

National Telecommunications and Information Administration
Broadband Technology Opportunities Program
Finding of No Significant Impact
MCNC, Building a Sustainable Middle Mile Network for Underserved Rural
North Carolina Project

Summary

MCNC applied to the Broadband Technology Opportunities Program (BTOP) for a grant to install approximately 500 miles of fiber optic cable within existing rights-of-way (ROWs) maintained by the North Carolina Department of Transportation (NCDOT) and the U.S. Forestry Service (USFS). The expanded service area includes 37 counties within the state of North Carolina and will serve education-sector community anchor institutions. The proposed action is called Building a Sustainable Middle Mile Network for Underserved Rural North Carolina (Project).

The National Telecommunications and Information Administration (NTIA) awarded a grant for the Project to MCNC, through BTOP, as part of the American Recovery and Reinvestment Act (ARRA). The funding must be obligated and the Project completed within three (3) 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) that 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 would 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 the Project was completed by MCNC in August 2010, reviewed and determined sufficient, and adopted by NTIA as part of the development of this Finding of No Significant Impact (FONSI).

The Project includes:

- Installing approximately 500 miles of fiber optic cable within existing ROWs,
- Connecting approximately 685 miles of infrastructure to expand the existing network to 37 counties,
- Using boring machines, small cable plows, and rock saws or mechanical trenchers to install the fiber line 38-42 inches below the ground,
- Installing above-or below-grade pull boxes approximately every 2,000 feet, and
- Hanging fiber cable in steel conduit along bridges as necessary.

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Based on a review of the analysis in the EA, NTIA has determined that the Project, if implemented in accordance with the preferred alternative, would 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 (<http://www2.ntia.doc.gov/>) and the following contact:

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Purpose and Need

The purpose of the Project is to install approximately 500 miles of new fiber optic network. The network will provide a higher quality of life and offer higher global competitiveness in unserved and underserved rural areas of North Carolina. The Project will serve as a robust middle-mile broadband network through 26 counties in southeastern and western North Carolina, expanding the existing optical footprint and increasing the existing bandwidth up to 20-fold. The Project will also connect approximately 685 miles of infrastructure currently present in more urbanized areas of the state and expand the existing system to 37 counties.

The middle-mile installation will enable MCNC to provide service to education-sector community anchor institutions in the state which will increase competition and lower prices for broadband service in the newly served areas.

Project Description

The Project will be placed in ROWs along existing USFS maintained greenways or NCDOT controlled streets, roads, and highways. Existing utilities at or near the construction corridor will be located and identified prior to installation. As needed, the Project corridor will be slightly realigned, but will remain within the ROWs to avoid existing utilities. The Project route is easily accessible and will not require the construction of access roads. Equipment used to install the fiber cable will be stored and operated within the ROWs. Forty-eight count single mode fiber

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will be placed in conduit and installed in a 38- to 42-inch trench on previously disturbed land located approximately 5- to 10- feet from the edge of the pavement or railway. The conduit will consist of industry-standard material, such as high density polyethylene (HDPE), and will protect the fiber cable.

Fiber cable will be installed using one of three construction methods, depending upon site conditions:

- Boring Machine: used to bore underground to avoid wetlands, streams, culverts, road crossings, or other obstacles.
- Small Cable Plow with Blade: a blade in the rear of a small plow will cut a trench, install the conduit, and close the trench in one operation.
- Rock Saw and Mechanical Trencher: used in rocky substrate, primarily in the Western North Carolina route, to cut a trench and install the conduit.

The pieces of equipment used in the installation techniques described above are typically powered by diesel engines. In addition, gasoline- or diesel-powered vehicles may operate in various locations along the fiber route associated with supervisory or quality control activities. Construction crews will adhere to NCDOT traffic safety guidelines and work will be done during normal daytime hours.

Above- or below-grade pull boxes will be placed near bends and also in long straight spans, approximately every 2,000 feet, to break up long runs. Repair and restoration of the affected area, including street, road and railway crossings, will be done after installation.

