engineer •Engineer Technician II •Economic Development Manager •IT Director •Assistant IT Director •Civil Engineer II •City Attorney •Outreach Coordinator •Law Cleark •Programmer

Open Access

The BTOP program required each CCI grant recipient to comply with its Nondiscrimination and Interconnection Obligations. Among the key factors include:

- "Not favor any lawful Internet applications and content over others;
- Display any network management policies in a prominent location on the service provider's web page and provide notice to customers of changes to these policies
- Connect to the public Internet directly or indirectly, such that the project is not an entirely private closed network;
- Offer interconnection, where technically feasible without exceeding current or reasonably anticipated capacity limitations, on reasonable rates and terms to be negotiated with requesting parties. This includes both the ability to connect to the public Internet and physical interconnection for the exchange of traffic" (NOFA, p. 33111).

UC2B designed the middle-mile fiber rings and the last-mile network with interconnection strategically placed to permit ISPs to reach customers economically. UC2B proposed to build 491 interconnection slice points on the network, including 51 in the grant-eligible neighborhoods. As the network engineering plans were developed, UC2B revised design more than doubled the number of interconnection points. With the final build, UC2B built 1,120 interconnection points.

In 2013, UC2B signed agreements with and interconnected with four service providers Champaign Telephone Company, Metro Communications, the Illinois Century Network (ICN) and the Central Illinois Regional Broadband Network (CIRBN). In early 2014, UC2B also signed agreements with and interconnected with PEG Bandwidth and Volo Broadband, for a total of six interconnection service providers as of this reporting. There are no other interconnection agreements currently being negotiated. UC2B has not denied any requests for interconnection[xxv].

UC2B has three peering arrangements, although they are not formal agreements. UC2B peers with the University of Illinois, the Illinois Century Network and Champaign Telephone Company. All three organizations lease dark fiber from UC2B and peer with UC2B's network core. UC2B supports local peering and encourages all local providers to peer with UC2B and its peering partners. UC2B is not providing transit for any other service providers, but UC2B purchases transit from Cogent in Chicago and from US Signal in Champaign[xxvi].

The Future of UC2B

Private-Public Partnership Announced

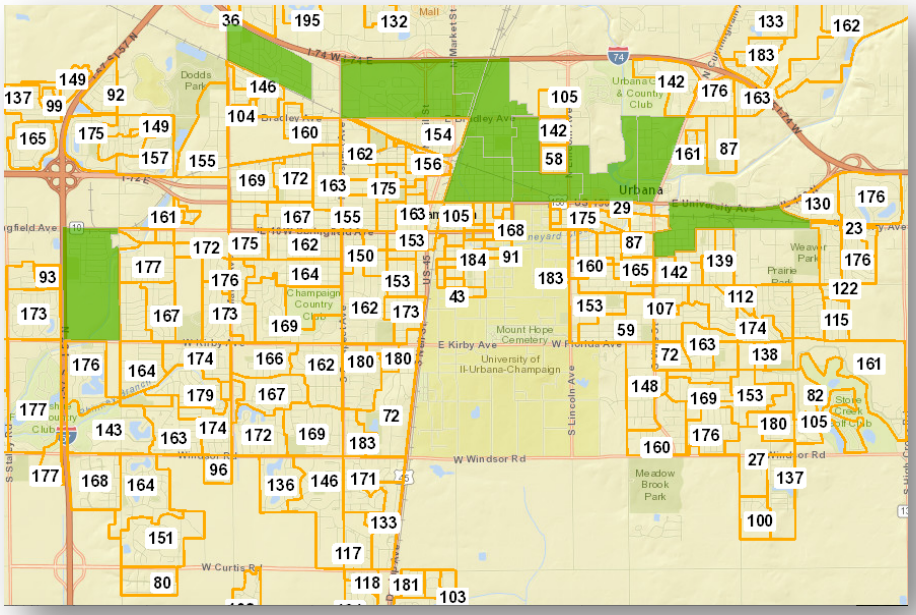
In May 2014, UC2B announced a partnership with an Illinois-based Internet service provider to expand and operate the fiber-optic broadband network in Champaign and Urbana. iTV-3, a subsidiary of the Family Video Company, will operate all aspects of the existing UC2B network and extend gigabit fiber-optic Internet services (and eventually television) to areas of the community not reached in the initial grant. This partnership was significant for the community and positioned Champaign-Urbana to be among the few cities in the country with a gigabit fiber-optic network available to all residents, business, and community anchor institutions.

