

RECIPIENT NAME:University of Illinois

AWARD NUMBER: NT10BIX5570044

DATE: 04/07/2014

OMB CONTROL NUMBER: 0660-0037

EXPIRATION DATE: 6/30/2015

ANNUAL PERFORMANCE PROGRESS REPORT FOR BROADBAND INFRASTRUCTURE PROJECTS

General Information

1. Federal Agency and Organizational Element to Which Report is Submitted Department of Commerce, National Telecommunications and Information Administration	2. Award Identification Number NT10BIX5570044	3. DUNS Number 041544081
4. Recipient Organization University of Illinois 506 Wright Street 364 Henry Admin. Bldg, Urbana, IL 61801-3620		
5. Current Reporting Period End Date (MM/DD/YYYY) 12-31-2013	6. Is this the last Annual Report of the Award Period? <input checked="" type="radio"/> Yes <input type="radio"/> No	
7. Certification: I certify to the best of my knowledge and belief that this report is correct and complete for performance of activities for the purposes set forth in the award documents.		
7a. Typed or Printed Name and Title of Certifying Official Michael K Smeltzer Director of Networkiing	7c. Telephone (area code, number and extension) 2172443835	
	7d. Email Address smeltzer@uillinois.edu	
7b. Signature of Certifying Official Submitted Electronically	7e. Date Report Submitted (MM/DD/YYYY): 04-07-2014	

OVERALL PROJECT PERFORMANCE INDICATORS

1. Please provide the following average cost figures for your project. Please review the instructions to determine how to calculate these figures. Write "0" in the second column and "N/A" in the third column if your project does not yet have this information. Depending on whether your project contains Middle Mile and/or Last Mile components, some metrics may not apply. Please provide a narrative description if the total is different from the target provided in your baseline plan (600 words or less).

Cost Indicator	Average Cost / Speed	Narrative (describe your reasons for any variance from the baseline plan or any other relevant information)
Average cost per new mile (Middle Mile)	\$107,253.84	This is substantially less than the \$135,808 in our baseline plan. We had originally specified larger fiber cables and a spare conduit on the rings. Those elements were changed to reduce costs.
Average cost per household passed (Last Mile)	\$1,616.44	This is slightly less than the \$1,750 in our baseline plan.
Average cost per subscriber (Last Mile)	\$10,220.57	This is substantially more than the \$4,062 in our baseline plan. Due to issues with landlords and UC2B's lack of a TV service, our take rate was substantially less than our projections. The base cost of building the infrastructure in the FTTP areas was divided by less than half of our projected number of subscribers, which more than doubled the cost per subscriber.
Maximum broadband speed advertised (Middle Mile)	10 Gbps	We offer up to 10 Gbps ports on layer-two services.
Maximum broadband speed advertised (Last Mile)	200 Mbps	Our fastest retail service is 200 Mbps.
Average broadband speed provided (Middle Mile)	N/A	We have no existing Middle-Mile customers. Even though we are connecting many Anchor Institutions to our Middle-Mile fiber, we are provisioning them with electronics and are providing services to them just like our Last-Mile FTTP customers.
Average broadband speed provided (Last Mile)	22.45 Mbps	This is the weighted average of the bandwidths subscribed to by all of our Last-Mile customers. Our network delivers its advertised speeds, and all service levels provide symmetrical bandwidth.

2. Please provide each facility name and type, the county where the facility is located, and census tract information for any facilities funded by your project during this annual reporting period. Report only facilities for which construction has been completed.

Facility Identifier / Name	Facility Type	County	Census Tracts
N/A	N/A	N/A	N/A

Add Facility

Remove Facility

3. Please identify (1) the total number of interconnection, peering, and/or transit agreements entered into during this annual reporting period; (2) the total number of agreements of each type that you are currently negotiating; and (3) whether you have denied any request for interconnection and if so, why. If you have not entered into any agreements, please write "N/A."

Interconnection Agreements (600 words or less)

In 2013, we 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, we also signed agreements with and interconnected with PEG Bandwidth and Volo Broadband, for a total of six interconnections with service providers as of this reporting. There are no other interconnection agreements currently being negotiated. UC2B has not denied any requests for interconnection.

Peering and Transit Agreements (600 words or less)

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.

CAPACITY, UTILIZATION, AND CAPABILITY INDICATORS

4. Community Anchor Institutions: In the chart below, please provide information on the types of community anchor institutions capable of receiving service (i.e., anchor institutions connected to your network plus those passed by your network) as a result of BTOP funds.

Type of Community Anchor Institution	Total Number Within Service Area	Type of Community Anchor Institution	Total Number Within Service Area
Schools (K-12)	38	Public Housing	12
Libraries	4	Other Institutions of Higher Education	1
Medical and Healthcare Providers	34	Other Community Support Organizations	80
Public Safety Entities	31	Other Government Facilities	93
Community Colleges	1	Total Community Anchor Institutions	294

5. Please indicate the average increase in broadband speed provided to the community anchor institution customers as a result of your project, including a description of how this increase was calculated (600 words or less).

