Grant Request Number	GRN-000177
Funding Program Name	Middle Mile Broadband Infrastructure Grant Program
Funding Request Name	MCNC - Middle Mile - Sanford-Jacksonville - GRN-000177
Applying Organization	MCNC
Applicant Name	Tommy Jacobson

Primary Applicant Type

Identify the primary applicant type:

Single Entity
———
Primary Entity Type

Type of entity: Primary entity type, (A) a State, political subdivision of a State, Tribal government, technology company, electric utility, utility cooperative, public utility district, telecommunications company, telecommunications cooperative, nonprofit foundation, nonprofit corporation, nonprofit institution, nonprofit association, regional planning council, Native entity, or economic development authority; or (B) a partnership of two (2) or more entities described in (A).

What is the primary applicant's entity type?

Nonprofit Institution
———
Is parent/owner of applicant a foreign entity?

No
———
Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - [redacted]; [redacted]; Outside Contractor ; [redacted]@outlook.com
KeyPersonnel_Resume_[redacted]
———

Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - [redacted]; [redacted]

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - [redacted]th

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Managerial Capability

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Key Personnel - [redacted]

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - Jeremy Rollins; MCNC; Manager, Outside Plant Engineering and Operations; jrollins@mcnc.org
KeyPersonnel_Resume_Jeremy_Rollins

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - [redacted]

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

[redacted]

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Managerial Capability

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[redacted]

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - Matthew Valenzisi; MCNC; Director, Network Architecture & Management, Chief Network Architect, NCREN; mvalenzisi@mcnc.org
KeyPersonnel_Resume_Matthew _Valenzisi
———
Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

[redacted]
———
Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - Rachel Pisciotta; MCNC; Chief Financial Officer/Treasurer; rpisciottq@mcnc.org
KeyPersonnel_Resume_Rachel_Pisciotta
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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

[redacted]
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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG)

Program funding.

Key Personnel - Sheila Sauls-White; MCNC; Senior Project Manager; ssaulswhite@mcnc.org
KeyPersonnel_Resume_Sheila_Sauls-White

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

[redacted]

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - Tommy Jacobson; MCNC; Chief Operating Officer & Vice President; tjacobson@mcnc.org
KeyPersonnel_Resume_Tommy_Jacobson

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Managerial Capability

Applicants shall submit to the Assistant Secretary one-page resumes for (a) all key management personnel and (b) all key personnel of subcontractors or other entities that will play substantial roles in building, managing, or operating the middle mile network built using Middle Mile Grant (MMG) Program funding.

Key Personnel - Tracy Doaks; MCNC; President & CEO; tdoaks@mcnc.org
KeyPersonnel_Resume_Tracy_Doaks

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Organizational Charts

Each applicant shall submit any necessary organizational chart(s) detailing all of its parent companies, subsidiaries, and affiliates.

MCNC Organizational Structure 2022-09-09-09-2022 03-50-MCNC-GRN-000177.pptx, MCNC Organizational Charts-09-09-2022 03-50-MCNC-GRN-000177.pptx, MCNC Letters of Support-09-26-2022 09-23-MCNC-GRN-000177.pdf

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Organizational Details

Each applicant must also provide a narrative describing the applicant's readiness to manage a middle mile broadband network. This narrative should describe the experience and qualifications of key management set to undertake this project, the applicant's experience undertaking projects of similar size and scope, recent and upcoming organizational changes including mergers and acquisitions, relevant organizational policies, and ownership information consistent with 47 CFR § 1.2112.

This narrative shall denote who will own the assets at the end of award period. This response is limited to 6000 characters as an open field narrative.

MCNC is a private, not-for-profit corporation located in RTP, North Carolina. MCNC has operated facility-based networks in NC for 35 years, the last 20 over fiber. MCNC holds contracts with the NC Department of Public Instruction, the University of North Carolina System, and the NC Department of Community College to provide K20 backbone Internet services via our premier service offering, the North Carolina Research and Education Network (NCREN), providing managed lit service offerings to the customer premise. In addition, MCNC contracts with the North Carolina Telehealth Network, serving public and nonprofit healthcare. In total, MCNC supports 954 service location end points to community anchor institutions throughout the state, delivering Internet and other lit services that range from 100M-100G. Through IRU fiber sales to third party providers, MCNC supports middle and last mile expansion throughout the state for competitive carriers like Roanoke Connect, Cloudwyze, Conterra, and Unity Fiber. All four of these organizations have expressed support for MCNC's application by way of the included letters of support.

Between 2010-2013 MCNC worked with the NTIA on expansion of middle mile fiber throughout the state of NC. MCNC was awarded $105.7M as part of the Broadband Technologies Opportunity Program (BTOP), which along with $43.8M of matching funds enabled the construction of 1700 miles of middle mile fiber, along with the connection of 129 Community Anchor Institutions (CAI). More recently, in 2019, MCNC completed a $10M, 120-mile fiber route in the Raleigh/Durham area. In 2021, MCNC built 25 miles of lateral fiber to connect 23 community anchor institutions between Dobson and Forest City, leveraging fibers obtained through a collaborative project with Meta in rural NC. MCNC is currently constructing an approximately $4M, 46-mile fiber route between Dobson and Winston-Salem. MCNC now operates 4411 miles of fiber throughout NC.

There are no recent or upcoming organizational changes that would impact the ability to execute this project, with no planned mergers or acquisitions. When the project is completed, MCNC will own the assets.

MCNC acknowledges as a non-profit entity that none of the situations outlined in 47 C.F.R ¤ 1.2112(a)(1)-(7) apply.

Tracy Doaks is MCNC's President and CEO. Tracy formerly held key leadership roles for the state of NC, most recently as the Secretary of Information Technology reporting to the Governor. Tracy will provide executive level sponsorship for the project.

Tommy Jacobson will be the project lead for the implementation of this project. Tommy is the Chief Operating Officer for MCNC and in his current role oversees all engineering and operational functions for MCNC's network. Tommy was the technical lead for the 2010-2013 $147M BTOP programs and more recently has managed MCNC's annual operating budget for fiber and connectivity services that is over $50M annually.

Rachel Pisciotta is MCNC's Chief Financial Officer. Rachel will ensure financial accountability and fiscal responsibility through the duration of the project and after.

Jeremy Rollins is MCNC's Manager of Fiber Engineering and Operations. Jeremy has nearly 25 years of experience building and maintaining fiber networks. He will provide direct oversight for all contractors selected to participate in the deployment of the project.

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Form CD-511 (Certification Regarding Lobbying)

The applicant must upload a completed form that certifies that Federal funds have not and will not be used for lobbying in connection with this request for Federal financial assistance. A fillable Form CD-511 can be found in the MMG ZIP folder.

CD-511 - Certification Regarding Lobbying - M-09-15-2022 09-58-MCNC-GRN-000177.pdf, CD511 - Certification Regarding Lobbying-10-14-2022 03-19-MCNC-GRN-000177.pdf

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SAM.gov Registration

Applicants are asked to upload a screenshot of their SAM.gov registration.

SAM-09-22-2022 12-05-MCNC-GRN-000177.GOV Screenshot.pdf

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Executive Summary

Please describe how the applicant's proposal will advance the objectives of the MMG Program, as well as the specific objectives of outlined in the Notice of Funding Opportunity (NOFO);

An overview of the proposed route or service area(s), including information regarding rurality and

socio-economic indicators in the area to be served by the proposed project.
This response is limited to 12000 characters as an open field narrative.

MCNC, one of the nation's leading not-for-profit middle mile networks, has for nearly 40 years provided nondiscriminatory, open-access, competitively priced middle mile services in the state of North Carolina. By combining a $11,186,163 grant from NTIA's Middle Mile Grant Program (MMG) with MCNC's own 41% matching investment of $7,773,435 - including $1,382,782.18 made possible by the Golden LEAF foundation -MCNC's High-speed Economies for Rural Opportunity (HERO) project will directly support improvements to broadband access and affordability across central and southeastern North Carolina. If funded, HERO will extend MCNC's reach via the construction of 209 miles of new middle mile fiber through substantially unserved and underserved areas, including some of the highest poverty areas in the state. Upon completion, HERO will support affordable, high-performance broadband for at least 4998 fully unserved locations (and nearly 4300 additional underserved locations) within just 5 miles of the planned routes. The 11-county area has over 16,000 unserved and 12,000 underserved housing units, including many substantially unserved local communities. In total, the affordability, latency, and resilience benefits of HERO would impact over 350,000 housing units and 696 CAIs, bringing new economic opportunities to these economically challenged rural areas of North Carolina.

Currently, MCNC offers open access, highly affordable middle mile services, with a presence in many but not all areas of the state. MCNC is highly competitive as a low-cost provider of middle mile services, and is the only truly open access provider of middle mile access in most parts of the state, offering services ranging from dark fiber IRUs (not available from traditional providers) to wavelengths to managed Internet transport. Should funding be granted to MCNC via this MMG grant, MCNC commits to provide in perpetuity wholesale broadband service at reasonable rates on a carrier neutral, fully open, non-discriminatory basis to all HERO infrastructure. MCNC is very well positioned to make this commitment based on our status as a proven not-for-profit provider of wholesale middle mile services, with both an identified set of existing and potential customers as well as an efficient operational cost position from our existing network. The expansion of MCNC's open access network via this grant will allow MCNC to enhance the affordability strategies of last mile providers who are drawn to MCNC as the only low-cost, fully non-discriminatory provider offering services including dark fiber over the longest time horizons.