In addition to owning more than 775 Family Video stores in 19 states and Canada, the iTV-3 organization has been in the ISP business since the mid-1990s and has provided fiber-based services since 2009. The company remains family-owned and places a strong emphasis on customer service.

iTV-3 has divided Champaign-Urbana into service areas of between 150 and 350 locations and refers to those service areas as "neighborhoods." This model is similar to the way Google Fiber divided "fiberhoods" to organize and prioritize sustainable fiber-optic investments, as seen in *Figure 18*. As part of the partnership, iTV-3 has agreed to build fiber infrastructure in any area of the Champaign-Urbana neighborhood where 50 percent of the potential customers subscribe.

iTV-3 staff launched a door-to-door marketing campaign and is actively gathering subscriptions in each neighborhood. The company also launched a new website, www.ThePerfectUpgrade.com, with a frequently updated map featuring each neighborhood and the number of sign-ups needed. A sample image from the iTV-3 interactive map is shown below. Areas shaded in green show the existing grant-funded neighborhoods already being served by UC2B.

Figure 18 - iTV3 "Fiberhoods" for Residential Subscription Campaign for Building Out the UC2B Network



Initially, iTV-3 will offer Internet and telephone and a customer may purchase either or both. Competitive pricing packages have been offered and the current service levels and costs are below. Television offerings are also planned, and iTV-3 is working to acquire Television Franchise Agreements with both Champaign and Urbana. No contracts are required.

- 50/10Mbps Internet: $49.95
- 50/10Mbps Internet + Unlimited US and Canada Voice: $64.90
- 100/20 Mbps Internet: $59.95
- 100/20 Mbps Internet + Unlimited US and Canada Voice: $74.90
- 1000/200 Mbps Interne: $79.95
- 1000/200 Mbps Internet + Unlimited US and Canada Voice: $94.90

Background on iTV-3 Partnership and UC2B as a Not-For-Profit

In July 2012, UC2B submitted a response to a Request for Information (RFI) from a company, which hoped to build Fiber-to-the-Premise projects in 10 university communities. In August of 2012, UC2B released an RFI to identify other organizations that were interested in expanding the UC2B fiber infrastructure and operating the network. Submissions were reviewed, applicants were interviewed, and in October 2013 UC2B connected with iTV-3 and began discussing partnership details.

Because partnering with a private company required the ability to do business in an agile and effective manner, the UC2B intergovernmental consortium recognized the need to transition to a not-for-profit (NFP) entity. This required the approval from each entity (the University of Illinois, the City of Champaign, and the City of Urbana) and nine members (three from each entity) were appointed to the UC2B NFP board in September 2013. Appointees to the board are not required to be employed by or affiliated with the appointing entity. (Source: UC2B.net) Moving forward, the UC2B Not-for-Profit Board of Directors will shift focus from network operations and construction to leveraging the network for the benefit of the community, with an emphasis on digital inclusion and digital literacy.

An important aspect of the iTV-3 and UC2B partnership was ensuring a commitment to Champaign and Urbana's Community Broadband Principles:

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

Because iTV-3 has agreed to build fiber within 120 days of any area where 50 percent of the potential customer base subscribes, the process is transparent and community-driven. Additionally, iTV-3 has agreed to offer wholesale access on the network to competition companies. This commitment aligns with the open access principle. After five years, if any neighborhoods in C-U are not connected, iTV-3

agrees to make unused fiber rings available for competing companies to offer service. iTV-3 will also contribute to the UC2B Community Benefit Fund, which will promote digital literacy and digital inclusion. Network infrastructure will continue to be owned by the UC2B Intergovernmental Consortium (subject to the Federal interest) and while iTV-3 will have use of existing fiber and equipment, they will not legally own it.

