City of CHAMPAIGN

REPORT TO CITY COUNCIL

FROM: **Steven C. Carter, City Manager**

DATE: **March 4, 2011**

SUBJECT: **UC2B PROJECT UPDATE SS 2011 - 016**

A. Introduction: This report provides Council an update on UC2B (Urbana-Champaign Big Broadband) activities. The project is related to grant funds awarded by NTIA (National Telecommunications Infrastructure Administration) as part of the American Recovery and Reinvestment Act (ARRA) of 2009.

B. Recommended Action: Council is being asked for input and to agree with the general direction that UC2B is headed. If Council Members have any questions or feedback, they can provide them to Fred Halenar, Information Technologies Director, at 403-8970 or by e-mail at fred.halenar@ci.champaign.il.us. Comments may also be provided to Steve Carter, City Manager, at 403-8710 or by e-mail at steve.carter@ci.champaign.il.us.

C. Prior Council Action:

- *June 2009.* In Study Session, Council discussed the "Big Broadband" economic stimulus grants project proposed for Champaign-Urbana.
- *August 2009.* Council approved a resolution in support of a grant application for federal funds for a "Big Broadband" Project and the City's share of the 20% local match required by the grants.
- *August 2009*. Council approved an Intergovernmental Agreement to form UC2B consortium.
- *April 2010.* A Special Study Session was held to discuss the project with a hired independent consultant and a regular Council meeting approved the acceptance of the federal and state funding, funding contract, and the City's share of the local match.
- *July 2010.* Information Only Memo provided Council a general update on the project.
- *August 2010*. Study Session provided an update on UC2B activities.

D. Summary.
- Engineering firm was selected and initial network designs are being reviewed.
- Subcommittees have been formed to speed information development and issue resolution processes.
- Formal selection of a vendor for Fiber to the Premises (FTTP) electronics will be finalized and made public soon.

- The Technical and Policy Committees identified a number of major issues and is dealing with them to move the project forward.

E. Background:

1. Recent Activities. Many of the actions to follow have been developed, reviewed, and adopted by both the Technical and Policy Committees of UC2B. See ATTACHMENT A for a more detailed list of recent activities. It is important to note that while there is nothing visible to see yet, there is still a lot of work and progress being made on the project.

2. UC2B Hires. Each of the three UC2B agencies will receive funds from the grant to cover some salaries and benefits. Following is a brief summary of actions taken so far:

University of Illinois

John Kersh was hired as a "Visiting Urban Project Planner". His duties include coordination of GIS information and mapping to facilitate the fiber construction, overseeing the collection and filing of the some 2,700 agreements that will be required to place UC2B infrastructure through private property, coordination of the marketing and outreach effort, and "other duties as may be assigned". He reports directly to Mr. Mike Smeltzer, the University's Principal Investigator of the grant. This position is an Academic Professional position. Mr. Kersh has a Masters Degree in Urban Planning. Mark Toalson, the City's Assistant Director for Information Technologies served on the selection committee. The term "visiting" in the title means that this is not considered a permanent position, and will probably end on or before January 31 of 2013.

Robert Miles was hired as an "IT Fiber Construction Manager". His duties include helping coordinate the fiber construction, selection of materials, and coordinate the possible 2,700 private property easements that will be necessary to provide FTTP. The position will also serve as a resource for both cities and the University as they manage their respective construction projects. Mr. Miles also reports directly to Mr. Mike Smeltzer. The position is a Civil Service position not requiring a college degree. Mr. Miles has over 30 years experience in the fiber optic network construction business. His position is a Civil Service position subject to funding with no guarantee of on-going employment after funding ceases.

City of Champaign

Currently, the City is reviewing and developing its staffing needs based on workloads that the project will create. Public Works, for example, is projecting that the fiber project will require time from several departmental positions. These include:

Civil Engineer II - 1,040 hours
Engineering Technician II - 1,040 Hours
Engineering Intern - 520 Hours

There are also discussions underway to determine the best way to use personnel resources from the grant. For example, how should UC2B handle the door-to-door campaign for securing a

customer base (subscribers) in the underserved census blocks. Staff from the City Manager's Office, Neighborhood Services, Public Works, Legal, Finance, Human Resources, and Information Technologies are working to identify those needs and how best to keep the employment local and perhaps even from the underserved areas identified by the grant. If this works out to where the City might be able to hire the canvassing staff, the City would need to gear up to handle that responsibility for this part of the project. The grant has some funding available for such positions, but the work will be temporary and will likely only be for short periods time as the project spans two construction seasons.

City of Urbana

It is not known at this time what plans Urbana has for hiring resources for the project, but an Urbana coordinator and canvassers seems to be a likely scenario, providing more local hires from the project funds.

Other

Based on the by-laws, UC2B should have a coordinator. The UC2B agencies are meeting to define the position's roles and responsibilities and how those duties might change as UC2B transitions between building and operating the network. A clear picture is needed so that UC2B can better define what level of funding it can charge to the grant.

