

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

Summary

The Board of Trustees of the University of Illinois (University of Illinois) applied to the Broadband Technology Opportunities Program (BTOP) for a grant to provide affordable broadband services to anchor institutions and underserved populations in the Urbana-Champaign area. The Proposed Action will deliver broadband services to 143 anchor institutions in 11 underserved census block groups, and is called the Urbana-Champaign Big Broadband (UC2B) Project (Project).

The National Telecommunications and Information Administration (NTIA) awarded a grant for the Project to the University of Illinois, through BTOP, as part of the American Recovery and Reinvestment Act (ARRA). The funding must be obligated and the Project completed within three years. This timeline is driven by the laws and regulations governing the use of this ARRA grant funding.

BTOP supports the deployment of broadband infrastructure in unserved and underserved areas of the United States and its Territories. As a condition of receiving BTOP grant funding, recipients must comply with all relevant Federal legislation, including the National Environmental Policy Act (NEPA) of 1969, which limits the types of activities that can be undertaken prior to completion of required environmental reviews. BTOP grant recipients, whose activities are not categorically excluded from further environmental review, must prepare an Environmental Assessment (EA) which meets the requirements of NEPA. After a sufficiency review, NTIA may adopt the EA and use it as the basis for finding that the Project will not have a significant impact on the environment. Following such a finding, the BTOP grant recipient may then begin construction or other activities that could impact the environment.

An EA for this Project was completed by the University of Illinois in August 2010. This EA was reviewed, determined sufficient, and adopted by NTIA as part of the development of this Finding of No Significant Impact (FONSI).

The Project includes:

- Installing 66.3 miles of underground fiber optic cable in a seven-ring Middle Mile configuration, covering a service area of approximately 52 square miles;
- Installing 26 manholes and 442 handholes along the Middle Mile fiber rings;
- Installing 27.9 miles of lateral fiber optic lines, and up to 24 intermediate handholes on those laterals, to provide direct connection between the fiber rings and 143 anchor institutions;

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

- Installing 64.8 miles of underground fiber-to-the-curb within the Last Mile service area, and 36.4 miles of fiber drop to reach 2,557 Last Mile end user facilities within an area of approximately three square miles;
- Installing 12-inch by 24-inch vaults where drop conduits will cross streets in the Last Mile service area;
- Using horizontal directional boring and trenching techniques to install underground fiber, conduit, and splice/access points within existing public rights-of-way (ROWs); and
- Installing optical network terminal (ONT) equipment inside Last Mile end user facilities, penetrating the building exterior, and using a fiber jumper cable to connect the internal ONT with the outside termination point.

Based on a review of the analysis in the EA, NTIA has determined that the proposed Project, if implemented in accordance with the preferred alternative, will not result in any significant environmental impacts. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required. The basis for the determination is described in this FONSI.

Additional information and copies of the EA and FONSI are available to all interested persons and the public through the BTOP website (www2.ntia.doc.gov/) and the following contact:

Frank J. Monteferrante, Ph.D.
Environmental Compliance Specialist
Broadband Technology Opportunities Program
National Telecommunications and Information Administration
U.S. Department of Commerce
Room 1036
1401 Constitution Avenue, NW
Washington, DC 20230
Tel. 202-482-4208
Fax 202-501-8009
e-mail FMonteferrante@ntia.doc.gov

Purpose and Need

The purpose of the Project is to provide affordable fiber optic broadband connectivity to the community's anchor institutions and fiber-to-the-home (FTTH) connectivity in underserved neighborhoods. The Project addresses the need to provide affordable internet service as well as the ability to connect important community institutions and citizens with each other. Although broadband and internet access was found to be available throughout most of the Project area, a study commissioned by the University of Illinois determined that the costs were out of reach for many of those institutions and citizens that could benefit most from such a service.