Community Benefit Fund

With the partnership with iTV3, UC2B is able to fulfill the goals of establishing a Community Benefit Fund. UC2B worked with local leaders to develop a strategy to help people living in Urbana and Champaign to gain more digital literacy skills and access to computer technology. The iTV3 operating agreement provides $50,000 annually for the next five years. UC2B's board established a Community Benefit Fund to support achieving several community focused goals to achieve digital equality for all people in the UC2B service area, and adopts the following objectives to achieve the goal[xxvii]:

- The Policy Board will issue an annual public report on the digital divide in the UC2B service area (the area of the seven rings including all of Urbana, Champaign and Savoy).
- The Policy Board will convene an annual meeting of anchor social institutions to discuss the above report and set general goals for overcoming the digital divide. This meeting will be open to the public and scheduled as a regular meeting of all UC2B committees.
- The Policy Board sets a goal to allocate 5% of its annual revenue and no less than 2% to a community benefit fund as a line item in the budget. Money from this fund will be dedicated to overcoming the digital divide, according to the general goals as above and the process as below.
- Prior to the operational phase of UC2B, the Policy Board will appoint an Advisory Committee for Digital Equality to help it achieve the goals as above. The Policy Board will appoint two Advisory Committee co-chairs and at least seven committee members, including at least one member of the Policy Committee. The Advisory Committee will decide upon all other committee roles. A majority of the Advisory Committee members will be chosen from the anchor institutions, which serve the underserved population of the UC2B service area. The Policy Board states its desire and intention that the members of the Advisory Committee represent the diversity of residents in the UC2B service area.
- The Advisory Committee for Digital Equality will propose a plan, including competitive grant awards from the community benefit fund to non-governmental agencies, to implement the general goals as above. If there is

no available money in any given year, no grants will be made. The Advisory Committee will forward to the Policy Board its recommendations for spending the community benefit fund, and the Policy Board will make the final decision.

Conclusion

This report shares the story of the Urbana Champaign Big Broadband network and its social and economic impact. UC2B is a public-private partnership organized to build a high-speed fiber-optic network serving the neighboring communities of Urbana and Champaign, IL that house the University of Illinois. Through the American Recovery and Reinvestment Act of 2009 (Recovery Act), the Department of Commerce, National Telecommunication and Information Administration (NTIA) established the Broadband Technology Opportunity Program (BTOP). The BTOP Comprehensive Community Infrastructure program awarded the University of Illinois $22,534,776. BTOP also required awardees to provide matching funds. UC2B received an additional $6,746,061 in state and local matching funds. As a comprehensive community infrastructure project, NTIA awarded UC2B the only middle-mile broadband infrastructure project that included last-mile coverage to residences, businesses and community anchor institutions. The UC2B project is incredibly unique and continues to improve quality of life throughout Champaign-Urbana. Citizens now have increased access to information, community anchor institutions can better serve the public, local businesses are innovating in new ways, and community developers are able to leverage the gigabit network to attract new companies to the area. The recently announced partnership with iTV-3 will extend the network, ensure sustainability, and increase competition amongst providers of Internet.

The University of Illinois collaborated with the City of Champaign and the City of Urbana through an intergovernmental agreement to build the broadband network and manage its start-up operation. Key goals for UC2B network included: access to improved broadband services in underserved areas; access to broadband training and digital literacy education; and increased demand for broadband, economic growth, and job creation.