The need for a coordinator is growing as the project advances and committees grow to gather information and to provide recommendations based on a review process. However, as the project advances and subscribers are sought, the responsibilities of the position may need to shift a bit to cover more of the operational functions that cannot be covered by the grant. Since UC2B does not currently have a revenue source, UC2B will need to explore other measures for funding such a need, such as through a grant amendment. Another idea is to seek a temporary loan, seed money from the governing agencies until UC2B can repay the loans with incoming revenues. It should be made clear that the coordinator expenses will be covered by revenues once UC2B becomes fully operational in about a year or so and has a sufficient number of subscribers to achieve a revenue level that support the position and other operational expenses. This will be discussed more later in the report.

Once UC2B has customers, there may be a need to consider other staffing or contractual arrangements to provide services to maintain the systems, assist customers, and perform business functions. The decision to add more staff will be made later as the network matures and experiences indicate a need to hire or contract services.

3. Subcommittee Work. As mentioned earlier, the Policy and Technical Committees created subcommittee assignments to help expedite the decision-making process on many of the major issues (see Attachment D). Most all of the subcommittees include Technical and Policy Committee members and members that are in the networking or other technology business whose expertise has been helpful. See ATTACHMENT E for the Committee/Subcommittee Activities.

4. Building the Network. The University developed an RFP for the engineering services to design the network based on inputs from the Technical and Policy Committees. Both cities had a representative on the selection committee; Tony Vandeventer, Assistant City Engineer, was Champaign's representative. The evaluation criteria was also created by UC2B's Technical Committee then modified and adopted by the Policy Committee. The firm selected was Shive-Hattery at a cost of $2.3 million. Besides engineering, Shive-Hattery will assist each organization on the construction specifications, procuring permits, securing the needed easements, sending and evaluating RFPs for construction, and making recommendations to each agency. Shive-Hattery also partnered (subcontracted) with NewCom from Des Moines, Iowa to design the outside plant and with FarPoint Communications from Minnesota for the networking components in the design. Based on the contract schedule, Shive-Hattery delivered the 50% design documents on February 15th. There will be two more design submissions that are scheduled for March and early April. Construction bids are expected to be released in April as well.

The Technical Committee also developed evaluation criteria for FTTP Electronics, and like the engineering evaluation criteria, the criteria were reviewed and adopted by the Policy Committee. While it seems that defining the electronics should come later in the process, knowing the type of equipment (electronics) is critical to the design of the network. The technology will drive the needed fiber counts, the types of services that can be offered over the network, the number of access points needed, the need for cabinets that may require power or other environmental necessities, and to locations for the cabinets and access points in the network. The RFP was released in December 2010. Proposals were due January 11, 2011. Proposal selection was accomplished by a team effort. The team included members from both cities; Fred Halenar, Information Technologies Director, was Champaign's representative. As of the writing of this memo, final contract negotiations were in progress with the top rated vendor. Results will likely be made public sometime in early March.

5. Major Issues. As with any project, especially one of this size and complexity, there are always issues that arise that need to be discussed so that staff can pursue the desired directions provided by Council. Attachment D is a list of the major issues identified by UC2B and the steps being taken to address those. Forming subcommittees, as noted earlier, was a way of dividing the workload and reducing the timeline for recommendations. Subcommittee recommendations were then forwarded to both the Technical and Policy Committees for review and approval. There are some issues staff wants Council to be aware of and staff would be particularly interested in getting Council's feedback. These are:

   a. **Governance & Business Models:** Probably the most important issue is how UC2B should best be organized to better handle both the build and operations of the network. Currently, UC2B is stated to function much like METCAD as an Intergovernmental Agreement. However, experience is teaching us that we may need to look at modifications to this model to improve the long-term efficiency and effectiveness of operating the network. To address this issue, staff from all the organizations is looking to dedicate some of the grant funds to hire a professional to help UC2B in the process of developing this model. This will be beneficial since none of the agencies have expertise in the fiber optic networking or services that can be offered over the network.

In addition, a consultant may be needed to assist UC2B in developing a more detailed business plan that includes expanding the business plan to the entire community. The models will establish the responsibility and authority of the organization, which is important to many aspects of the project. For example, when easements are obtained, who signs the agreement? Also, there needs to be a renewed focus on the actual authority that UC2B should have by virtue of the existing Intergovernmental Agreement. In addition, since the build and operation of the network will at some point be functioning together, UC2B needs to determine how the customer base will be supported. This can include such activities as network repair, customer assistance, continued marketing (since adding subscribers makes UC2B more sustainable). It should be noted that if a consultant is hired to provide guidance on process and for developing the operational model, the grant will not cover these costs since these activities are not related to building the network.