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
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Urbana-Champaign Big Broadband Project**

Project Description

The Middle Mile component of this Project involves installation of underground fiber optic cable and provision of direct internet connections to 143 anchor institutions and approximately 2,557 end users throughout the planned service area. All Middle Mile conduits, manholes, and handholes will be located in existing public ROWs. Horizontal directional boring will be used for almost all of the underground construction. Plowing will be used for fiber installation in areas where that technique is required or more appropriate for minimizing ground disturbance. New conduits will be installed where such infrastructure is not already available. In places where the conduit must cross another underground utility, small trenches will be hand dug to locate those utilities and ensure that they are avoided. No aboveground facilities or buildings will be installed as part of the Project's Middle Mile component.

Approximately 66.3 miles of Middle Mile fiber optic cable will be installed in a seven-ring configuration, covering a service area of approximately 52 square miles. All fiber cables for the rings will be placed in 1.5- or 2-inch conduits, which will run between manholes. These access points will be spaced at intervals of 800 to 1,200 feet to accommodate existing cross streets, fiber construction, extra cable storage, and future splicing. The Project includes installation of 26 manholes, each measuring 4 feet by 4 feet by 4 feet, where more than two conduit sections interconnect. Manholes will be accessed by 24- or 36-inch round surface covers. In addition, 442 handholes, each measuring 2 feet by 4 feet by 4 feet, will be installed along the seven rings to contain a splice case or extra fiber cable storage and join two sections of conduits. A total of 27.9 miles of lateral fiber optic lines will be installed to reach the 143 identified anchor institutions from the closest splice points on the seven rings. While most of the lateral fiber builds are short, a few are long enough to warrant installation of additional intermediate handholes. Up to 24 smaller handholes will be installed on these laterals.

The Last Mile FTTH component of this Project involves installation of 64.8 miles of underground fiber-to-the-curb via trenching. This fiber infrastructure will be installed along and under existing roads in public ROWs. Distribution fiber will be built to the curbs of each residence and business throughout each of the 11 underserved census block groups. A total of 36.4 miles of fiber drop cable (averaging 75 feet per site) will be installed from the curb to an estimated 2,557 end user homes and businesses who sign up for internet service through the Project. A single fiber strand will be installed into each home or business. Horizontal directional boring techniques will be used to install most of the distribution fiber and fiber drops, but plowing may be used where deemed to be less disruptive and more cost-effective. No handholes or vaults will be installed in association with the fiber drops unless there is a street crossing. In those cases, a 12-inch by 24-inch vault would be installed where the drops cross the street and a 1-inch rolled duct for drop use would be installed for each end user facility.

Outside plant fiber will terminate in a small splice box on the outside of each building. Optical network terminal (ONT) equipment will be installed inside Last Mile end user facilities and a

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

fiber jumper cable will be used to connect the internal ONT with the outside termination point. The ONT itself is about the size of a typical cable router or wireless access point (roughly 8-inches by 6-inches by 1-inch) and requires a source of 120-volt AC power. The Project does not include provision of uninterruptable power supplies for these ONT units.

Alternatives

NTIA requires that an EA include a discussion of the no action alternative. The no action alternative provides a baseline against which the effects of the proposed action may be compared. Under the no action alternative, the Project will not be implemented and the site-specific impacts associated with the Project will not occur. In addition, this EA evaluated the preferred alternative (described above) and a hybrid alternative combining aerial and underground cable construction. Installing underground cable was chosen as the preferred alternative, and this FONSI addresses the findings related to that alternative.

Preferred Alternative – Underground Cable Placement (described above in Project Description). Construction utilizing underground cable placement is the preferred alternative. Installation will be along and under existing roads in public ROWs. The Project will use horizontal directional boring and plowing to install the Middle Mile fiber rings, fiber to the curb, and fiber drops from the curb into end user homes and businesses.