The Project will employ the following measures to avoid and limit environmental resource impacts and for cost effectiveness:

- The fiber cable may be hung along bridges in steel conduit, as necessary, and as required by NCDOT. Steel and HDPE conduit can be successfully connected with the proper couplings.
- The fiber cable may be directionally bored to avoid wetlands, streams, or other features, when needed.

Alternatives

NTIA requires that an EA include an analysis 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 would not be implemented and the site-

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specific impacts associated with the Project would not occur in the Project area. In addition, this EA evaluated the preferred alternative, aerial installation, and direct burial alternatives.

Alternatives considered but eliminated from further discussion were copper cable and wireless technology alternatives. Installing underground cable and aerial installation, where needed, was chosen as the preferred alternative and represents the proposed action, and this FONSI addresses the findings related to that alternative.

Preferred Alternative – Underground Cable Placement in Conduit (as described in Project Description): The Preferred Alternative was chosen to satisfy the Project purpose and need based on cost-effectiveness and efficiently while avoiding significant impacts to environmental resources. This alternative will involve installing 48-count single mode fiber within conduit placed in a 38- to 42-inch deep trench on previously disturbed land. The trench will be located approximately 5- to 10-feet from the edge of the pavement or railway. Where appropriate, the fiber cable may be installed in steel conduit alongside bridges, as well as directionally bored to avoid wetlands, streams, or other sensitive features.

Alternative 2 – Direct Burial: MCNC considered directly burying the fiber cable underground without the use of conduit. Although this alternative would present a lower cost approach, the fiber cable would not be protected and therefore not reliable.

Alternative 3 – Aerial Construction: MCNC determined that this alternative would be significantly more expensive than the Preferred Alternative. Costs would be higher due to installation techniques and obtaining line agreements with utilities and telecommunication providers. Maintenance costs would be higher if the fiber was installed aerially, and exposure to the elements would compromise reliability.

Alternative 4 – No Action Alternative: Under the no action alternative, rural areas of North Carolina included in the study area would remain disadvantaged in comparison to more urban areas of the state and would continue to be unserved and/or underserved for broadband communications. This alternative would not satisfy the Project purpose and need.

Alternatives Considered But Not Carried Forward: MCNC considered copper cable and wireless technology alternatives. Copper cable was determined to be cost-prohibitive and unable to transmit the same amount of bandwidth as fiber optic. Wireless technology was eliminated because the required bandwidth of the Project cannot be achieved with wireless technology.

Findings and Conclusions

The EA analyzes existing conditions and environmental consequences of the Preferred Alternative, direct burial alternative, aerial installation alternative, and the no action alternative within 11 major resource areas. The resource areas analyzed included Noise, Air Quality, Geology and Soils, Water Resources, Biological Resources, Historic and Cultural Resources,

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Aesthetic and Visual Resources, Land Use, Infrastructure, Socioeconomic Resources, and Human Health and Safety.

Implementation of the Preferred Alternative is not likely to result in any recognizable environmental impacts and does not involve any unusual risks or impacts to sensitive areas.

Noise

The Preferred Alternative will result in temporary and insignificant direct increases in noise during construction due to the operation of equipment and installation of cable in conduit. However, the noise will be minimal and will generally blend in with existing traffic noise typical of the majority of the fiber cable ROWs. Alternative 2 (direct burial) would result in similar direct and indirect impacts as the Preferred Alternative. Alternative 3 (aerial construction) would result in lower noise levels than the Preferred Alternative, as demolition of sidewalks and pavement, and directional bore under streams and other natural features, would not be necessary. The no action alternative would result in no direct increase in noise levels.