The two proposed routes therefore offer multiple benefits that are closely aligned with NTIA's policy objectives. HERO will enable affordable, high-performance broadband in substantially unserved areas of the state that today lack competitive middle mile options. HERO will at the same time provide significantly improved network reliability, resiliency, and latency. Multiple last-mile providers have provided letters of support and commitment, including Roanoke Connect – an innovative last-mile provider working with electric co-operatives to expand access to fiber – and CloudWyze. As locally oriented providers, both Roanoke and Cloudwyze have committed to Community Benefit Agreements as they expand service in the HERO areas. Finally, the project passes by four Department of Defense

facilities, providing vital network resiliency benefits to these installations.

In its entirety, HERO would serve as a powerful springboard for the state's investments in expanded last-mile access via federal funds from ARPA and IIJA, as attested to in the support for HERO from both the North Carolina Broadband Office and Governor Cooper. Just as NTIA's Broadband Technology Opportunities Program (BTOP) played a pivotal role in expanding the reach of the MCNC network to advance the broadband goals of the past decade, today's MMG program can by funding HERO serve as a catalyst for achieving NTIA's goals for the upcoming decade and beyond.

We are seeking MMG support because the current MCNC network does not yet reach all key areas of the state. An NTIA grant for HERO therefore would be particularly impactful because in North Carolina, no other solution is likely to develop; privately funded networks have failed to deliver any attractive middle mile options in these economically distressed areas. The two proposed routes would extend MCNC into areas of North Carolina with over 130,000 housing units in low-income census blocks. A conservative estimate - based upon locations within 5 miles of the proposed route - shows that 37% of all census blocks in the regions to be served by this project have an average median income below the 200% poverty mark.

Economic prosperity in these eleven counties is hampered by high unemployment rates, slow or no population growth, and low property tax revenues. Furthermore, the NC Department of Public Instruction reports that 28 - 49% of the K-12 students in these 11 counties are eligible for the National School Lunch Program (NSLP). The objective of the HERO project is to for the first time put affordable, high-performance broadband within reach of these truly underserved populations.

MCNC is a proven network operator that for nearly 40 years has provided facility-based networking services to the public sector of North Carolina via the North Carolina Research and Education Network (NCREN) and the North Carolina Telehealth Network. MCNC also focuses on improving last-mile broadband and expanding economic opportunities for the citizenry of North Carolina. MCNC is fully authorized to provide middle-mile service to any type of last-mile ISP wishing to utilize our network, including via dark fiber IRU sales. Using various sources of investment, including prior NTIA BTOP funding, MCNC has grown to more than 4000 miles of fiber statewide. MCNC has completed a total of 197 fiber sales to 22 competitive last mile carriers. The HERO project would fill critical gaps in MCNC's middle mile reach just as new waves of last-mile fiber deployment are set to commence.

The two HERO fiber routes have been engineered to withstand all identified weather- and climate-related risks. MCNC also has planned the HERO project to minimize implementation risks. MCNC is a proven manager of fiber construction projects; we are currently engaged in active fiber construction using other sources of funds elsewhere in the state, work that has proceeded on-time and on-budget. Drawing on that operational expertise, we have designed a 2-year project implementation timeline for HERO.
MCNC maintains a strong commitment to developing a skilled, diverse workforce to meet broadband

needs throughout the State of North Carolina. MCNC continues to provide training to attract, train, retain, or transition to meet broadband workforce needs and has established strong partnerships with local workforce initiatives such as Wilson County Community College's FBA Fiber OpTIC™ Certification course. Priority will be given to hiring such local workers including those populations previously underrepresented and working with a variety of community and workforce development groups to ensure equitable and reasonable access to job opportunities presented by middle mile infrastructure. Finally, MCNC has discussed with Corning a potential partnership on workforce focused on creating opportunities during the near-term implementation of HERO (2023-24) for new broadband/fiber workers who are receiving training/skill development from Corning, with an overall goal of expanding the workforce in North Carolina able to implement new last-mile fiber projects funded by BEAD in the 2024-26 timeframe.
MCNC has an unblemished, multiyear track record of managerial, financial, and operational excellence that fully meets and exceeds NTIA's requirements. Throughout its history including the successful deployment of middle mile infrastructure made possible via BTOP grants and other sources, MCNC has demonstrated itself as an effective administrator of grant funds with a successful track record of compliance, and looks forward to the continuance of such via this grant.

We fully expect that MCNC's proposal will result in significant reductions in network latency experienced by Internet users. Our expectations are supported by observations made by Roanoke Connect, who have submitted a letter of support and committed to a fiber purchase via IRU on the proposed path in this grant application. Prior to investment into fiber and fiber to the premise technologies from Roanoke Electric/Roanoke Connect in northeastern North Carolina, the average latency for DSL customers in their service area was between 25ms and 37ms (based on standard deviations of distance and network integrity across the region). Roanoke Connects network came about as a direct result of MCNC's middle mile network in the northeast enabled by the BTOP programs of 2010-2013. Today, using a sample size of greater than 25%, the average latency is 3ms in their northeastern North Carolina service region. These same DSL latency metrics are consistent across the southeastern portion of North Carolina which includes the Sanford to Jacksonville path in MCNC's proposal. While the number of data points available were somewhat less than in Roanoke Connect's northeastern region, latencies were found to be, on average, greater than 32ms. Expectations related to decreases in latency upon the introduction of fiber to the premise here would be consistent with those measured in the Roanoke Connect northeastern region. This represents a reduction in latency of between 88 and 92%. Generally speaking, MCNC's proposed project is going to meaningfully reduce latency as the middle mile grant investment, coupled with additional last mile fiber investment by Roanoke Connect and others is going to be measurably less latent than wireless last mile/wireless backhaul and legacy technologies such as DSL and other copper based services.
———

Level of Need

A description of the level of need in the proposed service area(s), including but not limited to communities considered unserved and/or underserved in the proposed service area(s), discussion of

the competitive landscape in the area, variations among service areas if there are any, or the general economic conditions in the proposed funded service area.

This response is limited to 12000 characters as an open field narrative.

MCNC, a 501c3 open access middle mile provider, proposes two buried fiber routes to offer cost-effective services to Internet Service Providers (ISP) to help further expand affordable high-performance retail broadband in areas of North Carolina (NC) with over 130,000 housing units in low-income census blocks and at least 9000 unserved or underserved locations (as a very conservative estimate), and as many as 28,000 such locations in the overall 11-county, rural area that would be newly reached.

The level of need for middle mile service, which in turn supports last-mile retail broadband, along these two proposed routes is most substantial in the very low density rural areas between the small municipalities in the area. Like the rest of the country, the regions that fall between these townships with higher population densities have the lowest amount of available broadband. In some cases, the more rural areas have no fixed broadband providers and are limited to satellite or cellular Internet access. U.S. Department of Agriculture data indicates that fully 37.3% of the 19,070 census blocks impacted by HERO qualify as rural areas, underscoring the broadband access challenges in this part of the state. Populations in the limited access areas often find themselves in school parking lots or fast-food restaurants using shared Wi-Fi for homework or job applications.

Many data sources further demonstrate the great need in these areas. For example, a five-mile span on the MCNC proposed route through Sampson County, considered a high-poverty county for the past 20 years according to the Social-Economic statistics from the Department of Agriculture's 2000, 2010, and 2020 Census data. In addition, the Southeastern route swath has 115 census blocks (out of 273) and a substantial number of 75,752 housing units, with an average median income below the 200% poverty mark. Although the central NC proposed route swath has a slightly lower number of housing units below 200%, it is still a substantial number at 55,593 within 95 of the 267 Census blocks, according to the 2019 estimated Census data. Given these substantial economic challenges, NTIA's focus on improving retail affordability is especially important, and MCNC's laser-like focus on providing the most cost-effective suite of middle mile offerings to last-mile providers would be an important benefit of an MMG award for HERO.

The most recent FCC 477 data lists the number of unserved and underserved to be over 9,000 housing units in census blocks within just 5 miles of the two proposed HERO routes, including nearly 5,000 housing units considered unserved. The overall 11 county area includes over 16,000 unserved and 12,000 unserved locations; via future coordination with local retail ISPs, HERO could easily support expanded broadband access to these locations as well. Of course, Census Block FCC 477 data underreports the true level of need, as stakeholders in NC expect that the updated FCC maps will reveal additional unserved and underserved serviceable locations in these areas.