Alternative 2 – Use Aerial Plant for Some or All Sections. Under this alternative, fiber optic cable would be lashed onto existing or new utility poles along existing ROWs. Standard ROW regulations typically require pole owners to provide and lease pole space for installation of additional cable, where such pole space is available. In places where utility poles are not available, the Project would require installation of new poles. Pole installation would involve a smaller area of ground disturbance than expected during installation of underground fiber. For the Last Mile build however, installation of new poles in urban areas would be costly and time-consuming, and would not be permitted by many local jurisdictions. Thus, at least some underground cable installation would be required, and a fully aerial installation is not considered feasible.

No Action Alternative. No action was also considered. Under the no action alternative, fiber installation would not occur. Existing broadband cable would be leased or negotiated through service agreements for managed service with carriers or Indefeasible Right of Use agreements with cable carriers or providers. The EA examined this possibility solely as the baseline for evaluation of impacts related to other alternatives being considered.

Alternatives Considered But Not Carried Forward. During the Project planning stage, the University of Illinois considered using existing commercial carrier services where available. This approach was determined not to be sustainable due to prohibitively high market pricing. In

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

addition, this approach would not satisfy BTOP grant requirements for public and commercial dual use, as carriers would continue to control use and resale of capacity to third parties.

A wireless approach was also considered. This approach would require installation of towers and antennas. Permitting for tower construction could delay the Project and put its implementation at risk. Furthermore, dense foliage in the Project service area could block wireless signals in the unlicensed spectrum (such as Wi-Fi). As a result, some fiber optic backhaul would likely be required in the form of additional poles and external antennas mounted on houses. Local jurisdictions generally limit installation of antennas and towers, particularly as they affect existing and planned residential uses. A wireless approach would also severely limit internet speeds and scalability. Lastly, operational costs associated with implementation of a wireless alternative were deemed unmanageable and contrary to the purpose of providing affordable broadband to target populations. Accordingly, the wireless approach was eliminated from further consideration for the Project.

Findings and Conclusions

The EA analyzes existing conditions and environmental consequences of the preferred alternative, the hybrid aerial/underground alternative, and the no action alternative. Eleven major resource areas were analyzed, including Noise, Air Quality, Geology and Soils, Water Resources, Biological Resources, Historic and Cultural Resources, Aesthetic and Visual Resources, Land Use, Infrastructure, Socioeconomic Resources, and Human Health and Safety. Cumulative impacts of each alternative were also evaluated in the EA.

The EA determined that implementation of the Project as a fully underground Middle Mile and Last Mile network is not likely to result in any significant environmental impacts and does not involve any unusual risks or impacts to sensitive areas. Drawbacks of the hybrid aerial/underground alternative (as compared to the preferred alternative) include the potential for ice and squirrel damage, permitting requirements, increased potential for accidents during installation and maintenance, higher maintenance costs, adverse visual impacts, recurring pole rental costs, and reduced scalability. Thus, the EA recommends implementation of the proposed action as detailed in the Project Description and identified as the Preferred Alternative.

Noise

Project construction will occur in ROW areas that normally experience construction and vehicular noise. Operation of the Project network for data transmission, including normal maintenance and repair, will not add significantly to ambient noise. Installation and operation of end user electronics will only add minimal noise. Thus, the Preferred Alternative is not expected to have significant impacts on noise. Alternative 2 would result in slightly more noise impacts compared with the proposed action due to the heavier equipment needed for pole installations. Otherwise, noise impacts mirror those of the underground alternative, and will only minimally

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

contribute to the existing ambient noise levels. The no action alternative would not have any impact on noise.

Air Quality

All fiber optic cable and underground vaults associated with the Preferred Alternative will be installed in urban environments and/or along roads and streets in existing ROWs. No substantial emissions are associated with construction of the underground fiber optic cable. Furthermore, pollutants and greenhouse gases to be generated during Project construction and operation will be negligible as compared to existing vehicular and urban industry-related emissions. Thus, the Preferred Alternative is not expected to have significant impacts on air quality. Alternative 2 would generally result in air emissions similar to those expected for the Project. However, because of the large bucket trucks needed to service aerial cable, higher greenhouse gas emissions would be anticipated on the operational side of this alternative. The no action alternative would have no impacts on air quality.