Whatever model is chosen, it will need to meet the operational needs of UC2B, provide sufficient revenues to maintain services long term, and to lessen or eliminate the risk to the Cities and University as UC2B moves forward.

b. **Minority and Female Opportunities:** The federal funds were established as a form of economic stimulus and to serve un- or under-served segments of the population. UC2B was the only urban grant application approved by the Department of Commerce that contains a FTTP component. While there is no local firm that has the needed experience in designing our huge fiber optic network, there are other aspects of the project that UC2B would hope to keep locally so that the community can benefit by keeping as much of the funding local as possible. However, since the University of Illinois is the agency that receives the grant funds, UC2B must use University hiring and contracting rules and procedures for these requirements. In February, Mr. Fred Coleman III, Director of Diversity and Redevelopment at the University, made a presentation to the UC2B Policy Committee relative to state law and practices that the University must follow. The MAFBE (Minority And Female Business Enterprise) Act passed in 1994 set goals that the University must try to achieve. In 2009, P.A. 096-0706 (SB 351) and 2009, P.A. 096-1064 (SB 3249) states that bidders must list MAFBE sub/suppliers on bids rather than shop for them after the bids are submitted. The goal for the UC2B construction project is 15%.

However, while 15% will be the goal for construction work, the UC2B Policy Committee has discussed the possibility of going even further than the 15% since the grant was awarded based on the definition of citizens being underserved by Internet access and as an economic stimulus package. When hiring, UC2B would like to consider hiring from the census blocks identified in the grant application. For example, if the City gets to hire the canvassers, would it not be beneficial to hire from the neighborhoods that will be served by the grant. The same concept would extend to contracts as well in an effort to increase the amount of funds from the grant that stay local.

This is an issue because the City does not set goals for contracting at this time nor is the goal set at the 15% MAFBE level. If the City subcontracts the construction within the City for the grant, the City would be required to follow the MAFBE requirements and doing so could entail a new policy. In addition, if the City can hire canvassers to get subscribers for example, this could be another matter that might need to be considered by Council.

c. **Possible Seed Funding:** First, it should be noted that the grant funds can only be used for activities related to establishing and building the network, including marketing and connecting UC2B services to FTTP properties and anchor institutions. Federal and state funds cannot be used for operational functions of the organization. In fact, the state restrictions go even further by requiring the state funds to cover only bondable items. The reason for this restriction is that the state funding comes from bond proceeds establish for capital improvement projects.

Since UC2B needs to develop and implement operational aspects of the project, the agencies may need to ask their organizations for some seed money to carry out those functions. If a General Manager or Director is hired to help the organization better coordinate communications, develop programs, centralize communications, and make recommendations on actions and services between the organizations, some of those services may be operations related.

The grant funds would be able to cover all costs related to building the network, but some additional seed funding might be needed simultaneously to perform work related to operations. Organizations that are part of the UC2B Intergovernmental Agreement are analyzing and defining what this need might be. Councils and Boards may need to approve some seed money to aide in the functions identified to perform network repair, customer assistance, and continued marketing efforts. After further analysis, staff will likely approach Council with a plan on what and how seed funding will be used and how it might be re-paid by UC2B.

d. **Cabinets & Pedestals:** The original application for the grant funds was based on a technology that would not require cabinets or pedestals in the rights-of-way. This became an issue when AT&T began it "Project Lightspeed". This project included putting cabinets and pedestals in neighborhoods in order for AT&T to offer its U-verse video services. To address this problem, Council adopted Council Bills 2008-146 and 2008-147 that modified City Code section 30-238 to address issues related to locating facilities on the rights-of-way. The ordinance addresses criteria for placing above ground facilities for technical reasons, it addresses the appearance (landscaping) of such facilities, and it requires removal if they are no longer used. The project will need to adhere to these codes and staff will verify compliance as it reviews and approves construction plans and permits before actual construction begins. It is estimated that the project will require approximately 7 such cabinets in the right-of-way in Champaign and 5 in Urbana.

The technology was selected by a competitive process (an RFP). The process included an analysis that took into account the Total Cost of Ownership. The 1st place ranked proposal was based on a technology called "Active Ethernet" (also referred to as AE), which is a very mature and reliable technology that will save about $250,000 based on the estimated budget for this aspect of the project. Prior Council direction also directed staff to ensure that a competitive processes be used to save money wherever possible to implement the project. The AE technology will require that cabinets be strategically placed in the neighborhoods. While the technology can be mentioned, the name of the firm providing the FTTP electronics can only be made public once the University completes final negotiations and has a contract in place to bring before the University's Board of Trustees for approval. The winning firm will also be posted on the Illinois Board of Higher Education's website.

6. Community Input. Since Council's last discussion of this project, there has been an increase in activity with the public. UC2B Technical and Policy Committee members participated in two eBlack Champaign-Urbana Community Symposiums with a third event scheduled for March 19. (eBlackCU is a collaborative portal on African American experiences in Champaign-Urbana that is funded by the Office of the Vice Chancellor for Public Engagement, University of Illinois at Urbana-Champaign, and administered by the Graduate School of Library and Information Science, UIUC. More information is available at http://www.eblackcu.net/portal/about.) The first symposium was two days; November 5th and 6th. The intention of the symposiums was to inform the community about UC2B and how technology might impact the community. The 2nd Symposium was held on January 8, 2011 and dealt more with how the fiber network and other technologies might be used to foster economic development and create jobs in the area. The 3rd symposium will focus on jobs, youth, and churches using technology.

