NTUA ABDG-Rural Project Narrative

1. Project Description and Timeline

The nature of the improvements

The Navajo Tribal Utility Authority proposes to extend its existing middle mile fiber network to five (5) remote communities in Apache County, on the Navajo Reservation including Kinlichee, Klagetoh, Nazlini, Wood Springs, and Wide Ruins. This proposed fiber optic build out will also connect two existing towers (Kinlichee and Wood Springs) and one new tower (Nazlini) and replace the current microwave transport. The proposed fiber build out will also connect the following community anchor institutions including the Kin Dah Lichi'l Olta School, Nazlini Community School, Wide Ruins Community School, Klagetoh Fire Department, Kinlichee Chapter House, Klagetoh Chapter House, Nazlini Chapter House and Wide Ruins Chapter House. NTUA shall connect the new proposed fiber optic build out to the existing NTUA middle mile network in Ganado AZ. NTUA also proposes to install additional splice points along highway 191 from Ganado to Wide Ruins for future pico/micro cell deployment to ensure continuity of cellular and broadband services. Currently, highway 191 from Ganado to Chambers, AZ is literally a "dead zone" with respect to communications.

In addition, NTUA and its majority owned subsidiary, NTUA Choice Wireless, will connect to the proposed tower in Nazlini with the following technologies: (600mhz) & Fixed Wireless Broadband (EBS/2.5GHz).

How the proposed project addresses the broadband needs of the area(s) that it serves

The proposed project will extend last mile fiber connections from NTUA's existing middle mile network into eight (8) Navajo community anchor institutions, all of which serve critical needs of the community. These community anchor institutions currently are unserved without access to reliable wireline broadband service. Currently wireline service is available only using DSL service delivered over obsolete twisted pair copper lines. Locally, DSL service is unreliable, oversubscribed, over reported and severely underperforming advertised speeds.

The proposed project will provide the Navajo connected community anchor institutions a fiber infrastructure capable of symmetrical 10 Gbps service, with affordable and subsidized service tiers also available. In addition to the direct fiber connections, the proposed Nazlini tower will provide the unserved community of Nazlini with wireless broadband service capable of 100 Mbps with affordable and subsidized service tiers also available.

The effects of the coronavirus pandemic have been especially severe in the residents in including Kinlichee, Klagetoh, Nazlini, Wood Springs, and Wide Ruins areas. Students in the area cannot access broadband or cellular services while commuting to school and have limited opportunities for remote learning. Online learning, tele-medicine, and virtual meetings are essentially nonexistent due to the lack of reliable broadband and the proposed infrastructure will make them generally available to the population in the area. The low housing and population density of the area coupled with remoteness of the communities have left the areas far removed with respect to communications. The availability of

improved broadband infrastructure at publicly accessible community anchor institutions will help provide improved community services, and increase the community's access to remote learning, telehealth and remote work opportunities.

Number of community anchor institutions served

Eight (8) community anchor institutions whose mission statements appear below would be served:

Kin Dah Lichi'l Olta School

[redacted]

Services Provided: Educational Facility
The mission of Kin Dah Lichi'i Olta' is to provide a child centered learning environment that promotes student achievement embedded in cultural diversity toward meeting the demands of a global society. Our vision is for all students to have the opportunity to reach his/her unique potential in a safe & caring atmosphere enveloped by a spiritual, cultural & emotionally enriching educational environment.

Nazlini Community School

[redacted]

Services Provided: Educational Facility
Kin Dah Lichi'i Olta' mission is to provide a quality education while honoring Diné Language, Culture, and Identity in a safe and healthy environment for all students to succeed. We envision for our children to strive and succeed using their greatest potential as they can have multiple opportunities to fulfill their dreams within and beyond the Sacred Mountains. May we all walk in beauty and harmony.

Wide Ruins Community School

[redacted]

Services Provided: Educational Facility

Wide Ruins Community School was founded in 1930 and expanded in 1963. The school has since come a long way from a school having one teacher with an assistant, and a bus driver, to a Bureau of Indian Affairs school, to currently a Tribal Grant School.

The school has a student population of 112 students from kindergarten through 6th grade. 45 of these students reside in the Residential Dormand there are 42 staff members consisting of administration, teaching staff, residential, kitchen, transportation, and facility.