Geology and Soils

All construction for the Project will occur in existing public ROW and associated construction activities will not alter the soil content. In addition, there will be no appreciable removal of soil; therefore erosion is not a risk. Any plowing will be conducted in ROWs adjacent to agricultural fields, so the topsoil of those fields will not be affected. Consequently, the Preferred Alternative is not expected to have significant impacts on the geology and soil in the construction area. Alternative 2 would have similarly minor impacts on this resource area. Small pits would be excavated for pole installation, and best management practices (BMPs) would be implemented during backfilling to minimize lasting impacts on geology and soil. The no action alternative would have no impact on geology and soils.

Water Resources

No construction activities will be conducted in wetlands under either alternative being considered, and no wetlands impacts are anticipated. The Project will cross several waterways, but BMPs will be implemented to prevent diversion of waters, erosion, and construction runoff. Erosion control and prevention of storm water runoff are addressed as part of the local Urbana-Champaign construction permitting process. Installation of fiber through existing conduits and directional boring under creeks will minimize impacts on waterways, including the Boneyard Creek in Champaign, the Third Street area in Champaign, and the Lincoln Avenue/Gregory Street area in Urbana. In these areas, the Project will require conduit to pass 10 feet under the creek bed, with boring start and end points located 50 to 100 feet away from the edges of the creek. With these BMPs, the Preferred Alternative is not expected to significantly impact water resources. Alternative 2 would require pole installation in two areas planned for waterway crossings, and would have a greater impact during construction for fiber installation. Moreover, the hybrid option would result in increased cost and duration of construction along waterways. The no action alternative would result in no impact to water resources.

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

Biological Resources

There are no critical or suitable habitats in the Project area, and all installation will be conducted in existing ROWs. In accordance with section 7(c) of the Endangered Species Act, as amended, 16 U.S.C. 1531 et seq., the University of Illinois obtained from the U.S. Fish and Wildlife Service (USFWS) a list of federally Threatened and Endangered Species that may be present within the Project area. The species potentially impacted during construction of the Project include the Eastern Prairie fringed orchid, the Prairie bush-clover, and the Indiana bat. On April 26, 2010, the USFWS concurred with the University of Illinois' conclusions that the Preferred Alternative will not impact threatened or endangered species. Alternative 2 would be expected to have similarly minor impacts on biological resources. The no action alternative would have no impact on biological resources.

Historic and Cultural Resources

The Preferred Alternative will not involve construction in any special Old Town districts, burial grounds, or other protected areas. Instead, all construction will be performed along existing ROW corridors. No impacts to archeological and native resources are anticipated. If any suspected archaeological or human remains are encountered, construction will be halted immediately and appropriate State Historic Preservation Offices will be notified. With regard to architectural resources, almost all construction will be performed underground and will not impact existing architectural assets in the region. A Section 106 consultation was performed to assess potential impacts to historic properties in the Project area. On April 27, 2010, the Illinois State Historic Preservation Officer (SHPO) determined that no historic properties will be affected by the Preferred Alternative. Alternative 2 was not evaluated as part of the SHPO Section 106 consultation. The no action alternative would result in no impact to historic and cultural resources.

Aesthetic and Visual Resources

While there are parks and natural landmarks in the vicinity of the Project area, no construction is planned for those areas. Because all infrastructure will be installed underground, no aesthetic or visual impacts are anticipated as a result of the Preferred Alternative. No structures will be visually imposed upon the natural or built environment, except for small telecommunications terminals on end user buildings. The Project will follow existing standards for ROW construction to avoid damaging any tree roots during directional boring operations. Installation of poles as part of Alternative 2 would potentially necessitate aggressive pruning and/or removal of existing trees. Thus, this alternative would have more adverse aesthetic impacts. The no action alternative would not result in adverse impacts to aesthetic and visual resources.