In October, 2010, UC2B Committee members attended a Cyber Church Project meeting at Salem Baptist Church. The group is a collection of ministers in the area that see benefits in using technology in reaching their member families. Similarly, a couple of UC2B Committee members make regular appearances at the Garden Hills School Association meetings. The intention is to keep area residents informed of UC2B's progress on the project. These meetings are generally very good question & answer sessions that show that citizens are interested in the outcomes of this project.

A group of pastors in the northern neighborhoods have formed a committee named the "UC2B Faith Based Committee of the Community Benefit Partnership" to make sure that citizens in their area are aware of this project and to encourage them to become active participants in the project. The Committee submitted a letter to UC2B regarding their commitment to the project with a sincere request to do what it can to keep jobs and contracts local. The Committee is also working to develop educational and marketing programs that will assist UC2B in getting subscribers. The churches may also be seen as a way to assist in the sustainability of the network. The original concept was to exchange services and get some compensation for each customer they can get to subscribe. The Committee saw this as a way to get some funding that would help sustain the technology used or as a way to offset some in-direct costs associated with maintaining computer labs on their premises. Some churches already have computer labs for youth and after school programs, but the churches are also thinking of ways they can make their

labs more accessible to their constituents for more hours and not just limited to the youth in their neighborhoods. In a special meeting for the Policy Committee, the pastors presented various scenarios as to how hiring from the north end of the City might be used by the project. Some ideas shared included canvassers, helpdesk people, landscapers, crew laborers, etc. The ideas offered by the pastors will continue to evolve as both groups seek to identify what works best for making UC2B a successful community project.

7. Google Fiber. Google published a "thank you" to all those showing an interest in their big broadband contest.   However, Google has not announced any recipient(s) for its project.

8. Future Council Actions. Depending on the outcomes of the analysis, research, and inputs being considered, staff expects the following items to require some form of future Council action. The items may be, but will not be limited to:

- UC2B Governance and Business Models
- UC2B Minority/Female Opportunities (Hiring and/or Contracting Service Standards and Practices)
- UC2B Seed funding

It is apparent that UC2B needs to determine the governance model and take appropriate steps to implement it. As the project proceeds, there needs to be an entity in place that can create, enter into, and enforce a number of agreements. There is also the issue of liability, staffing, and contractual services that need to be resolved along with UC2B's relationship to the three entities that are party to the Intergovernmental Agreement.

9. Next Steps: The next step will be to complete the engineering work and to bid for construction. Staff will also complete its analysis and begin developing recommendations to bring to Council on the major issues identified in this memorandum.

There is a website where the public can access more information regarding UC2B. The website is http://uc2b.net/.

If there are any questions about this report, please call the Information Technologies Director, Fred Halenar, at 403-8970. Council Members can also e-mail questions, comments, or concerns to fred.halenar@ci.champaign.il.us.

F. Alternatives:

1. Direct staff to proceed with the future actions identified in this report that include creating and adopting an operational and business model, establishing hiring and/or contracting requirements, and investigating the possibility of establishing some seed funding for operations.

2. Direct staff to proceed in other directions.

G. Discussion of Alternatives:

Alternative 1 would direct staff to continue the course of actions as identified in this report. Of course, if Council has input or offers additional direction related to these matters, staff will certainly include them as direction from Council and work toward those directives.

a. **Advantages:**

- Addresses some of the major issues being resolved with UC2B
- Confirms the actions taken so far
- Makes sure that City governance is in sync with UC2B actions
- Notes items that will require future Council action
- Accommodates Council input on the actions identified

b. **Disadvantages:**

- Since UC2B has a Policy Committee that includes other agencies, Council and staff directions may not always wind up being the same

Alternative 2 would allow Council to provide direction on alternatives that differ significantly from those currently being followed by staff and UC2B.

a. **Advantages:**

- Provides Council with the opportunity to provide direction beyond those major issues noted in the memo

b. **Disadvantages:**

- Since UC2B has a Policy Committee that includes other agencies, Council and staff directions may not always wind up being the same or being entirely met.

H. Community Input: The "Background Section" of this report discussed much of the community input already. Generally, committee and subcommittee participation does include citizens, vendors, and staff from each of the agencies. Staff from both Cities and University have attended community meetings. In addition, the marketing committee is developing materials that can be shared with the community. Once materials are finalized and distribution begins, staff believes even more interest will be generated in the project, especially as the project nears activating services to the first customers.

I. Budget Impact: Besides staff time, there has been no real impact on the City's budget. However, once salary or contracting services are needed, staff will work to keep funding limited to what the grant can provide and support. Once grant funds are allotted to the City, staff will prepare the necessary budget amendments. If it is determined that some seed funding is needed, this will impact the budget, however, until the analysis is complete, staff is unsure how the budget will be impacted or how UC2B would plan to pay these funds back.

J. Staffing Impact: The project does impact staffing whether or not the grant covers the cost. For example, staffs' from several departments have spent time on the UC2B project. Legal, Finance, Public Works, Neighborhood Services, and Information Technologies have spent approximately 750 hours (collectively) on the project. As noted in the report, there will be an opportunity to recover some of these costs and also to cover some direct hires for the carrying out duties related to the project. This is a large project with major implications to the community. Staff time is well worth what is anticipated to be benefits to the entire community. Staff will continue to record the hours it spends on the project and will report those to the grants office at the University of Illinois for reimbursement as allowed by the grant or as part of the City's in-kind contribution towards the local match necessitated by the grant.