Air Quality

In implementing the Preferred Alternative, minimal temporary and insignificant direct effects on air quality will result. Air emissions would be elevated during construction from the operation of petroleum- or electric-powered equipment. Alternatives 2 and 3 would result in similar direct and secondary impacts to air quality as the Preferred Alternative. The relatively small amounts of air emissions that would result from these alternatives will have negligible impact on the production of greenhouse gasses. No direct impacts to air quality would result from the no action alternative.

Geology and Soils

In implementing the Preferred Alternative, the Project will result in minimal and insignificant direct adverse effects on geology and soils. Construction equipment used to install the conduit will minimally and temporarily disturb soils of the ROWs. Alternative 2 would result in direct and indirect impacts to geology and sediments similar to those of the Preferred Alternative. Alternative 3 would result in some pole replacements, with minimal impacts on soils. The no action alternative would cause no direct impacts to geology and soils.

Aesthetic and Visual Resources

Since the Project is restricted to existing ROWs, the Preferred Alternative will not result in any significant direct impacts to natural features, architectural features, or protected areas identified along the fiber cable route. Alternative 2 would result in similar direct, indirect, and cumulative impacts to natural features, architectural features, and protected areas as the Preferred Alternative. Alternative 3 would add a fiber line on existing poles and would have minimal visual impacts. The no action alternative would have no direct effects on natural features, architectural features, or protected areas, and would have no indirect or cumulative adverse effects on these resource categories.

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Water Resources

The Preferred Alternative will not result in significant direct impacts to surface waters. Through early coordination with the US Army Corps of Engineers (USACE), Raleigh Regulatory Office, it was determined that if disturbances associated with the Project remain within the staked-sloped limits of the ROWs as planned, a Section 404 Clean Water Act permit from the USACE will not be required. The Project was designed to avoid impacts to surface waters by utilizing directional bore methods or hanging the fiber cable along bridges. In addition, best management practices will be utilized to avoid and minimize sedimentation impacts on receiving surface waters. Storage of equipment and materials will be kept within ROW limits. Implementation of the Project may result in a minor increase in economic development, and therefore, associated minor indirect and cumulative effects on surface waters may result. These effects would be insignificant and would be mitigated by Clean Water Act regulations.

Alternative 2 would result in similar direct, indirect, and cumulative effects on surface waters as the Preferred Alternative. Alternative 3 would have minimal direct impacts to surface waters since ground disturbance would be limited to a small percentage of pole replacements. This alternative would result in similar secondary impacts to surface waters as the Preferred Alternative. The no action alternative would result in no direct impacts to surface waters.

Biological Resources

The Preferred Alternative will result in insignificant direct adverse impacts to wildlife and vegetation during construction activities. Construction methods used to implement the Preferred Alternative will involve minimal ground and vegetation disturbance, which may temporarily disrupt wildlife that utilize the ROWs. Direct temporary disturbance of wildlife along the fiber route construction corridor will be mitigated by the short duration of construction activities. Indirect and cumulative effects will be mitigated by compliance with state and federal regulations that protect threatened and endangered species and their habitats, jurisdictional features, and riparian buffer zones. Potential indirect and cumulative effects to biological resources from stimulated development along the Project corridor will likely be minimal and may include insignificant impacts to wildlife habitat. Alternative 2 would result in similar direct, indirect, and cumulative impacts to wildlife and vegetation as the Preferred Alternative. Alternative 3 would result in similar direct, indirect, and cumulative impacts to wildlife as the Preferred Alternative and would include no or minimal direct impacts to vegetation, as the Project would be aerial in nature. The no action alternative would not result in direct impacts to wildlife or vegetation, and would not result in indirect or cumulative adverse environmental effects.