The 2018 US Department of Agriculture, Food and Nutrition Service data shows that in Congressional districts 8, 7, and 3 (which the proposed Sanford to Jacksonville Middle Mile route traverses), the Supplemental Nutrition Assistance Program (SNAP) supports over 35,528 (District 8), 46,297 (District 7), and 37,905 (District 3) households. Using the exact data for Congressional districts 6, 13, and 8 (which the Winston-Salem to Albemarle route traverses), the SNAP supports over 38,784 (District 6), 39,834 (District 13), and 35,528 (District 8) households.

The NC Department of Commerce (NC DoC) 2022 data for the Sanford to Jacksonville route classifies half the counties (Cumberland, Sampson, and Duplin) as Tier 1 and the other half (Harnett, Lee, and Onslow) half as Tier 2. The NC DoC ranks Tier 1 as the most economically distressed, followed by Tier 2. The ranking is based on the following factors; unemployment, average household income, population growth, and property tax revenue. The second proposed route passes through Cabarrus, Davidson, Forsyth, Rowan, and Stanly counties. According to the NC DoC, these five counties are all classified as Tier 2, except for Cabarrus County as Tier 3.

In addition, the NC Department of Public Instruction reports that many of the K-12 students in these 11 counties are economically disadvantaged, and, therefore, eligible for the National School Lunch Program (NSLP). The data shows that in the Winston-Salem to Albemarle route, the following percentage of students are receiving benefits from the NSLP by county: 28% of the students in Cabarrus, 34.9% in Davidson, 48.4% in Forsyth, 38% in Rowan, and 40.5% in Stanly. In the Sanford to Jacksonville route, the number of students receiving benefits from the NSLP by county: 47.4% students in Cumberland, 35.1% in Duplin, 37.4% in Harnett, 47% in Lee, 37.5% in Onslow, and 43.6% in Sampson.

According to the NC Broadband Infrastructure Office (NC BIO) Broadband Survey data, the primary source of Internet connectivity through Cumberland, Harnett, Lee, Duplin, Onslow, and Sampson counties is DSL offered by Brightspeed (formally CenturyLink). The data shows the medium broadband performance for download is 17 Mbps while the upload is at 3 Mbps. As you can see with actual test data results, most broadband performance is considered unserved. The survey data also shows that within this region, most Internet subscribers are Extremely Dissatisfied with their level of service. Fiber only makes up 6% of the broadband connectivity in this region.

Using the same data source from the NC BIO Broadband Survey, Cabarrus, Davidson, Forsyth, Rowan, and Stanly counties have better broadband connectivity, with the majority using cable modems. However, even with the cable modem connectivity, the performance is underserved at 49 Mbps download and 12 Mbps upload. The five-county region only has 7% direct fiber access to the home. Additional information on the competitive landscape is covered in detail in the “Competitive Landscape” narrative.

On July 6, 2022, MCNC met with the NC BIO senior leadership and shared their plans for submitting a grant application on the two proposed middle-mile route segments. NC BIO team leaders responded

positively, encouraged cooperating with Roanoke Connect, and said this would be a favorable addition to NC broadband infrastructure, in particular given that the member-owned governance structures of Roanoke and its other EMC partners means that middle mile cost savings from MCNC will be passed on to improve the affordability of service to retail subscribers. MCNC has secured letters of commitment from both Roanoke Connect and Cloudwyze, another new-entrant last-mile provider, attesting the benefits of the HERO project for improving access and affordability of high-performance last-mile services in the areas reached by HERO.

Like many areas in the country, the larger Internet companies in NC are only interested in supporting the more densely populated areas. They find the ROI for rural areas is limited at best. Despite years of federal funding, the majority of MCNC's proposed region is still unserved or at most underserved, with no known plans for upgrades from the existing broadband providers.

———

State Collaboration Acknowledgement

NTIA strongly encourages prospective non-state applicants to coordinate and consult with the State Broadband Office or other coordinating body located in the jurisdiction in which the eligible entity proposes to deploy middle mile infrastructure to ensure that the proposal is consistent with the state's broadband plan and priorities. Please confirm collaboration and consultation.

Do you confirm collaboration and consultation with the appropriate organization?

Yes

———

State and Local Collaboration Narrative

Please provide information on the applicant's coordination with applicable State, Territory, Tribal, and local governments, including their awareness of the proposed project and any potential impact to respective service areas; and

Information regarding the applicant's involvement and coordination with community organizations or other relevant partners in the proposed service area.

This response is limited to 6000 characters as an open field narrative.

MCNC has met with organizations such as the North Carolina Telehealth Network Association (NCTNA) which represents Community Anchor Institutions (CAIs) in the healthcare sector along the proposed route, and others about the significant benefit of middle mile infrastructure in order to provide existing and expanded services to patients and other community members while simultaneously addressing the digital divide. These discussions have confirmed the importance of HERO's inclusion of fiber hand-holes at regular 2500-foot intervals as a long-term solution for ensuring that currently unserved, or future newly deployed, such CAIs are able to access high-performance broadband services

Roanoke Electric has informed MCNC that they will pursue community benefit agreements, such as for discounted or free access to fiber capacity for certain municipal services, with local communities in the areas in which they deliver services as part of this project, based on the availability of HERO infrastructure from MCNC. MCNC will continue to pursue such agreements on its own and will require vendors and last mile partners and providers such as Cloudwyze to pursue such with communities impacted by this project.

More broadly, MCNC has and continues to engage and coordinate with state, tribal, and local governments in an effort to generate awareness and support for the proposed project. Outreach includes numerous calls and meetings with elected officials, business and industry groups, community organizations, and worker organizations in the counties and communities impacted by this project. MCNC has discussed the project with county managers and county offices for all eleven counties and has discussed the project with each of the community colleges along the routes. These discussions have centered around timelines, the potential for partnerships, community benefit agreements, workforce development, and most importantly the development of broadband that is accessible and affordable to those that remain unserved or underserved in these counties - largely Tier 1 and Tier 2. Most have provided their letters of support - submitted as part of MCNC's application - and others are forthcoming.

MCNC has also discussed the project with economic development, and other groups such as the NCTNA which leads efforts to provide high quality, accessible broadband to North Carolina's nonprofit and public healthcare providers. For this association and its smaller and rural providers, this project will ensure that they have access to infrastructure essential to leveraging today's powerful health information technologies in order to serve their patients.

MCNC's outreach has included outreach to the state and federal legislative delegations for each of the eleven counties along the proposed route to inform them and ultimately their constituents of the benefits of this project.

Additionally, seeking to ensure that the proposed efforts are consistent with NC's established broadband plan and priorities, MCNC has coordinated and consulted with both the Office of Governor Cooper as well as NC's newly created Office of Digital Equity and Literacy (i.e., the North Carolina Broadband Office). They find the proposed efforts to be aligned and supportive of their vision, particularly in light of the enabling role HERO can play in the state's upcoming BEAD-funded efforts. Letters of support from the above-mentioned entities are included as part of this application.

This access is particularly important given the population living below the federal poverty line in the counties through which this project runs. While the latest five-year figures revealed that 14% of NC residents earned incomes below the federal poverty level line, those in the counties along the proposed route largely exceeded that rate with up to 22%. The establishment of middle mile

infrastructure associated with this project will bring significant benefit to counties with persistent poverty as well as to those who currently meet qualifications of a host of existing programs including supplemental nutrition assistance programs, Medicaid, Public Housing Assistance, Veterans and Survivors Pension Benefit (the proposed route will pass by four military installations) and many others.

In discussions with the above-listed individuals and organizations, MCNC has confirmed commitment to the deployment of a high-speed broadband network in order to provide access to broadband in unserved and underserved communities along the route. Perhaps more importantly, discussions have centered around the importance of such access being affordable by providing interconnection opportunities for last-mile providers. To that end, MCNC will be offering access to the funded middle mile infrastructure, in perpetuity, on an open access basis.

———

Will the project connect middle mile infrastructure to last mile networks that provide or plan to provide broadband service to households in unserved areas?

Yes

———

Is the project connecting non-contiguous trust lands?

No

———

Do you commit to offering wholesale broadband service at reasonable rates on a carrier-neutral basis?

Yes

———

The eligible entity adopts fiscally sustainable middle mile strategies. This strategy should be described in the Budget Narrative.

Do you attest to this?

Yes

———

The eligible entity commits to offering non-discriminatory interconnect to terrestrial and wireless last mile broadband providers and any other party making a bona fide request. This policy will be described in the Interconnect Policy.

Do you attest to this?

Yes

———

The eligible entity identifies specific terrestrial and wireless last mile broadband providers that have(i) expressed written interest in interconnecting with middle mile infrastructure planned to be deployed by the eligible entity; and ii) demonstrated sustainable business plans or adequate funding sources with respect to such interconnection. This may be demonstrated in the Level of Need narrative of the Exec Summary.

Do you attest to this?

Yes

———

The eligible entity has identified supplemental investments or in-kind support (such as waived franchise or permitting fees) that will accelerate the completion of the planned project. Such acceleration may be described in the Project Timeline narrative.

Do you attest to this?

Yes

———

The eligible entity has demonstrated that the middle mile infrastructure will benefit national security interests of the United States and the Department of Defense. The benefits may be explained in the Benefitting National Security Interests Narrative.

Do you attest to this?

