

Broadband USA Applications Database

Applicant Name: MCNC

Project Title: Building a Sustainable Middle-Mile Network for Underserved Rural NC

Project Type: Middle Mile

Executive Summary

To ensure a high quality of life and a globally competitive future for its citizens, businesses, and communities, North Carolina has long supported the deployment of affordable broadband networks. Building on NC's historical investments in broadband, MCNC will build a sustainable middle-mile network connecting urban central NC with underserved rural areas of southeastern and western NC. This application for American Recovery and Reinvestment Act Broadband Stimulus Funds addresses statutory goals by improving affordability and access for education, health care, community institutions, and last-mile providers. The design, construction, and operation of the network will create over 230 engineering and construction jobs. MCNC is a proven broadband provider that has operated the North Carolina Research and Education Network (NCREN) for over 25 years. The proposed project is shovel ready and is supported by an \$8M cash match and a \$3.8M in-kind match. MCNC's strategy is to leverage available capacity by linking it with new construction. The proposed fiber build will serve the existing community anchor institutions on NCREN (schools, community colleges, other institutions of higher education, and community support organizations) with more robust and scalable connectivity. The build will also create a higher capacity public middle-mile connectivity for community anchor institutions that are not part of NCREN (e.g., libraries, medical, and public health providers). Finally, the build will enable private service providers (existing and new) to reach underserved areas of the state. The proposed middle-mile fiber build addresses the public/private middle-mile needs of major portions of rural NC. There are twelve counties along the build for which the entire county is classified as underserved. There are six in the southeast: Beaufort, Bladen, Columbus, Edgecombe, Green and Harnett. There are six in the west: Davie, Jackson, McDowell, Polk, Rutherford and Transylvania. In addition there are at least twelve other counties traversed by the build that contain unserved census blocks: Carteret, Craven, Johnston, Onslow, Pender and Roberson in the southeast; and Buncombe, Catawba, Cleveland, Haywood, Iredell and Lincoln in the west. This application complements state of North Carolina proposals from the eNC Authority that address mapping and broadband planning. Strong support for submission of the MCNC and eNC proposals has come from NC Governor Beverly Perdue, North Carolina's fifteen-person delegation to the U.S. Congress and the NC Office of Economic Recovery and Investment. Because of NC's current financial crisis, these projects cannot be implemented during the grant period without federal grant assistance. QUALIFICATIONS OF THE APPLICANT Initially funded by the NC state government in 1980 as a catalyst for technology-based economic development, MCNC is now an independent 501(c)(3) non-profit organization. MCNC has operated the North Carolina Research and Education Network (NCREN) for over 25 years. With a history of innovation, world-class service, and reliability, NCREN provides backbone and ISP services to community anchor institutions including: 1. All

17 institutions of the public University of North Carolina system 2. 24 of the 36 NC independent colleges and universities 3. All 115 public K-12 school districts and all 2,400 public schools in NC 4. 20 of the 58 institutions in the North Carolina Community College System 5. Research institutions and foundations (e.g., NC Biotechnology Center) MCNC has been a facilities-based provider since its inception. Microwave wireless transmission technology has given way to terrestrial fiber over time. MCNC has been able to leverage staff expertise in the management of real estate, power, and HVAC systems critical for operating a fiber network. MCNC has managed fiber capacity and optoelectronics (both owned and leased) for over ten years. Its experience in designing and building middle-mile networks provides a community of design, build, and permitting partners that is ready to assist in the project completion as soon as funds are awarded. A few examples:

- Several fiber construction firms have been contacted and will submit bids to build.
- The NC Department of Transportation will expedite the granting of rights-of-way along state-controlled highways
- Non-profit energy cooperatives throughout the proposed service area are ready to cooperate with rights of way and other access issues.