Prepared by: Reviewed by:

Fred Halenar   Richard A. Schnuer
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Attachment   A: Recent Activities
                       B: Design, Construction and Operational Goals
                       C: Procurement Plan
                       D: UC2B Major Issues
                       E: Committee/Subcommittee Work

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Recent Activities

- In August 2010, the Technical and Policy Committees produced and adopted a document called "Design, Construction and Operational Goals" for UC2B (see Attachment B). The document is added to all Requests for Proposals to give potential vendors a better understanding of what UC2B is and what outcomes are expected by the project.

- In August 2010, the Policy Committee adopted a "Procurement Plan" that will allow the Cities to bid the construction aspects of the project (see Attachment C). The reason for this is to break the project into small pieces, which is hoped to allow local vendors to get more chances to get some of the business.

- In September 2010, the Policy Committee added Maria Mobasseri, Computer Science and Information Technology Department Chair at Parkland College. UC2B by-laws address this addition. Ms. Mobasseri was familiar with both technology in underserved neighborhoods and she oversaw the Digital Divide grant at Parkland College. In December, Parkland went through an internal reorganization and moved the Digital Divide grant and staff under Mr. Minor Jackson, Executive Director of Workforce Development. Ms. Mobasseri offered her resignation and Mr. Jackson was nominated and appointed to the Policy Committee in January 2011.

- September 2010, the Policy Committee was given a document defining some of the more important issues facing UC2B (see Attachment D). After preliminary discussion, the Policy Committee elected to divide the issues between the Technical and Policy Committees keeping more of the policy related issues with the Policy Committee. All reports developed by the Technical Committee will be reviewed by the Policy, modified and adopted.

- In October 2010, UC2B Policy Committee added Rev. Zernial Bogan as a non-government member of the Policy Committee. UC2B by-laws also allowed for this addition. Rev. Bogan has been very active in championing the use of technology in the African American neighborhoods via the Cyber Church Project.

- In October 2010, UC2B adopted a "Construction Standards Manual", which will be used by the engineering firm and construction contractors for building the fiber network. The manual contains existing segments from local and State (IDOT) right-of-way requirements and road construction standards. The manual used the most stringent standards applicable between any of the organizations (both Cities, County, and University). The manual was shared with Champaign, Urbana, Savoy, University of Illinois, County, and Township Road Commissioners for review and input.

- October 2010, the Technical Committee developed proposal evaluation criteria for Engineering and Electronics to the Premises RFPs. The Policy Committee reviewed these documents, made 2 changes and then adopted the evaluation criteria for the RFPs.

- Also in October 2010, the Technical and Policy Committees adopted 2 major changes to the initial fiber optic ring design submitted with the grant application. This included an extension of one ring in the southwest areas of Champaign and possible re-routing of a ring in northeast Urbana.

- In November 2010, the Policy Committees adopted the budget that was provided in the grant application. The budget includes a limited number of cost allocation categories; however, each category can contain a number of cost-related items. For example, the construction budget includes items like boring, conduit, fiber cables, hand holes, etc. Modifications up to 10% of a budget category are allowed without federal approval. It is assumed that some budget modifications will be made after a number of the bids and RFPs are awarded since the winning proposals will dictate budget needs. If there are any savings, perhaps more funds could be redirected to address marketing needs to obtain more customers.

  In February, the University provided the Policy Committee with a slightly more detailed budget. Each category provided is intended to address needs for building the fiber optic network. While there is no extra funding available per se, there may be some opportunity to refine the budget once all the bid item costs are known. If there are any categorical funds available, it may be possible to restructure the budget, with NTIA approval, to help cover costs like having funds available for a UC2B Project Coordinator to cover costs related to building the network. Some of the funds might be used to obtain professional services for help in setting up UC2B contracts and agreements needed to get permissions for building the network. The Policy Committee adopted the more detailed budget in February 2011.

- In January, the Cities and the University began meetings to discuss designation, roles, and tasks of a lead agency to provide staff support to the Policy Committee during the development phase. This should help speed process and improve communications between the organizations.

Design, Construction and Operational Goals for the UC2B's Fiber Infrastructure

Note: The items in bold are the actual goals and objectives. The non-bold text is additional information that is intended to add more clarity to the goal or objective.

1. **Conduit paths for the network backbone and fiber to the curb should be, to the extent possible, below ground construction** – The purpose of this goal is to minimize public concern regarding personal and neighborhood aesthetics and create a network that removes security and operational concerns that exist with above ground infrastructure.

2. **Minimize the future operating expenses of the UC2B network** – Intended to create an infrastructure that will allow for the greatest centralization of network electronics, which could result in lower operating costs.

3. **Minimize or eliminate the number of huts, cabinets, and pedestals in the rights-of-way and in publically granted easements** – Intended to reduce both the impact on neighborhood aesthetics and power requirements. Fewer sites housing powered FTTP electronics equates to reduced HVAC needs and lower one-time and recurring costs associated with these needs.