Yes

———

Please describe:

The proposed project will benefit national security interests. The route from Sanford to Jacksonville, which passes through Fayetteville, can provide network services and resources to four military installations in NC. The four military installations are Fort Bragg (U.S. Army facility in Fayetteville), Pope Army Airfield (Fayetteville), Camp Lejeune (U.S. Marine facility in Jacksonville), and Marine Corps Air Station New River (Jacksonville). The services that can be provided include dark fiber, lambda-based transport, and Internet services, increasing redundancy and resiliency of telecommunications capabilities at these facilities. MCNC has sold fiber to third party providers on the existing statewide network that serves other military installations in the state and believes this will also occur through this project.

In addition, the project area passes through eleven counties that are served by seven electric cooperatives. As noted in the support letter from Roanoke Connect, a planned objective of the project is to interconnect with these electric cooperatives to improve Internet connectivity for residential consumers. An ancillary benefit will be improved connectivity to the SCADA and communication

systems of these power grids. MCNC's prior federally funded projects have enabled fiber to other electric cooperatives in the state in a similar fashion.

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Project Duration

Number of Years

2

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Project Timeline Narrative

The narrative requires the Applicant to describe a project with critical path, including key milestones for implementation of the project, preparations, and risk factors; and a capital investment schedule evidencing that the applicant will complete build-out and the initiation of service within five years of the date on which the entity receives the grant and will meet interim buildout requirements set forth herein and in any other binding document.
If the project is able to be accelerated with supplemental investments or in-kind support to meet a statutory purpose, this should be explained.

This response is limited to 6000 characters as an open field narrative.

MCNC will complete the project in two years. MCNC's construction management program will enable rapid execution of the project including risk mitigation during the project period. Key milestones after award are:

- Engineering contractor selection
- Completion of required environmental review leading to a Finding of No Significant Impact (FONSI)
- Selection of fiber and telecommunication hut construction contractor(s)
- Material and equipment acquisition
- Fiber construction
- Network deployment

An engineering firm will be selected in month one to perform environmental assessment activities and design and permitting work. On a recent 50-mile project, MCNC offered a three-week RFP response period and made an award one week later. To guard against potential delay, MCNC will prepare this Engineering and Environmental Assessment RFP in advance that can be quickly updated to reflect programmatic requirements of an NTIA award and released to responders. The completion of this first milestone will enable MCNC and the selected engineering firm to quickly begin the environmental and design work needed for the submission to NTIA of relevant environmental review packages (milestone two). This step will take six months and require a capital investment of approximately $500,000.

MCNC will work with the engineering firm to finalize all relevant encroachments and permits with the NC Department of Transportation, municipalities, and railroads, as well as developing a relevant bid package to put out an RFP to select construction contractors by the 9th month of the award (milestone three). Upon FONSI completion (anticipated no later than one year after the award based on prior experience with similar federal projects), MCNC would then begin construction activities.

Part of MCNC's matching funds will be warehoused fiber already in-hand. This eliminates one of the biggest current lead-time risks. Baseline engineering details that are currently known will allow for the preliminary purchase order commitments for other materials during the first 1-2 months of the project period. Material estimates for this project are approximately $4.8M and these expenditures would be expected over a rolling 12-month period beginning in August of 2023 and ending in August of 2024. By providing firm orders to materials contractors with whom MCNC has established relationships, we are confident in this timeframe for milestone four.

MCNC anticipates that with an award date of March 2023 the full project will be complete by March 2025, including commencement of construction no later than January 2024 and at least 18 miles of fiber completion per month over a 12-month construction interval through January 2025. Construction activities are anticipated to be approximately $12M, for an average rate of capital expenditures of $1,000,000 per month over this 12-month period through milestone number five.

The final 3 months of the project period would be used for network testing and integrating the completed fiber build into MCNC's statewide network. MCNC commits to completion of 100% of the project miles by the end of the second year, along with all funded equipment to operationalize the network deployed (milestone six).

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Project Timeline File

Applicants are asked to upload a timeline which will denote key milestones for implementation of the project, including but not limited to field survey, network design, equipment/material procurement, environmental assessment, permitting, construction, network testing, network activation and completion.

Project Timeline Narrative-09-27-2022 04-37-MCNC-GRN-000177.docx

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Is an extension being requested?

No

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Special Rules for Tribal Governments and Native Entities

The Infrastructure Investment and Jobs Act permits the Assistant Secretary, in consultation with

Tribal governments and Native entities, to waive, or specify alternative requirements, in connection with most directives governing the MMG Program if the Assistant Secretary finds that waiver or modification of the requirement is necessary for (a) the effective delivery and administration of middle mile grants to Tribal governments or (b) the construction, improvement, or acquisition of middle mile infrastructure on trust land.

Is a waiver or alternative requirements requested?

No

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Fair Labor Practices

Applicants must have a demonstrated record of and plans to be in compliance with federal labor and employment laws as described in III.H in the NOFO. This will help ensure that projects are carried out in accordance with the law, assist NTIA in ensuring that a prospective awardee is capable of carrying out activities funded by an award in a competent manner in compliance with all applicable federal, state, and local laws; and promote the effective and efficient completion of high-quality middle mile broadband infrastructure projects by ensuring a reliable supply of skilled workers and minimizing disruptive and costly delays.

This response is limited to 6000 characters as an open field narrative.

Section 1:
MCNC has provided federal contracting services for more than 15 years and has demonstrated a record of compliance with all federal labor and employment laws since that time.

Contracts for this project have not yet been awarded to contractors or subcontractors; however, any agreement entered into for work related to this funding, will require their compliance with federal labor and employment laws and require a record of their compliance in the prior three years.

MCNC will require contractors to certify adherence to fair labor rules as required by federal and state law. As contractors and subcontractors are considered, MCNC can provide additional information to NTIA with respect to those contractors' past performance on a similar project.

Section 2:
The certification regarding past compliance with federal labor and employment laws by MCNC, contractors, and subcontractors is included along with other attestations in the "Authentication and Certifications" document uploaded in the NTIA Portal.

Section 3:
To the best of our knowledge and belief, within a three-year period preceding this application/proposal, MCNC and its principals have not violated any laws related to the Occupational

Safety and Health Act, the Fair Labor Standards Act, or any other federal labor and employment laws. MCNC will provide an update with respect to any contractors selected to work on this project if awarded.

Section 4:
MCNC will enact a written plan to ensure compliance with federal labor and employment laws by its own employees and any contractors or subcontractors. This will include ensuring that:
1) employees designing the network will be directly employed by MCNC
2) wages paid to any MCNC employees are based on prevailing wage data and in compliance with Davis -Bacon and Service Contract requirements
3) employees will be hired locally from the geographic areas of NC that will be served by the fiber
4) an appropriately skilled workforce will be developed by partnering with Registered Apprenticeship programs or other training programs, particularly those that work with underrepresented or historically excluded populations
5) employees will be appropriately credentialed and will receive appropriate safety or other training necessary for their roles
6) employee job duties and roles are appropriately classified based on the Fair Labor Standards Act

Requirements will be included in all contractor and subcontractor requests for proposal and agreements stipulating that they also follow the standards noted above. When MCNC is recruiting and selecting contractors, it will comply with all requests for proposal requirements applicable to the award granted which we anticipate will include selection of contractors that meet Women Owned Business (WOB), Minority Business Enterprise (MBE), or Veteran owned classification.

MCNC will create a workplace safety committee to ensure appropriate safety planning takes place related to the deployment and delivery of these projects. Procedures for employees, contractors, and sub-contractors to raise health and safety concerns will be communicated to all parties, and issues raised will be reviewed and handled expeditiously.
———
Officer Certification

In order for NTIA to evaluate an applicant's demonstrated record of and plans to be in compliance with federal labor and employment laws, each applicant must provide examples of items described in III.H in the NOFO. Applicants are asked to upload a Certification from an Officer/Director-level employee (or equivalent) of the applicant evidencing consistent past compliance with federal labor and employment laws by the applicant, as well as contractors and subcontractors.

Fair Labor, Civil Rights and Nondiscriminatio-09-26-2022 10-56-MCNC-GRN-000177.docx.pdf, Transparency, Accountability, And Oversight R-09-26-2022 11-12-MCNC-GRN-000177.docx.pdf, Technical Capability Certification-09-26-2022 11-15-MCNC-GRN-000177.pdf, Certifications Regarding Debarment and Suspen-09-26-2022 11-16-MCNC-GRN-000177.pdf, Connections to Anchor Institutions

Certificat-09-26-2022 11-18-MCNC-GRN-000177.pdf, Technical Capability Certification-10-14-2022 03-27-MCNC-GRN-000177.pdf

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Highly Skilled Workforce

To ensure that applicants have the technical and operational capacity to carry out the project, applicants must submit a plan for ensuring that the project workforce will be an appropriately skilled and credentialed workforce (including by the applicant and each of its contractors and subcontractors). The plan for a highly skilled workforce should include the information described in III.I in the NOFO.

This response is limited to 6
000 characters as an open field narrative.