MCNC operates NCREN in a fiscally transparent and responsible manner by leveraging the MCNC endowment to make capital investments and recovering operating costs from the community anchor institutions connected to the backbone. MCNC has pledged \$8M in cash and \$3.8M in-kind as matching funds for this project. PROPOSED INFRASTRUCTURE AND SERVICES MCNC proposes to build a \$39.99M middle-mile network of terrestrial fiberoptic cable, mostly buried, lit and amplified with industry-standard dense wave division multiplexing optoelectronic gear. The network will have both public and private users. MCNC's portion of the network will connect community anchor institutions (schools, community colleges, other institutions of higher education, and community support organizations) in rural NC to the existing North Carolina Research and Education Network (NCREN). The second portion of the network will be leased to private-sector middle-mile operators and wholesalers. This portion will meet the standards of interconnectivity set out in the BTOP/BIP NOFA. One middle-mile operator, FRC, has already committed, via letter of intent, to operate and market a portion of the dark fiber available for private use. FRC has letters of intent from last-mile service providers to reach into unserved and underserved areas transversed by the build. Through private-sector middle-mile partners like FRC, lit capacity and other middle-mile services will be offered to ILECs, CLECs, MSOs, wireless ISPs, energy cooperatives, and independent and cooperative telecom companies in the areas of the proposed build. Also, BalsamWest, a middle- and last-mile service provider in western NC, has been granted capacity on the middle mile to help expand their service offerings in underserved areas of western NC. MCNC already owns, through IRUs, the fiber that connects community anchor institutions in urban NC to NCREN. In underserved rural areas of the state, however, community anchor institutions are connected to NCREN by short-term leases for lit capacity (circuits). The result has been that the service received by community anchor institutions in rural NC compares unfavorably to the service received by institutions in urban areas in terms of price, capacity, and confidence over the long term. MCNC has attempted to gain long-term ownership of dark fiber in rural areas over the last five years with little success. The proposed middle-mile build will enable MCNC to provide equitable NCREN service to all education-sector community anchor institutions in the state. In addition, MCNC has coordinated with the state librarian and the NC Health Information Technology Collaborative. They have committed, as documented by endorsement letters included in this application, to explore connecting rural libraries, county health departments, county health care clinics, and nonprofit hospitals to NCREN upon award.

The potential private partners have broad relationships with all classes of service providers. MCNC and FRC have already held meetings with last-mile providers in unserved and underserved areas who will apply separately for last-mile stimulus funds. Letters of endorsement from last-mile providers included with this application. NON-DISCRIMINATION AND INTERCONNECT OBLIGATIONS MCNC has discussed the availability of fiber along the proposed routes with a number of private providers. These private partners, led by a firm commitment from FRC, have committed to wholesaling lit capacity to last-mile providers. They include some of the leading middle-mile dark-fiber operators in the country. Their business strategy for this middle-mile build is to wholesale interconnection with any party interested in serving consumers, commercial entities, private healthcare, and energy distributors. POPULATION AND COMMUNITY ANCHOR INSTITUTION STATISTICS Serving almost one half the population of NC, this middle-mile network will serve 18 southeastern counties and 19 western counties for 37 total. The proposed middle-mile network will serve the southeastern NC counties of Beaufort, Bladen, Carteret, Columbus, Craven, Cumberland, Edgecombe, Greene, Harnett, Johnston, Nash, New Hanover, Onslow, Pender, Pitt, Robeson, Wake, Wilson; and the western NC counties of Alexander, Buncombe, Burke, Caldwell, Catawba, Cleveland, Davidson, Davie, Gaston, Haywood, Henderson, Iredell, Jackson, Lincoln, McDowell, Mecklenberg, Polk, Rutherford, and Transylvania. According to U.S. Census Bureau numbers, the approximate number of households served by this middle-mile build is 1.8 million (population: 5.2 million). According to the NC Dept. of Commerce, the number of businesses passed by this build is 139,000. The number of K-12 schools is 1,232; the number of higher education institutions is 55; the number of public libraries is 183; and the number of hospitals is 63. In summary, the network will have great reach. Through community anchor institutions on the backbone, 2M students in K-20 education are already served by NCREN. In addition, over 5.2M citizens who make over 15 million annual doctor visits, and over 5M estimated library visitors may be served. On the private side, this route has the potential to be the middle mile solutions for 335,589 underserved households (796,875 total population) North Carolinians live in the 24 partially or fully underserved counties.