4. **Maximize the flexibility of the infrastructure for future expansion (eventually to the entire community)** - The design approved by NTIA supports fiber rings community-wide by incorporating both high fiber strand counts and a spare conduit on every conduit segment.

5. **Minimize the time required to restore service to FTTP customers in the event of a fiber break - Service restoration is available through warm alternate fiber paths at Layer 1.** All fiber service rings should be less than 30 kilometers in length.

6. **Maximize the ability of the physical infrastructure to support the redundancy, reliability, and cost efficiency needs of varied public and private providers to deliver cost and performance competitive services.** - The more advanced customers that are served via connections that have a reverse path (either hot or warm) the fewer customers will be significantly impacted by a fiber cut.

7. **Minimize the distances of laterals for public safety, medical and governmental Anchor Institutions and potential multi-site customers (listed on a spreadsheet) to the fiber service rings** - The closer the fiber service rings are to each public safety, medical and government Anchor Institution and potential multi-site customer, the shorter the "vulnerable" lateral connections need to be and the more desirable the connections will be.

8. **Facilitate point-to-point connectivity (i.e. fusion splicing) between rings to create the shortest path to fiber assignments when end locations reside across multiple fiber ring paths** - Meet the fiber interconnection needs of the cities, the University, IRU (Indefeasible Right to Use Agreements) customers, UC2B customers and ISP locations as listed on the attached spreadsheet. On the design approved by NTIA, any strand of any ring can be cross connected to any strand of any other fiber ring in at least two locations, often more. In addition, several agencies purchased IRU's and need to be able to operate their own networks on one or more rings with no dependencies on any UC2B-owned and operated electronics.

9. **Design a transport network that allows the delivery of multiple IP-based services (i.e. the ability to offer IP-based phone, TV, Internet services, etc.) and that allows multiple public and private providers to provide services.**

10. **Create a flexible, standards-based network topology that might last for the next 50+ years and address the following items for Urbana, Champaign and the surrounding area:**
    a. Provide a long-term solution to support fiber to the premises (FTTP - homes and businesses).
    b. Provide dark fiber to the locations identified by each organization that purchased an IRU (list attached).
    c. Provide service delivery solutions to the anchor institutions (list attached).
    d. Provide multiple transport tiers that allow both business and residential subscribers to select a bandwidth subscription rate and services they desire.
    e. Provide a path for the evolution to future technologies while retaining long-term support for the recommended FTTP technology.
    f. Provide delivery solutions for ICN (Illinois Century Network) and IDOT (Illinois Department of Transportation) (list attached).

11. **Provide for balance of core infrastructure so that the governance agencies of UC2B (City of Urbana, City of Champaign, and University of Illinois) all have equal access to all aspects of the network in case the agencies consider offering their own public services over the network** – The purpose of this is to provide options to each agency if the created consortium fails to meet operational objectives and requires each agency to offer its own services.

12. **Effectively use existing local government conduit and fiber and use private conduit and fiber where construction and design standards and economics create measurable advantages that support all other goals and expectations.**

13. **Prioritize construction to maximize available services as soon as is reasonably possible.**

14. **Minimize damage to public and private property** – The purpose of this goal is to minimize the cost of building the network and reduce the time needed to patch relations with citizens and businesses.

15. **Use local labor and contractors whenever possible** – The project funding, in part, is intended to be an economic stimulus, so UC2B would want work to go to as many local contractors and providers as possible. UC2B would also like to see local firms hiring trainees and apprentices to help fill their workforce needs by hiring from the 11 census blocks where FTTH will occur.

Operational Objectives:

1. Position the Champaign-Urbana area as a leader in the U.S. and the world for broadband availability and adoption.

2. At a minimum, create the ability to provide IP-based triple-play services on the network.

3. Position the Champaign-Urbana community to take advantage of the benefits of big broadband.

4. Attract world-leading research opportunities for the University of Illinois.

5. Provide great home and business internet service at a low/competitive cost, especially in the targeted service area identified as a vulnerable population.

6. Provide the network foundation to enable community organizations to provide training, helpdesk support, computer equipment outreach, and customer adoption.

7. Create a meaningful impact on people's lives to promote jobs, economic opportunity, and ability to use big broadband to help bridge the digital divide.

8. Support local entrepreneurship within the community.

Procurement Plan

Plan C – UC2B Fiber Engineering and Construction Procurement (subject to change and approval by the U of I Board of Trustees)

1. F&S Planning issues a request for qualifications (RFQ) for fiber design firms in mid August. The RFQ incorporates the priorities established by the UC2B Policy Board. This RFQ would be for a single firm to design both the seven fiber rings and the fiber-to-the-curb infrastructure. Mike Bass will work with the BOT if the resulting contract exceeds $1 million.

2. F&S Planning and Mike Smeltzer will present the UC2B project to the Chancellor's Capital Review Committee (CCRC) for approval at its August 20th meeting.

3. Clark Wise, Mike Bass (or Planning) asks for the U of I Board of Trustees for UC2B Intergovernmental Agreement and project approval at its September 23rd meeting.