While we do not have exact data, we know that most of our CAI's have converted to UC2B fiber from either a T-1, DSL or cable-modem connections. The fastest of those technologies can offer speeds as fast as the slowest UC2B fiber tier on downloads, but those technologies are far slower on uploads. UC2B's download speeds at our slowest bandwidth could range from "equivalent" to 13 times faster. UC2B's upload speeds at our slowest bandwidth would be 20-40 times faster than either T-1, DSL or cable modems.

6. What retail services are being provided by this project? Please describe below. (600 words or less). As an attachment to this report, please provide pricing plans (in \$ per month) associated with each retail service. Retail services description:

UC2B customers can self-determine to subscribe to Consumer or Commercial tiers of services. The Commercial tiers provide access to more IPv4 public IP addresses, have greater bandwidth tiers and offer reverse DNS. All UC2B customers have unlimited bandwidth to the UC2B Intranet, but have tiers of connectivity to the Internet. The customer CPE can deliver close to 900 Mbps to the Intranet. Consumer Internet connectivity is sold in 20, 30 and 40 Mbps tiers. 87.2% of all customers have elected a 20 Mbps symmetric connection. 9.7% of all customers have elected a 30 Mbps symmetric connection. 1.5% of all customers have elected a 40 Mbps symmetric connection. Additionally we have 17 commercial customers that have subscribed to faster tiers. There are 12 at 60 Mbps symmetrical, 4 customers at 100 Mbps symmetrical and 1 customer at 200 Mbps symmetrical. UC2B's retail pricing plans are attached.

7a. What network management policies (e.g., bandwidth limitations, traffic prioritization) are in place for the services provided by your project? 7b. Have you ever limited or blocked consumers from accessing any lawful content, service, service provider, or application, or prevented any consumers from attaching any legal device to the network? If so, please explain why (300 words or less)?

The only bandwidth limiting done by UC2B is to enforce the tier of Internet connectivity that a customer has subscribed to. We have never blocked any customer's access to any content or service, not do we ever intend to. We also do no traffic prioritization, be it based on source, content or recipient. We have not prevented any customer from attaching any legal device to the network. We have had to remove some customers from the network for failing to comply in a timely fashion with lawful requests to remove copyrighted content from their computers and cease sharing it

8. If applicable, please provide the total number and the percentage of subscribers who have dropped the broadband service provided through this project (total number of households and/or businesses and the "churn rate") and the subscribers' reasons for discontinuing their service (600 words or less).

We have lost 64 installed retail customers thus far out of a total customer base of 1,389 . That would give us a churn rate thus far of 4.61%. The most common reason for dropping UC2B service has been when customers move. However in some instances we have been able to sell UC2B service to the new occupants of rental units that are connected to UC2B fiber. Other customers cancelling service have either been unsatisfied with their installation experience or with the limited technical support UC2B has been able to provide them for customer-owned equipment. Our monthly service rates are quite low, and allow us to be able to make sure the network is working, but they do not allow us to be able to make sure that every device owned by a customer will always work on a UC2B connection. We understand that is a need, but it is not one that we can currently fill.

9. Please provide the following information regarding the number of fiber strand-miles:

Total Number of Strand-miles	Total Number of Active Fiber Strand-miles Used by Recipient	Total Number of Leased Fiber Strand-miles	Total Number of Dark Fiber Strand-miles	Total Number of Strand-miles Being Built		
				Active	Leased	Dark
31,005	5,297	5,277	20,431	0	0	0

10. If you wholesale dark fiber, please list your wholesale customers and the number of fiber miles you currently are leasing to those customers:

UC2B wholesales dark fiber to six service providers and to five public entities. We have two IRU agreements with Big Broadband

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Services and recently amended one of those agreements adding strand miles. Their combined agreements now total 1,075.89 miles. We have an IRU agreement with the Central Illinois Regional Broadband Network for 69.93 strand miles. We have an IRU agreement with the State of Illinois Department of Central Management Services - Illinois Century Network (CMS/ICN) for 343.65 strand miles. We have an IRU agreement with PEG Bandwidth for 201.58 strand miles. We lease 19.39 strand miles of dark fiber on a short-term lease to Volo Broadband. We also lease 22.96 strand-miles of dark fiber on a short-term lease to Metro Communications. We also have or will soon have IRU agreements with the University of Illinois, the City of Champaign, the City of Urbana, the Champaign-Urbana Mass Transit District (MTD), and Champaign County totalling 3,293.53 strand miles. Those five public entities are not Internet Service Providers, but rather use the fiber for internal communications and distributing Internet among their various locations in our community.