MCNC has developed the following plan for ensuring a highly skilled and credentialed workforce, building on our established strict vetting process that evaluates direct hires and external contractors on the basis of the suitability to perform the work. MCNC will release a Request for Proposal (RFP) to identify one primary construction contractor to perform the work and one primary engineering contractor for designing the route. Screening and selection process, including in-person interviews, will evaluate proposals on the following criteria:

1) Evidence of established safety plans for the contractor and any subcontractor that includes required traffic control, adherence to required OSHA standards for the construction of buried utilities, and appropriate training for all field personnel.

2) Evidence that contractor and subcontractor personnel were selected through Registered Apprenticeship or other appropriate selection process as well as utilization of local workforce who have attended training offered in NC Community Colleges, for example, the Fiber Technician Certification at Wilson Community College.

3) Evidence that labor force, including subcontractors, will have all required OSHA certifications for positions utilized to perform the work

4) Evidence of appropriate background check and drug screening as required

5) Evidence of provided on-going on-the-job training to personnel

6) Evidence that credentials of personnel are accurate and up to date

The contractor workforce will not be unionized. Based on the nature and size of this project, it is anticipated selected construction and engineering contractors will utilize the following jobs directly on the project, with relevant and noted qualifications and certifications:

Director of Operations (1 position) - OSHA 30/CPR/First Aid - BS Civil Engineering

Safety Manager (1 position) - OSHA 30/CPR/ First Aid

Engineering Manager (1 position) - OSHA 30/CPR/ First Aid

Construction Area Manager (4 positions) - OSHA 30/CPR/First Aid

Field Supervisor (4 positions) - OSHA 10/CPR/First Aid

Crew Foreman (4 positions) - OSHA 10/CPR/First Aid/ Certified Flagging (DOT)

Crew Laborers (16 positions) - OSHA 10/CPR/First Aid/ Certified Flagging (DOT)

Engineering Technician (1 position) - Permit Management

Field Engineer Field Design Changes (1 position)

CAD Design Tech for construction Red Lines (1 position)

Senior Project Manager (1 position - Professional Engineer (PE)

Sr. Project Manager (1 position) - Geographic Information Systems Professional (GISP)
Project Management Professional (PMP) - ASPRS Certified Photogrammetrist and LiDAR Scientist

Outside Plant Engineer I (2 positions)

Outside Plant Engineer II (2 positions)

Survey Project Manager (1 position) - Professional Land Surveyor (PLS)

Although MCNC must run a new competitive award if the MMG grant is funded, the provided resumes are from construction contractors currently providing similar work for MCNC and intended to be a representative sampling of staffing requirements we will have of the selected contractor. Although there is no expectation that this firm versus other similar firms will win the competitive procurement for HERO, we have provided these examples in order to meet NTIA's requirement to provide resumes of key personnel. As part of a competitive bidding process to select a HERO contractor, MCNC's requirements will guarantee resumes with comparable experience and credentials.

Non-union MCNC employed staff will oversee the project and management of external contractors on this project directly including the following titles:
Senior Project Manager

Manager, Outside Plant Engineering and Operations
Senior Fiber Engineer
Senior Technical Manager of Network Engineering and Deployment
Senior Director of Network Architecture
Senior Network Engineer

Project oversight will be provided by members of MCNC's Senior Leadership Team:
Chief Executive Officer
Chief Operating Officer
Chief Financial Officer
MCNC's Inside Counsel
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Advancing Workforce Development

A skilled workforce is critical to meeting infrastructure buildout timelines under the Infrastructure Act and connecting households across the country to reliable, affordable, high-speed broadband. A well-trained workforce will also allow for the safe deployment of sustainable networks. To meet the workforce needs of the MMG Program, applicants must make appropriate investments to develop a skilled, diverse workforce. Each applicant must provide as part of its application examples of items described in III.J in the NOFO.

This response is limited to 6000 characters as an open field narrative.

For forty years MCNC has earned and maintains a great record of success in the use of a highly skilled workforce and support of efforts to develop a skilled, diverse workforce in the state of North Carolina (NC). This effort begins with the infrastructure development itself, i.e., construction, fiber splicing, and related job categories. Upon award, MCNC would require that all those working, including all awarded subcontractors, on this project continue that tradition by working in a safe, effective and expedient manner to deploy broadband infrastructure to unserved and underserved regions of North Carolina.

MCNC recognizes the importance of creating equitable on-ramps into broadband related jobs and the creation of a technology-based workforce made possible by such infrastructure as critical to the security and prosperity of these communities currently unserved or underserved.

MCNC continues to provide relevant training to attract, train, retain, or transition to meet local workforce needs and increase high-quality job opportunities such as in broadband network

construction. Vendors and contractors are required to do the same, and will be required to do so for this project if it proceeds upon the award of MMG funds. Furthermore, priority will be given to hiring local workers including those populations previously underrepresented and work with a variety of community and workforce development groups to ensure equitable and reasonable access to job opportunities presented by middle mile infrastructure.

As additional specific examples of items described in section III.J of the Notice of Funding Opportunity, MCNC has and will continue to partner and support programs - awarded subcontractors will be required to create training opportunities for participants/graduates of this program - related to such efforts such as Wilson County Community College's FBA Fiber OpTIC™ Certification course designed to equip future fiber technicians with the skills and knowledge required to install, splice, test, and maintain "Fiber to the Home" (FTTH) and Fiber to the Building (FTTB) systems. MCNC has also supported NC State University and the Friday Institute's A.I. Academy program. Finally, MCNC and Corning have discussed a partnership focused on creating opportunities during the near-term implementation of HERO (2023-24) for new broadband/fiber workers who are receiving training/skill development from Corning, with an overall goal of expanding the workforce in North Carolina able to implement new last-mile fiber projects funded by BEAD in the 2024-26 timeframe.With MMG funding support from the NTIA, MCNC, along with vendors and contractors, can work to establish and support similar efforts and additional apprenticeship and certification programs in the underserved and unserved communities to be served by this project.

Additionally, MCNC would continue and expand its Students@Work and Teachers@Work programs providing educational and training sessions with students and faculty across NC on a host of topics including cybersecurity, workforce readiness, and career planning.

MCNC recognizes that this project creates opportunities for workforce development as the project is completed and into the future. We understand the need to ensure that any workforce is sustainable, resilient and ready for the future. Such efforts are increasingly important in light of recent trends such as 'quiet quitting' and the "Great Resignation." In anticipation of this project, MCNC has and will continue to reach out to labor groups, economic and workforce development groups, and other community organizations and stakeholders. It is our intent to develop programs to create a workforce development pipeline that fulfills current and future needs. As we developed our application, we began discussions with Corning Optical Communications LLC, a subsidiary of Corning Incorporated who has corporate offices and manufacturing facilities in North Carolina, around their Pre-apprenticeship Program for Fiber Optic Careers Development designed to help build the Broadband Workforce of the Future. In doing so, we identified ways to leverage relationships MCNC has with the UNC System Office, NC Community Colleges, Sampson Community College, Stanly Community College and Rowan Salisbury Community College, Fayetteville State University and Fayetteville Technical Community College and a number of others as a means of expanding their program in the 11 unserved or underserved counties in which we will build this new infrastructure. Corning has offered a letter of support for our application and we look forward to working with them on this effort as we begin work

on these projects. It should be noted that this project enables future BEAD projects and BEAD related opportunities for existing and incumbent employees, and if this project proceeds in 2023 and 2024, MCNC will coordinate with North Carolina's state broadband office to develop mechanisms for workers involved in this project to transition to new work on BEAD-funded projects in 2024 and beyond. We are also currently exploring opportunities related to cybersecurity – an increasing need in North Carolina and across the nation. Any increase in access to high-speed broadband connectivity will grow the footprint of cyber infrastructure that's necessary to provide that broadband connectivity. This cyber infrastructure must be protected from cyber-attacks in order for it to be useful. The need

Finally, MCNC has coordinated and consulted with both the Office of Governor Cooper and NC's newly created Office of Digital Equity and Literacy. They agree that MCNC efforts through this project align and support their vision and mission to rescue communities and individuals from struggles imposed by a digital divide and create and revive community, economic and workforce development efforts along the project routes. Their letters of support - and those of others - are included in this application.

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Climate Resiliency

Please demonstrate that the applicant has sufficiently accounted for current and future weather- and climate-related risks to new MMG Program infrastructure projects. In particular, each applicant should clearly demonstrate how it is conducting the items listed in III.K in the NOFO.

This response is limited to 6000 characters as an open field narrative.