Land Use

No changes in land use or zoning will be required for the Preferred Alternative or Alternative 2. Control over easements necessary for providing fiber to residential areas and anchor institutions is entirely at the discretion of the property owners. All Project ROWs and property easements are zoned for utility fiber construction. The planned crossing of Third Street in the city of

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

Champaign (between Green and Healey streets) will use existing conduits. Accordingly, no additional construction will be required, no assets will be added, and there will be no changes in existing land use. Project activities conducted within the Boneyard Creek District in Urbana will comply with special regulations to avoid diversion of the creek; prevent erosion and discharge or runoff into the stream; and preserve the aesthetic and public use of the area consistent with the City's Master Plan for recreational use. The no action alternative will not result in adverse impacts to land use.

Infrastructure

Both the Preferred Alternative and Alternative 2 will add to existing communications infrastructure. Fiber drops will only be extended to residences, businesses, and/or anchor institutions with available utility and communications service. No other impacts on infrastructure are anticipated as a result of Project implementation. The no action alternative would leave the communications infrastructure in its current condition.

Socioeconomic Resources

The Preferred Alternative will have substantial positive impacts on socioeconomic resources. Anchor institutions serving vulnerable populations and underserved areas will have access to higher bandwidth and more affordable internet services. Although Alternative 2 would provide similar socioeconomic benefits, operational costs would be substantially higher. The no action alternative would have a detrimental impact due to the increased need for high-bandwidth services among vulnerable populations. The no action alternative would also have adverse secondary impacts on business and community development, including technological literacy and accessibility for job training.

The Preferred Alternative will not have disproportionate impacts on minority or low-income populations. The Project uses the same construction methods (underground installation of fiber optic cable) in all areas, including minority, low-income, and more affluent areas. Similarly, no disproportionate impacts related to Environmental Justice issues would be expected under Alternative 2 or the no action alternative.

Human Health and Safety

There will be no construction on any Brownfield sites as a result of the Preferred Alternative.

The Preferred Alternative will be implemented in compliance with applicable standards for traffic and safety management during construction. The University of Illinois will address traffic standards in its ROW permit process, and both cities are working on a common standard which includes traffic management and safety requirements based on the U.S. Department of Transportation Manual on Uniform Traffic Control Devices, latest edition, and state DOT requirements. The project will adhere to those standards where applicable. Alternative 2 would involve a minimal increase in worker safety impacts as the result of elevating workers to hang cable, and the no action alternative would have no impacts on human health and safety.

**National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
Board of Trustees of the University of Illinois
Urbana-Champaign Big Broadband Project**

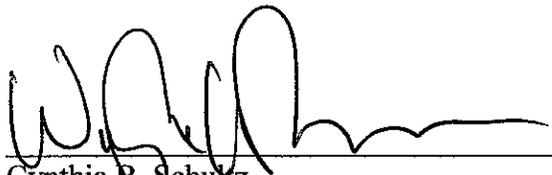
Cumulative Impacts

The Preferred Alternative will have negligible cumulative impact in terms of underground construction, manholes, or noise. These types of activities are typically associated with utility construction and occur on a regular basis throughout the Project area. Similarly, the Preferred Alternative will not add to biological resource impacts because ROW construction does not occur close to critical habitats. Existing infrastructure may be minimally impacted due to the potential of overcrowding utility corridors and/or poles; thus increasing risk of utility disruptions during construction or maintenance. A significant positive cumulative effect on socioeconomic resources is anticipated. No cumulative impacts are anticipated with respect to the remaining resource areas considered in the EA.

Decision

Based on the above analysis, NTIA concludes that with the Best Management Practices and environmental protection measures proposed for implementing the Project using the preferred alternative, the construction and operation of the Project will not require additional mitigation. A separate mitigation plan is not required for the Project. The analyses indicate that the proposed action is not a major Federal action significantly affecting the quality of the human environment. NTIA has determined that preparation of an EIS is not required.

Issued:



Cynthia B. Schultz
Director of Compliance and Audits
Broadband Technology Opportunities Program

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