Key UC2B accomplishments:

- Provide improved Internet connectivity to approximately 143 Community Anchor Institutions spread across the Urbana-Champaign community, as well as to 57 businesses and 2,500 households that are located in 11 “underserved” Census Block Groups;

- Offer subscribes access to the Internet in tiers of service based on their needs and budgets.
- Constructed an entirely fiber-based open access network;
- Built a gigabit speed broadband infrastructure middle mile network to provide backhaul services;
- Built a last mile broadband infrastructure to provide broadband service to end users and give subscribers access to a 1 Gbps community intranet;
- Connected community anchor institutions such as schools, libraries, hospitals, government organizations, and non-profit organizations that serve the community to the middle mile network;
- Built the network with all of the fiber buried underground;
- Establishment of the UC2B Community Benefit Fund.

Other notable happenings that will shape the future of UC2B include:

- UC2B was invited to join the Coalition for Local Internet Choice (CLIC), a group representing a "wide range of public and private interests who support the authority of local communities to make the broadband Internet choices that are essential for economic competitiveness, democratic discourse, and quality of life in the 21st century.)[xxviii]
- UC2B is a member of US Ignite, a nonprofit organization that fosters "the creation of next-generation Internet applications that provide transformative public benefit."[xxix]
- UC2B was the recipient of the 2012 Community Broadband Project of the Year, awarded by the National Association of Telecommunications Officers and Advisors (NATOA). The award recognized UC2B for "deploying an innovative, open-access Fiber to the Home network, and turning on its head the traditional model of starting with the most lucrative areas by prioritizing first low-income and unserved communities."[xxx]
- Mayors from Champaign and Urbana were invited to join Next Century Cities, a coalition committed to "celebrating gigabit-level cities, demonstrating their value, and helping other cities to realize the full power of truly high-speed, affordable, and accessible broadband."[xxxi]
- Local community focused effort are springing up in Urbana-Champaign to focus on the "above ground" resources needed to support broader adoption and use of broadband and digital technologies throughout the UC2B service area. This includes InfoCity CU. InfoCity CU is "creating a new vision of the future and a program to mobilize all sectors of our community towards realizing that vision. The vision is to utilize the power of information technology to create a more inclusive and just community, overcoming past inequalities and making full use of information storage and access and all the diverse kinds of information that are currently available"[xxxii].

Endnotes

[i] http://www2.ntia.doc.gov/infrastructure
[ii] BTOP defined underserved and unserved with particular criteria in terms of the availability of broadband services by Census tract. See Notice of Funding Availability for complete definition and criteria, http://www.ntia.doc.gov/files/ntia/publications/fr_bbnofa_090709.pdf , p. 33109.
[iii] https://localwiki.org/cu/Community_Benefit_Fund
[iv] Broadband Initiatives Program; Broadband Technology Opportunities Program; Note
[v] Charlie Smyth, UC2B Not-for-Profit Board Meeting Presentation, October 29, 2014
[vi] NOFA, p. 33107
[vii] http://www2.ntia.doc.gov/files/grantees/nt10bix5570044_apr2013_0.pdf
[viii] http://www2.ntia.doc.gov/files/grantees/universityofillinois_infrastructure_application_part1.pdf
[ix] http://jointcenter.org/sites/default/files/MTI_BROADBAND_REPORT_WEB.pdf
[x] National Broadband Plan
[xi] NTIA, Annual Performance Report, April 2014, http://www2.ntia.doc.gov/files/grantees/nt10bix5570044_apr2013_0.pdf
[xii] http://www2.ntia.doc.gov/files/grantees/nt10bix5570044_university_of_illinois_ppr2013_q3.pdf
[xiii] http://www.ntia.doc.gov/files/ntia/publications/fr_bbnofa_090709.pdf
[xiv] http://www.ntia.doc.gov/files/ntia/publications/fr_bbnofa_090709.pdf, p. 33018
[xv] http://www.ntia.doc.gov/files/ntia/publications/fr_bbnofa_090709.pdf, p. 33018
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