The Preferred Alternative will not result in significant direct adverse impacts to protected, federally-listed, threatened and endangered species. During the site reconnaissance, no federally-listed protected species were found to be present within the Project construction corridor. Special attention was given to searching for Schweinitz's sunflower (*Helianthus*

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schweinitzii) and Michaux's sumac (*Rhus michauxii*) as these species are known to inhabit existing ROWs; however, no specimens were found. MCNC consultation with the US Fish and Wildlife Service Asheville and Raleigh Field Offices, under Section 7 of the Endangered Species Act, concluded that the Project is not likely to adversely affect threatened and endangered species or their designated habitat. Alternatives 2 and 3 would result in similar direct, indirect, and cumulative impacts to federally-listed threatened and endangered species as the Preferred Alternative. The no action alternative would not result in direct impacts to vegetation, and would not result in indirect or cumulative adverse environmental effects on federally-listed protected species.

Historic and Cultural Resources

The Preferred Alternative will not result in significant adverse direct impacts to archaeological resources, architectural resources, or native resources/tribal lands. Portions of the Project parallel archeological and architectural resources and historic districts. However, since the Project is confined to existing ROWs, adverse impacts to these resources are not expected. Potential indirect and cumulative effects from stimulated development along the Project corridor should likely be minimal and should have no significant impact on historic and cultural resources. Guidelines and restrictions for development in historic preservation districts will help mitigate potential adverse effects.

The North Carolina State Historic Preservation Office (SHPO) reviewed the Project during the initial scoping process. The SHPO provided a response stating that, although their records indicate several properties of historic and architectural significance within the areas of potential affect, the Project is expected to have minimal affects on nearby historic properties since it is confined to existing ROWs. The SHPO further stated that no archeological sites are known to be present within the Project study area. The SHPO determined that an archeology survey would not be necessary. Correspondence from the SHPO stated that although impacts to sites eligible for listing on the National Register of Historic Places are unlikely, if cultural resources or human remains are encountered during construction, work should stop immediately and their office contacted. This is a requirement of the BTOP grant and will be part of the Project implementation.

Alternatives 2 and 3 would result in similar direct, indirect, and cumulative impacts to historic and cultural resources as the Preferred Alternative. The no action alternative would have no direct effects on historic and cultural resources and would likely have no indirect or cumulative adverse effects on this resource.

Land Use

The Preferred Alternative will not result in any significant direct adverse impacts to local zoning or master plans, including historic districts. Other than the potential for minimal positive

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impacts related to an increase in economic development in the service area attributable to increased broadband access, no land use impacts were identified.

Alternative 2 and 3 would result in similar impacts as the Preferred Alternative. The no action alternative would result in no direct impacts to land use.

Infrastructure

The Preferred Alternative will result in direct positive impacts to infrastructure by improving existing broadband telecommunications along the Project corridor. Temporary insignificant adverse impacts to infrastructure will occur during construction associated with potential vehicular travel lane closures and storage of equipment along ROWs.

Alternatives 2 and 3 would result in similar direct, indirect, and cumulative impacts to infrastructure as the Preferred Alternative. The no action alternative would result in no adverse direct impacts to infrastructure.

Socioeconomic Resources

The preferred alternative will result in numerous positive direct impacts to socioeconomic resources. These positive impacts will include:

- Providing employment during construction for rural areas with high unemployment and poverty rates;
- Contributing to the local hospitality and retail economies during construction; and
- Providing positive impacts to local students in unserved and underserved communities.

The Preferred Alternative will result in positive indirect and cumulative impacts to socioeconomic resources through increasing broadband service for businesses and educational institutions, and contributing to the revitalization of local economies. No disproportionate impacts to low or minority populations are anticipated in association with the Project.

Alternatives 2 and 3 would result in similar direct, indirect, and cumulative impacts to socioeconomic resources as the Preferred Alternative. The no action alternative would result in negative indirect impacts as local economies and communities would be at a disadvantage to those located in more urban areas that have greater access to broadband.

Human Health and Safety

The Preferred Alternative will not result in significant direct adverse impacts to human health and safety. Implementation of the Project will be in compliance with NCDOT guidelines currently in effect to protect human health and safety during construction along active roadways. Construction crews will adhere to NCDOT traffic safety guidelines, as described in NCDOT