4. F&S Planning conducts an expedited version of the regular QBS process to select the engineering firm. The review committee includes representatives from Urbana & Champaign, as well as CITES. During the presentations with the top firms, the fiber infrastructure design review will take place.

5. The winning engineering firm produces "typical design documents" and "unit totals" for construction bidding by March 1 or sooner. Construction documents will be bid as soon as the "typical design documents" and "unit totals" are complete. The construction will be segmented into three areas that will be bid by three separate entities:

> **A. Champaign** – All UC2B conduit, manhole and fiber construction in the City of Champaign city limits (except the campus area described in "**C**" below), as well as in the adjacent portions of Champaign County and the Village of Savoy. In the South Farms on Curtis Road, "Champaign" will end at First Street while "Urbana" will begin immediately east of First Street. In the north, 'Champaign' will include West Kenyon Road east to the city limits, while "Urbana" will extend from just east of the city limits on West Kenyon Road. Champaign will place a handhold at the city limit on West Kenyon Road. This work will be bid by the City of Champaign and funded through a sub-award on the UC2B grant.

> **B. Urbana** - All UC2B conduit, manhole and fiber construction in the City of Urbana city limits (except the campus area described in "**C**" below), as well as in the adjacent portions of Champaign County. This work will be bid by the City of Urbana and funded through a sub-award on the UC2B grant.

C. Campus – All UC2B conduit and manhole construction along and between Windsor Road on the south, University Avenue on the north, Lincoln Avenue on the east and the ICRR tracks on the west and all fiber and fiber terminations between University Nodes. Fiber coming from the four rings in Champaign and the three rings in Urbana will be pulled into the appropriate conduits (installed by various contractors) and terminated in University Nodes by the Champaign and Urbana contactors respectively.

7. As soon as each of the three entities has selected its contractor(s) and finalized contracts, construction can begin, perhaps as early as April or May. We get 67% complete before the ground freezes in November or December and make the Feb 1 2012 deadline.

8. The remaining construction happens in 2012. Final completion is Feb. 1, 2013. No grant extensions are possible.

UC2B Major Issues
September 1, 2010

1.   **Organizational (Operational) Model**

A lot hinges on the organizational/operational model that UC2B selects. The significance
of this determines how UC2B can fund operations, maintain staffing, provide network
expansion, and control service offerings. It dictates the level of autonomy UC2B has in
governing itself. Other major issues may have the ability to stand on their own, but to
some degree it is likely that other issues will look to the model to better determine how it
may impact the operations of UC2B. Since UC2B currently plans to be in operation
sometime in July of 2011, this issue is important to decide soon.

2.   **Marketing Messages**

There are perhaps different messages needed at different times during the development of
the UC2B. For example, early in the process, one wants to peak peoples' interest in the
project, especially those in the Fiber To The Premise (FTTP) areas. The first messages
should attempt to keep citizens, businesses, anchor institutions, and governances
informed on the project's progress. Later, the message(s) need to change and describe
why people would benefit by subscribing to the UC2B network. After UC2B matures,
the messages need to a) continue attracting customers to UC2B and to b) keep customers
informed about ongoing support services. Developing a unified message amongst the
governance agencies would go a long way in promoting the network.

3.   **Operation Location and Management**

There are a number of concerns associated with running a business (based on the selected
model, or at least for the lead agency under the existing Intergovernmental Agreement)
that may need to be in place by July 2011. These include, but are not limited to:

a. Business location for office and field operations
b. Staffing to manage the business, provide help functions, and perform field services
    (an option for these functions may be to contract the services)
c. Equipment and software is needed to perform automated functions like customer
    billing, financial management, payroll, service tracking, inventory, circuit control,
    etc. The Technical Committee is reviewing some software options, but it is apparent
    that there may not be a single software available to handle all the functions of the
    business. Equipment may also be needed for field operations and or future growth of
    the network. Office and possible garage space may also be concerns (these functions
    may also become contracted services)
d. Ongoing marketing

4.   Network Offered Services (Data, Voice, Video)

The decision needs to be made, perhaps early on, as to what services UC2B wants to offer on the network (besides other vendors wishing to use UC2B's network to deliver services). This will ultimately impact the revenue sources available to UC2B. Since data, voice, and video might become competitive between providers (which may also include UC2B), how will UC2B package and price these services.

5.   Expanding the Network

This may be another issue that is related to the organizational/operational model selected, but based on advice from an independent consultant, expanding the network makes it fiscally easier to operate and support the network based on increased revenues. Expanding the network to the entire community could cost as much as $75 to $100 million, so this is not an easy decision to make. How it might be funded might again depend on the selected model.