This project spans several North Carolina (NC) counties in western NC, including Forsyth, Davidson, Rowan, and Stanly, as well as Lee, Harnett, Cumberland, Sampson, Duplin, and Onslow, that are in eastern NC. This region, considered the southeast in chapter 19 of the 2018 National Climate Assessment (USGCRP, 2017), has been identified as prone to increasing flood risks, heat and drought events, heavy precipitation events, and Freeze-free Season lengths. According to NOAA's 2022 state climate summaries (State Summaries 2019, n.d.), the temperature has risen more than 1° F since the beginning of the 20th century, with historically unprecedented warming projected during this century. NC is also susceptible to highly variable hurricanes and rainfall, projected to increase with the global sea level continuing to rise, leaving the Coastal Plain and low-lying areas susceptible to flood. NOAA's disaster and risk mapping tool (NCEI.Monitoring.Info., n.d.) and their storm event database (NCEI, 2019) indicates tornadoes reported have increased with a focused location running north and south through Cumberland and Sampson counties in the east and Rowan, Davidson, and Forsyth in the west. These stated risk factors contribute to FEMA's National Risk Index (Learn More | National Risk Index,

n.d.), ranking all natural hazards. Sampson and Duplin counties are rated Relatively High; Cumberland, Harnett, and Lee ranked Relatively Moderate; Davidson, Rowan, and Stanly relatively low. The two fiber routes proposed cross areas known to experience these weather- and climate-related risks above. As a result of this careful review of this risk profile, MCNC is confident that the proposed routes seeking MMG funding are as well designed as possible for long-term sustainability in the face of future weather-and climate-related risks. MCNC plans to recheck the climate data every five years to address any evolving risks.

NC is one of 15 states recognized as having Enhanced Mitigation Plans, qualifying for additional funding, and per FEMA's Hazard Mitigation plan status (ArcGIS Web Application, n.d.), all the associated counties are approved. MCNC's plan to mitigate these weather and climate-related risks align with the state and local jurisdiction's mitigation plans. These factors are a significant reason for installing the fiber network buried in underground conduits, with the slack loops and hardened splice enclosures, to be in Hand/Manholes for new network connections and maintenance access. With high winds, tornadoes, hurricanes, and flooding affecting aerial networks on utility poles, we feel that this strategy reduces the risk of disasters interfering with the operation of the network, resulting in less frequent outages. MCNC feels this is the best solution because of the relatively low freeze-thaw cycle and minimum earthquake risk.

The southeast has ever-increasing temperatures; yet it can freeze and snow at times. Therefore, MCNC has opted to house all our network electronics in environmentally controlled prefabricated huts. MCNC has space available in these facilities for future network users to house their electronics and build out their hardened networks. This project will also contribute to the route diversity of MCNC's statewide network, enhancing the overall resiliency of MCNC's ability to maintain high-performance broadband service in the event of natural disasters that may disrupt any given region of the state.

MCNC has an existing Enterprise Risk Management Committee (ERMC) that monitors, assesses, and responds to any item that may pose a risk to any strategic, operational, financial, or reputational impact to MCNC. This group, which includes MCNC's CEO, COO, CFO, CISO, and inside counsel among others, meets monthly. As part of regular discussion the ERMC analyzes any threats to operations due to environmental or climate related concerns. The ERMC also engages in regular review of medium and longer-term risk assessment and mitigation planning, and MCNC anticipates placing additional priority on climate resiliency management items for ongoing discussion and review should we be awarded this grant. Additionally, MCNC currently maintains a professional services contract with a qualified engineering firm for addressing any risk mitigation interventions required to ensure uninterrupted operation of our assets. As such we are well positioned to add analysis of climate risks within their scope of work through keeping up with current regulations and requirements through the links noted below, and others, as required. We believe that the existing framework MCNC has with our ERMC and the additions it could make would ensure regular monitoring and mitigation actions as required with respect to the factors referenced in NOFO III.K.5.

References

USGCRP. (2017). Fourth National Climate Assessment. Globalchange.gov, 2(4), 1–470. https://nca2018.globalchange.gov

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NCEI.Monitoring.Info. (n.d.). Billion-Dollar Weather and Climate Disasters: Mapping | National Centers for Environmental Information (NCEI). Noaa.gov. https://www.ncdc.noaa.gov/billions/mapping

NCEI. (2019). Storm Events Database | National Centers for Environmental Information. Noaa.gov. https://www.ncdc.noaa.gov/stormevents/

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Civil Rights and Nondiscrimination Law Compliance

Prior to distributing any MMG Program funding to a prospective awardee, NTIA will require the prospective awardee to agree, by contract or other binding commitment, to abide by the non-discrimination requirements set forth in III.J in the NOFO.

Do you agree to abide by the non-discrimination requirements?

Yes

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Certification of Technical Capability

Each applicant must supply a certification attesting that it is technically qualified to complete and operate the proposed project.

Technical Capability Certification - Place Ho-09-22-2022 12-18-MCNC-GRN-000177.docx, Technical Capability Certification-10-14-2022 03-45-MCNC-GRN-000177.pdf

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Interconnect Policy

The Applicant must describe in detail the nondiscrimination, interconnection, and network management practices that would be adopted for the project facilities. The Applicant should describe how it will comply with nondiscrimination and interconnection obligations, particularly with connectivity to the public Internet and physical interconnection for the exchange of traffic. In

addition to describing network management practices, the Applicant should disclose any practices in place to block access to illegal or harmful content.

This response is limited to 6000 characters as an open field narrative.

Interconnection Policy
As a network-wide policy, MCNC provides interconnection points at each of its points of presence. These interconnection points also allow commercial middle mile service providers to serve last mile providers with wholesale open access, at reasonable market rates and terms (or better), to network components and services such as wavelengths and fibers. Any and all service providers including for-profit, nonprofit, and/or public operators (e.g., ILECs, MSOs, CLECs, energy/telco cooperatives, last mile, middle mile, etc.) may interconnect with MCNC's network at market rates and terms (or better) for the purpose of exchanging traffic.

In addition, in order to provide more direct interconnection between residential users and Community Anchor Institutions (CAIs), MCNC encourages settlement-free peering with all willing Internet service providers within North Carolina (NC).

All elements of this interconnection policy will be offered by MCNC with respect to the HERO project, if funded by the NTIA MMG program, in perpetuity.

Network Management Policy
MCNC Internet service is based on best-effort delivery. MCNC does not use any mechanisms to preferentially allocate bandwidth to any specific class or classes of users, applications, providers, or sources. Users, peers, and providers are limited only by the physical or contractual bandwidth limitations of their connection to the network. Except for enforcing contracted bandwidth limits, MCNC does not limit bandwidth usage by its users, peers, or providers via mechanisms such as rate limiting or policing.

MCNC does not restrict users' access to specific content, block the use of specific applications, or limit the types of devices that can be used to access the network. However, MCNC will block any traffic destined for its infrastructure by unauthorized sources and will take appropriate action to either block or limit traffic that transits its network if, by MCNC's determination, that traffic is harmful to the recipient. MCNC will cooperate with law enforcement if notified of harmful or illegal traffic transiting its network.

Nondiscrimination Policy
MCNC provides Internet access to CAIs, nonprofit last mile, and middle mile providers in an open, nondiscriminatory manner. Any CAI in the MCNC service area is eligible to connect at market rates and terms (or better). As a middle mile provider, MCNC uses several upstream Tier 1 Internet service providers that provide full access to the public Internet. MCNC does not make any distinction in its

treatment of customer traffic based on application or content.

Where available, MCNC also provides lit capacity and other middle mile services to private sector middle mile operators and wholesalers in an open, provider-neutral and nondiscriminatory fashion. Any middle or last mile provider or wholesaler within the MCNC service area is eligible to connect at market rates and terms (or better), at locations where services are available.

Policy Document URL - https://www.mcnc.org/policies
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Technical Overview

Please describe targeted last mile service objectives, including last mile service provider letters of commitment, agreements, or contracts; and a description of the proposed service offerings, including the pricing of the services to be offered over the proposed facility.

This response is limited to 6000 characters as an open field narrative.

MCNC proposes to build two Middle Mile Fiber Routes (MMFRs) that will allow last mile service providers to establish highly reliable and resilient last mile network connectivity services to directly serve both residential and commercial customers in the proposed service areas (see attachment "MCNC Network Logical Diagrams"). These last mile service providers can leverage the proposed MMFRs by building laterals to both residential and commercial customers (as well as to their own aggregation facilities) from Hand Holes (HHs) (placed 2,500' or less apart) along the proposed MMFRs. From these HHs, the proposed MMFRs pass through and/or terminate on MCNC owned-and-operated equipment enabling the delivery of MCNC network connectivity services. By making fiber-based interconnections available to every serviceable location along the proposed MMFRs, end users subscribed to Internet and other network access services will experience significantly reduced latencies for those services.

MCNC continues to support one of the most innovative electric membership cooperatives (EMCs) in North Carolina (NC), Roanoke Electric, in its efforts to deliver broadband service to the unserved and underserved areas in their region. Over the years, Roanoke Connect, the Internet Service Provider (ISP) division of Roanoke Electric, has expanded its territory to the surrounding counties; however, with the Infrastructure Investment and Jobs Act (IIJA) Broadband Equity, Access, and Deployment (BEAD) Program, Roanoke Connect is now looking to take advantage of the MCNC proposed MMFRs to apply for BEAD funding on its own in order to continue to expand last mile fiber service via partnerships with other EMCs. This funding will allow for their expansion into five additional counties while collaborating with six EMCs (Central, Four County, Jones-Onslow, South River, Tri-County and Union Power) in those regions with plans to leverage its agreement with MCNC to support a Fiber to The Home (FTTH) deployment that will reach up to 27,796 unserved and 4,389 underserved households (see Roanoke Electric letter of support).