11. Please provide the following information regarding the facility collocation capacity:

Total Facility (total square feet for all facilities)	Number of Square Feet Used by Recipient	Number of Square Feet Leased	Number of Square Feet Available
850	754	40	8

12. If you do not own collocation space, please describe how and where other network providers and/or customers interconnect with your network (600 words or less).

UC2B is leasing space from the University in two of its Nodes for its core network equipment and for a minimal amount of collocation space for the routers of our dark fiber customers. In order to have as redundant a system as possible, our dark fiber customers need to locate a small router that can terminate the fiber coming from the 7 rings (and their subrings) in each of the two core nodes. We have allocated a quarter of a 7-foot-tall, 23"-inch-wide rack for each IRU customer's router. Beyond that, UC2B is not offering any collocation space. UC2B does also have fiber cross-connect panels in a third University node on two inter-nodal fiber cables to facilitate connections to the Illinois Century Network, the University itself, AT&T, Comcast, Windstream, Champaign Telephone Company, Metro Communications and Pavlov Media, who all have facilities in that node.

Service providers will be able to connect to UC2B in those three University's telecommunications nodes, where many of them already have facilities today. The Illinois Century Network, AT&T and Champaign Telephone Company have presences in all three nodes. Windstream, US Signal, Peg Bandwidth and Metro Communications have (or will have) presences in two of the nodes. Comcast, and Volo Broadband have presences in one of the nodes.

We are also providing diverse fiber transport on any of our seven rings for service providers without facilities in the UIUC Nodes. If an ISP can get fiber to any one of the 400+ manholes on our seven backbone rings that contain splice cases, they can lease dark UC2B fiber strands to connect redundantly to the UC2B network core and distribute their services.

A local provider is planning to build a data center / carrier hotel in 2014 that will have diverse connections to four of the seven main UC2B rings, which by definition gets them access to all seven. Our seven fiber rings were designed to be able to redundantly connect any location on one ring to any location on any ring. Our cotangent seven ring design reduces the need for co-location in our facilities and decentralizes service provider hardware. A simplified diagram of the ring design, the inter-nodal cables and the three nodes is attached.

13. To the extent that you have made any subcontracts or sub grants, please provide the number of subcontracts or sub grants that have been made to socially and economically disadvantaged small business (SDB) concerns as defined by section 8(a) of the Small Business Act, 15 U.S.C. 647, as modified by NTIA's adoption of an alternative small business size standard for use in BTOP. Please also provide the names of these SDB entities (150 words or less).

UC2B has made two sub-awards, and both were made to local municipalities - the Cities of Urbana and Champaign. Urbana hired a prime contractor for the phase one fiber construction (all fiber in rights-of-way) in its city limits, and their prime contractor engaged the services of four small disadvantaged Minority and Female Business Enterprises (MAFBE) as subcontractors. They were: Electrical Resource Management (MBE), Southern Belle Electric and HVAC (MBE), Tepper Electric Supply Co. (FBE) and Groundhog Utility Construction, Inc. (FBE). Champaign's prime contractor for the phase one fiber construction hired two FBE subcontractors. They are: Prairie Restorations, Inc. and Gordon Electric Supply, Inc.

Through their sub-award, City of Champaign handled the contracting for all the phase two construction (fiber from the curbs to the buildings) and hired PowerUp an MBE firm as the prime contractor. PowerUp also engaged Southern Belle Electric and HVAC (MBE) as a sub-contractor.

14. Please describe any best practices/lessons learned that can be shared with other similar BTOP projects (900 words or less).

This will not apply to all projects, but sub-awarding the right-of-way construction that happened in Champaign to the City of Champaign and sub-awarding the construction that happened in Urbana to the City of Urbana has proved to be an excellent decision. Because the contractors reported directly to the Public Works departments of each city, there was great communication between each contractor and its employing city, and issues were resolved quickly. Whether a contractor agrees or disagrees with a decision made by a city does not really matter, because at the end of the day the city is paying the contractor, and therefore the cities are getting what they want in their rights-of-ways, installed the way they want it installed.

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Municipalities that do not provide municipal-owned utilities do not necessarily have in-house expertise with underground utility construction. While they see it from a permitting and inspection perspective all the time, they can lack expertise in planning and implementation. One of our early hires was a retired fiber construction manager with more than 20 years of experience supervising fiber and copper utility construction. His expertise in the planning and daily implementation has been worth every dollar we pay him. He has been a vital link between the fiber construction crews and the cities' Public Works departments.

15. Using the Excel spreadsheet template titled "Annual PPR CCI Addendum", please provide an updated list of Community Anchor Institutions (CAIs) that you have connected and plan to connect to your network.

16. Using the Excel spreadsheet template titled "Annual PPR CCI Addendum", please provide a list of community pairs that are receiving new or improved broadband service as a result of BTOP grant funds.

17. Please provide up-to-date network route maps in a single file, in a Google Earth compatible format (e.g., KMZ file).