6.   Use of Existing Infrastructure

There are two areas that need to be addressed here.

a.   First, if the City's and University allow UC2B to use their existing conduits (and possibly fiber), how are the entities be compensated. The grant could purchase these resources or the entities could contribute the resources as in-kind contributions toward the local match. However, in-kind contributions may be limited to a certain percent of the local match.

b.   The second and more significant issue is whether or not UC2B leases fiber and/or conduit from other sources to complete the network (thereby allowing the network to be completed more quickly). The problem associated with leasing is that UC2B may never own that infrastructure and therefore will not have control over how those parts of the network are used. Leasing could also impact the reliability offerings of UC2B and/or its partners and could eventually limit how UC2B might proceed with offerings in the future. A second problem is the fact that leasing creates a recurring expense for UC2B, which creates an issue based on the financial models already explored. If other firm(s) is interested in selling empty conduit or fiber and conduit, UC2B could and should be interested in that solution since UC2B would then own the infrastructure. The independent consultant hired by the cities did say that if given the money, UC2B should build and own the network. All indications in the grant application and review process hint that UC2B (Intergovernmental Agreement) will build, own, and operate the network.

7. **Open Network**

Since the grant requires the network be an "open" network (to other providers), UC2B will need to prepare for the reality of private firms participating in the network. There is a private firm already part of the network since it became a contributor in the local match by purchasing a number of fiber channels on a number of rings in the community. While this is consistent with the grant, it raises items that need to be addressed. These include, but are not limited to:

a. If a private firm builds a fiber lateral, who owns the lateral?
b. Who supports sections of the network if built by a private firm(s)?
c. If UC2B wants to reach customers beyond the privately built laterals, will UC2B need to lease parts of the privately owned infrastructure or will UC2B need to build new infrastructure to reach those customers?
d. There are other insurance, maintenance, and liability concerns associated with this situation.
e. How do the private firms and UC2B handle situations where other 3rd party firms want to reach a location using either or both infrastructures?

8. **Indefeasible Right to Use (IRU)/Transport Contracts (could also be an item for # 7 above)**

It would be nice to have the IRU and transport contracts developed early in case there are early adopters of the "open" network by third party vendors or for users or businesses that wish to purchase fiber on the UC2B built network. The contracts would provide a consistent approach for uses of network assets. It would also create the potential to generate one-time and recurring revenues for UC2B. What contract rates will apply? Who has the right to secure and enter into these contracts?

9. **Helpdesk and Support Costs**

While grants for sustainability were not successful, UC2B still needs to address the ongoing education, helpdesk and support issues created by having customers. A certain percentage of the fees collected from the subscription rates were to be used for possibly meeting this purpose. It was also suggested at a recent Policy Committee meeting that a part of the monthly fees collected in the 11 census blocks go to the organization(s) that recruits and signs-up customers. Is there any other responsibility connected to these fees if provided on an ongoing basis? Will the organizations provide the customer support service, helpdesk, and training services (excludes field work and in-home installation)?

Committee/Subcommittee Work

Each subcommittee provides research, topical information, and recommendations for both the Technology and Policy Committees to review and adopt. Following is a brief summary of the issues being addressed:

a) Some UC2B Policy Committee members and attorneys from each organization are exploring business and governance model options for UC2B once operations have begun. (Operations are anything related to operating the network.) Grant funds only address building the network.) Recommendation(s) for a model will be brought to the entire Policy Committee for review and approval. This is one of the most important issues to resolve since any network operations will depend on the structure defined for UC2B.

b) A Marketing Committee has been one of the longest functioning subcommittees. This committee is analyzing what information would be useful to differing UC2B audiences. Included in the committee's charge is the development of promotional materials for residential, commercial and anchor institutions. The Marketing Committee is working on a timeline as to what materials are needed and when throughout the project.

c) UC2B is thinking about how the network might be expanded after it is built. The reason for this is to insure that the network design can meet future needs and to identify revenue levels needed to properly support the network and meet UC2B and customer expectations for long-term sustainability.

d) Since building the network includes federal money, one of the federal requirements is making the network an "open network". This means that other services providers, for reasonable costs, can establish service offerings on the network. Please note that this does not mean free, since UC2B will be the entity that expands the network beyond the grant area and will also provide future upgrades and user support. A subcommittee is working on defining this more clearly and what it will mean to UC2B. Identifying the services offered on the network will also have to be maintained.

e) To address items such as inventory, asset location, circuit and service controls, UC2B needs to find software or a service that will help perform these functions. Customer billing will also be an important function since revenues will become the life blood of UC2B. A subcommittee developed specifications that can be framed by a more complete RFP template so that this process can be competitively bid. The subcommittee completed its task in January and forwarded the specifications to the Policy Committee in January 2011. The Policy Committee will review and adopt the specifications after dealing with higher priority engineering issues. After adoption by the Policy Committee, the Technical Committee will be tasked with creating the evaluation criteria that will be used to judge proposals. It is anticipated that these evaluation criteria will be completed in April or May.

f. Finally, a subcommittee is looking at what types of Indefeasible Right to Use (IRU) and/or data transport agreements might be needed. The subcommittee will also make recommendations on criteria or limits for selling available dark fiber (unused idle fibers) since selling dark fiber can create a quick one time revenue or reduce UC2B's future ability to expand services if more fiber is needed. In addition, the subcommittee is identifying existing fiber and conduits that are owned by others but might be used to speed construction at less cost or aid in gaining access to difficult locations like crossing railroads and the Boneyard. There are also issues with fiber and conduit owned by the cities and University that are being addressed.