Dark fiber, perhaps the most valuable service offering to come from MCNC's proposed Middle Mile project, will be available to organizations under MCNC's Open Interconnect policy at competitive prices allowing last and middle mile service providers to take full advantage of the new fiber routes to get to other locations in the state or carrier co-location facilities outside of NC. Both nonprofits and commercial carriers will benefit from this capability which will allow them to expand their offerings in these service areas as well. MCNC will also offer co-location services along the proposed MMFRs, per attachment "MCNC Network Logical Diagrams."

MCNC Internet service is available from 10M to 100G and is offered to Community Anchor Institutions (CAIs) as well as for resale to nonprofits in an effort to increase broadband availability in unserved and underserved areas of the state. Layer 2 MPLS-based Ethernet Transport (10M to 10G) as well as Layer 1 Lambda-based Transport with Ethernet handoffs at 10G or 100G are available along all sections of the proposed MMFRs (see attachment "MCNC Proposed Service Offerings"). In general, as a 501c3 nonprofit organization, MCNC has competitive pricing at market rates and terms (or better) on all its network connectivity services including those planned on the proposed MMFRs (reference attachment "MCNC Service Pricing").

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Applicants are encouraged to upload supplemental documentation.

Technical Details Proposed Project - Suppleme-09-22-2022 11-37-MCNC-GRN-000177.docx, MCNC Letters of Support-09-23-2022 03-09-MCNC-GRN-000177.pdf

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Competitive Landscape

The Applicant should describe existing middle mile offerings in the area, if any, including competitor data if applicable. This should include a description of the proposed service offerings, including the pricing and technology of the services to be offered over the proposed facility. Where possible, Applicant's project should be able to demonstrate a decline in middle mile costs that are likely to flow through to consumer broadband prices.

This response is limited to 6000 characters as an open field narrative.

MCNC has a history of being very cost disruptive in the North Carolina (NC) middle mile services market. After completing the BTOP routes in 2013, the entire state benefited from price reductions from all middle mile service organizations as they adjusted market pricing for the new open-access competitor. For example, the price for a 20 year IRU per strand mile from Piedmont EMC is $1050, while MCNC charges $750 per strand mile for a 20 year IRU. Less cost in the middle mile reduces operational costs in the last mile and residential services, allowing retail ISPs to advance their own affordability improvement strategies. MCNC expects that to continue in these areas if the High-speed Economies for Rural Opportunity (HERO): North Carolina Broadband Project project is able to proceed.

The competitive landscape for the MCNC proposed routes comprises two primary categories. The first type is the traditional incumbent providers of commercial last mile, middle mile (circuit lease only, no dark fiber), and residential Internet services, such as AT&T, Charter (Spectrum), Windstream (Kinetic), and Lumen (formally CenturyLink). The other type includes organizations like Segra, Cogent, Conterra, and Zayo which offer a mix of commercial last mile and middle mile services via geographically limited fiber.

Of the well-known businesses that support commercial last mile, (circuit only) middle mile, and residential Internet in NC, the primary focus is on densely populated areas. For example, AT&T markets wireless solutions to solve the needs of the less populated areas (underserved) but no fiber to the home. Lumen offers costly circuits in this region and relies on Brightspeed with dated copper technology to serve the region with DSL (unserved). Charter relies on the cable TV infrastructure acquired Time-Warner assets to support the areas they serve (limiting the performance and growth). Finally, Windstream offers services but only in limited areas as they work to recover from their recent bankruptcy. Neither AT&T, Brightspeed, Charter, Lumen, or Windstream offer any dark fiber services in NC.

This second group is active with middle mile solutions in areas within reach of their existing infrastructure. For example, Cogent, known for the cost-effective reuse of other commercial services, only has assets that intersect in Cumberland and Rowan counties. Segra has middle mile and last mile services in Cumberland County, more pronounced in the Winston-Salem area. Zayo has limited availability of middle mile services that intersect in Davidson County. On the other hand, Conterra, a respected middle mile service provider with limited access along both proposed routes, has indicated that should MCNC build a middle mile network in these areas, they would consider extending much-needed broadband to communities along the routes. This group would likely take advantage of the expanded reach of MCNC's open access to improve its competitiveness in central and southeastern NC.

With the primary focus on densely populated areas, large Internet companies have allowed other organizations to enter these markets. However, the coverage of these other businesses is spread thin and leaves much of the proposed region with limited middle mile options. Through the completion of the proposed project, MCNC is the only network willing and able to offer a full range of open access middle mile services at competitive rates only a non-profit can offer. Refer to the attachment “Middle Mile Service Offerings” for more information.

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Applicants are encouraged to upload supplemental documentation.

MCNC Service Pricing - Supplemental Data-09-26-2022 10-38-MCNC-GRN-000177.docx, MCNC Proposed Service Offerings - Supplementa-09-26-2022 10-38-MCNC-GRN-000177.docx

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Type of technology to be used in proposal:

Fiber Optic Technology

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Each applicant of an award to build middle mile infrastructure using fiber optic technology shall certify that the proposed project, upon completion, will include direct interconnection facilities that will facilitate the provision of lit broadband service, at speeds not less than 1 Gigabit per second for downloads and 1 Gigabit per second for uploads to anchor institutions located within 1,000 feet of the middle mile infrastructure, as detailed in the Template CAI below.

Do you agree to certify to the above?

Yes

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Upload Template CAI. Required for Fiber Optic Technology, optional for Wireless or Other.

Template Community Anchor Institution-09-22-2022 12-20-MCNC-GRN-000177.xlsx

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An eligible entity applying for a middle mile grant may seek, and the Assistant Secretary may grant, a waiver of the requirements set out in the previous paragraph, in full or in part, to the extent the eligible entity demonstrates that the requirement is not technically or economically feasible.

Do you plan to apply for a waiver? If yes, please attach the waiver application in the Application Workspace, the Application Information section, Required Documents under Required Document Question 4 "Additional Waiver Upload".

No

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Network Route Maps

Applicants should provide a physical network map that includes the following (if applicable):

The Project Area and those unserved and underserved areas which it will enable.
Applicant‘s pre-existing service area that demonstrates current service levels.
The physical path of the network‘s transmission medium (e.g., backbone and lateral cable routes, microwave links), transmission type, technology, operating bandwidth, capacity (e.g., dark vs. lit strand count), and cable placement (e.g., aerial, burial) should be displayed.
Points of interconnection (purely passive and non-environmentally controlled nodes, e.g., splice points are optional):Provider Facilities
Collocation Facilities
Private Interconnection Points with partnering service provider/private network

Wireless towers and associated coverage areas.

Anchor institutions within 1,000 feet, if desired.
Additionally, the maps should delineate between network and facilities that are:Part of the Applicant's/key partners' existing network;
Proposed as part of this project;
Leased from a third party;
Utilized under some alternative arrangement; or
Relevant to interconnection with either Last Mile or Middle Mile service providers.

PLEASE NOTE: Only ESRI Shapefiles will be accepted and uploaded.

MCNC Network Route Maps - ESRI Shapefiles-09-26-2022 08-23-MCNC-GRN-000177.zip
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Data Submission Specification

There is a template "Upload Template Data Submission Specification" which shall be uploaded. Applicants must complete the table with information for all interconnection points proposed for the network. This table has three required fields: Point Name, Latitude and Longitude. This should accommodate all of the points of interconnection (passive, non-environmentally controlled points of interconnection, e.g., splice points, may be excluded), collocation facilities, central offices, head ends, and other centralized facilities, network access points to Last Mile service providers, Internet peering points, and towers.

Upload Template Data Submission Specification-09-22-2022 12-40-MCNC-GRN-000177.xlsx
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Network Diagram

The Applicant must provide a high-level network diagram to be uploaded for the project that is a representation of the network, capacities, and facilities. The diagram must clearly denote which of the network elements already exist. The diagram should show:

The links between the network nodes. The types of facilities used in connecting the network elements (fiber, wireless microwave, etc.).

The points of interconnection and collocation facilities, including Internet peering points, access to local exchange carriers, central offices, or cable head ends.

The proposed aggregation node facilities that will provide the egress point(s) from the broadband backbone to the networks of the selected service provider(s), named Last Mile service providers, and the selected named Internet Service Provider(s) in the new infrastructure.

The Applicant should show which technologies are used and include bandwidth capacity constraints.

Logical Network Diagrams-09-22-2022 12-28-MCNC-GRN-000177.pdf, Network Logical Diagram - Supplemental Data-09-22-2022 12-29-MCNC-GRN-000177.pdf

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Environmental Narrative

Any project-related activity that may adversely affect the environment must not be undertaken prior to the completion of the environmental review process prescribed by NTIA. Doing so may jeopardize consideration of the application.

All Applicants for MMG projects must comply with the National Environmental Policy Act, the National Historic Preservation Act, and the Endangered Species Act, and other applicable environmental regulations.

Please provide a service-area environmental description that describes the physical project area and its surroundings (e.g., disturbed or developed land vs. open space; adjacent natural resources, such as rivers, wetlands, or forestlands; and any protected lands or resources in or near the project area), including site photographs and aerial photographs (e.g., Google Earth or Google Maps images), if the project includes construction and/or ground disturbing activities.

This response is limited to 12000 characters as an open field narrative with image files to be uploaded.

This project is proposed to be constructed utilizing industry standard practices of plowing, trenching, and horizontal drilling. The route passes through cities, villages, farmland, wooded areas, residential properties, low-lying lands, river/creeks, and railroad crossings predominantly along roadways in the North Carolina Department of Transportation's (DOT) right of way.

Cities and towns to note are Albemarle, Richfield, Salisbury, Lexington, Winston Salem, Sanford, Fayetteville, Clinton, and Jacksonville, with other smaller villages. Route selection was to avoid historically significant streets, and MCNC intends to coordinate with any local authority having jurisdiction (AHJ) on junction point locations for future expansion by users of the network into these towns.

All ground disturbances will be restored with soil remediation as required to the original condition. Any sidewalk or concrete cutting, of which little is expected, is to be replaced to the current standards of AHJ.

Water crossings have been identified for rivers and creeks, with the widest one being the Yadkin River at approximately 700 feet, none of which are considered navigable waterways. These crossings are included in the uploaded image files. With anticipated permit processes, all environmental impact studies and reports required by AHJ are to be completed, along with NTIA's NEPA analysis.

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Upload Map Images:

Water and Swamp Crosssings-09-23-2022 10-33-MCNC-GRN-000177.zip, Environmental Impact - City and Towns-09-26-2022 11-48-MCNC-GRN-000177.zip

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Template Table of Funded Partners and Unfunded Collaborators

List all funded and unfunded project collaborators, including partners, subrecipients, match providers, major contractors/supplies, details on role/scope of work for project. A fillable Template of Funded Partners and Unfunded Collaborators can be found in found in the MMG ZIP folder.

Template Table of Funded Part and Unfunded Co-09-22-2022 11-47-MCNC-GRN-000177.xlsx, Template Table of Funded Part and Unfunded Co-10-14-2022 03-32-MCNC-GRN-000177.xlsx, 2023-04-05 - Uploaded Revised-Template Table -04-05-2023 04-50-MCNC-GRN-000177.xlsx

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Certificate of Operational Capability

Each applicant must supply a certification from an officer-level employee (or individual of comparable rank) attesting to the applicant's operational capability to complete and operate the proposed project.

If the applicant has provided a voice and/or broadband internet access service, it must supply a certification from an officer-level employee (or individual of comparable rank) attesting that it has filed FCC Form 477s and the Broadband DATA Act submission, if applicable, to the extent required during this time period and otherwise complied with the Commission's rules and regulations. Alternatively, the applicant must explain any pending or completed enforcement action, civil litigation, or other matter in which it was alleged to have failed to comply with Commission rules or regulations.

If the applicant has operated only an electric transmission or distribution service, it must submit qualified operating or financial reports that it has filed with the relevant financial institution for the relevant time period along with a certification that the submission is a true and accurate copy of the reports that were provided to the relevant financial institution.

If applicable, the applicant must submit a certification from an officer-level employee (or individual of comparable rank) that is has operated a middle mile broadband network for at least two years or

that it is a wholly owned subsidiary of such an entity and must specify the number of years the applicant or its parent company has been operating.

Operational Capability Certification-09-26-2022 11-00-MCNC-GRN-000177.docx.pdf

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Certification of Financial Capability

Each applicant must supply a certification from an officer-level employee (or individual of comparable rank) attesting that it is financially qualified to meet the obligations associated with a project, that they will have available funds for all project costs that exceed the amount of the grant, and that they will comply with all MMG Program requirements, including service milestones.

Financial Capability Certification-09-26-2022 11-02-MCNC-GRN-000177.docx.pdf

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Letter of Credit

During the application process, each applicant must submit a letter from a bank meeting eligibility requirements consistent with those set forth in 47 C.F.R. § 54.804(c)(2) committing to issue an irrevocable stand-by letter of credit, in the required form, to the applicant. The letter shall at a minimum provide the dollar amount of credit offered and the issuing bank's agreement to follow the terms and conditions of NTIA's model letter of credit. NTIA shall publish on its website a model letter of credit substantially similar to the model letter of credit established by the Federal Communications Commission in connection with the Rural Digital Opportunity Fund (RDOF - Rural Digital Opportunity Fund Order, 35 FCC Rcd at 773-77, Appx. C.).

NTIA will ensure, prior to issuing a middle mile grant award, that each eligible entity obtains an acceptable, irrevocable standby letter of credit in a value of no less than 25 percent of the award amount.

Each eligible entity shall provide with its letter of credit an opinion letter from its legal counsel clearly stating, subject only to customary assumptions, limitations, and qualifications, that in a proceeding under Title 11 of the United States Code, 11 U.S.C. § 101 et seq. (the "Bankruptcy Code"), the bankruptcy court would not treat the letter of credit or proceeds of the letter of credit as property of the winning bidder's bankruptcy estate under Section 541 of the Bankruptcy Code.

Commitment Letter (Letter of Credit) Executed-09-14-2022 08-45-MCNC-GRN-000177.pdf

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Audited Financial Statement (Previous 3 Years)

Each applicant shall submit financial statements from the most recent fiscal year that are audited by an independent certified public accountant. If the applicant is not audited in the ordinary course of business, in lieu of submitting audited financial statements it must submit unaudited financial

statements from the three prior fiscal years and certify that it will provide financial statements from the three prior fiscal years that are audited by an independent certified public accountant by an NTIA specified deadline.

***You must provide 3 years of audited financial statements.**

Audited Financial Statements Restated - 2020 -09-15-2022 10-11-MCNC-GRN-000177.pdf, Audited Financial Statements - 2021 and 2020-09-15-2022 10-11-MCNC-GRN-000177.pdf

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Historical Financial Statements (Previous 3 Years)

Each applicant shall submit financial statements from the three prior fiscal years that are audited by an independent certified public accountant. If the applicant is not audited in the ordinary course of business, in lieu of submitting audited financial statements it must submit unaudited financial statements from the three prior fiscal years and certify that it will provide financial statements from the three prior fiscal years that are audited by an independent certified public accountant by an NTIA specified deadline.

***You must provide 3 years of historical financial statements.**

Audited Financial Statements - 2021 and 2020-09-27-2022 04-45-MCNC-GRN-000177.pdf, Audited Financial Statements Restated - 2020 -09-27-2022 04-45-MCNC-GRN-000177.pdf

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Budget Narrative

Applicants will create and submit a budget narrative that adequately describes all proposed activities and costs for their grant-funded project. Applicants must complete the file template, fill in all required information, and upload the file
. The file must be uploaded as a Word file, and not converted to a PDF. You can find additional guidance in the MMG Application Guidance.

Template Budget Narrative Final-09-22-2022 11-51-MCNC-GRN-000177.docx, Template Budget Narrative Final-10-14-2022 03-35-MCNC-GRN-000177.docx, 2023-04-05 - Uploaded Revised-Template Budget-04-05-2023 04-52-MCNC-GRN-000177.docx

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Template Detailed Budget Justification

The Detailed Budget Justification spreadsheet must reflect the cost categories that appear on the SF-424 and SF-424C and include itemized calculations for each cost placed under those categories. A fillable Template Detailed Budget Justification can be found in found in the MMG ZIP folder.

Template Detailed Budget Justification - MCNC-09-22-2022 11-52-MCNC-GRN-000177.xlsx

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Any other funding provided for this project?

Yes

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Please describe.

MCNC has collaborated with the GoldenLEAF foundation based in Rocky Mount, NC since 2011 on broadband projects of significance in the state of North Carolina. They were the primary matching source of funds for MCNC's NTIA BTOP awards in 2011-2013, providing approximately $24M in matching funds toward the construction of 1700 miles of middle mile fiber. Should MCNC be awarded a Middle Mile Grant to build these needed fiber routes that are being proposed, the GoldenLEAF foundation has committed to providing $1,382,782.18 to MCNC for use as matching funds for the purpose of administering the grant. GoldenLEAF does not provide 100% funding for projects but rather operates in a matching fund role as we are proposing here. There are no conditions associated with this GoldenLEAF foundation grant to MCNC other than that they are used as part of the project being outlined to the NTIA upon award by the NTIA. Drawn down of GoldenLEAF funds will occur consistent with federal draw requests in terms of matching percentage.

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Template Pro Forma

Pro forma financial projection and analysis related to the project's sustainability, inclusive of subscriber (e.g., last mile network connections, other wholesale services), across an eight-year forecast period. A fillable Template Pro Forms can be found in the MMG ZIP folder.

MMG Template Pro Forma Final - MCNC-09-14-2022 08-51-MCNC-GRN-000177.xlsx, 2023-04-05 - Uploaded Revised - Template Pro -04-05-2023 04-52-MCNC-GRN-000177.xlsx

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