Wide Ruins Community School consists of six instructional buildings, a cafeteria, a residential dorm, an administration building, transportation, and facility office. The school serves students from Lupton, Houck, Sanders, New Lands, Wide Ruins, and Klagetoh each year. Our mission is to provide academic excellence & cultural awareness for your children.

Klagetoh Fire Department

Services Provided: Public Safety

[redacted]

[redacted]

Kinlichee Chapter House

[redacted]

[redacted]

[redacted]

Services Provided:

- Planning Meetings
- Local Government Meetings
- Veterans Meetings
- Voting & Election Services

- Public Access to internet and PC use
    - Provide Technical Access: scanning, faxing,
    - General access for the Public

Klagetoh Chapter House

[redacted]

Services Provided:

- Planning Meetings
- Local Government Meetings
- Public Employment Program - Job Assistance
- Veterans Meetings
- Voting & Election Services
- Public Access to internet and PC use
    - Provide Technical Access: scanning, faxing,
    - General access for the Public

Nazlini Chapter House

[redacted]

The Mission of the Nazlini Chapter is to provide effective leadership and service delivery, support opportunities for self-sufficiency of its community members that will improve the quality of life, uphold our Navajo Nation sovereignty and maintain our Navajo identity, and be accountable to our Nazlini Chapter membership. The Nazlini Chapter foresees a prosperous future for the community with adequate infrastructure, business development, economic opportunities for employment that allows personal responsibility and independence, educated workforce, sustained preservation of our natural resources and language, tourism and a healthy population living in harmony

Services Provided:

- Planning Meetings
- Local Government Meetings
- Veterans Meetings

- Voting & Election Services
- Public Access to internet and PC use
    - Provide Technical Access: scanning, faxing,
    - General access for the Public

Wide Ruins Chapter House/Senior Center

[redacted]

Services Provided:

- Planning Meetings
- Local Government Meetings
- Veterans Meetings
- Voting & Election Services
- Public Access to internet and PC use
    - Provide Technical Access: scanning, faxing,
    - General access for the Public
- Senior Center

Number of households served

This proposed project is to connect eight (8) community anchor institutions. The six (6) community anchor institutions together serve the entire communities along highway 191 in the heart of Apache county. According to the 2019 Navajo Nation Estimates, a total of 3272 households in census designated place:

Navajo Chapter	Number of Households
Ganado	1011
Nazlini	635
Klagetoh	406
Wide Ruins	466
Kinlichee	754
Total	3272

Number of businesses served

This proposed project is to connect six (8) community anchor institutions. There aren't any current plans to connect businesses to the buildout but the installation of last mile fiber will allow local business to connect at low cost.

Total population served

This proposed project is to connect eight (8) community anchor institutions. The eight (8) community anchor institutions together serve the entire communities of Ganado, Nazlini, Klagetoh, Kinlichee, and Wide Ruins With estimated populations listed below:

Navajo Chapter	Estimated Population
Ganado	2544
Nazlini	1154
Klagetoh	843
Wide Ruins	824
Kinlichee	1814
Total	7179

The total population directly and indirectly served by the community anchor institutions is over 7,000.

The anticipated economic development benefit achieved by construction of such improvements

Economic development benefit achieved by construction of improvements are anticipated to be primarily improved education opportunities and job training.

Total miles of fiber to be installed (if applicable)

NTUA proposes to construct approximately 51 miles of new fiber. The majority of the fiber proposed is middle mile construction from the NTUA existing fiber backbone in Ganado, AZ to Nazlini, Kinlichee, Klagetoh, and Wide Ruins with laterals off the backbone to community anchor institutions.

Location of new fiber (aerial, underground or both?)

Fiber will be installed in a combination of overhead and underground plant. The majority of the fiber optic cable shall be installed on existing NTUA electric poles. Most of the last mile fiber drops shall be placed underground from closest pole to the community anchor institutions. Due to the preliminary work completed including environmental assessments (including biological, cultural, and historic preservation) and engineering design, the construction will proceed in a timely manner and be completed within 24 months.

Stated commitment to operate and maintain the network for a minimum of five (5) years upon completion of the improvements

The Navajo Tribal Utility Authority commits to operate and maintain the network for at least five (5) years upon completion of improvements. NTUA will operate and maintain the network in perpetuity and continue its long history of providing communication services to the Navajo people.

The party or parties that will perform the infrastructure construction (if known)

The overhead construction and related tasks will be performed by a combination of NTUA communications staff and subcontractors procured using a competitive bidding process. NTUA has several qualified subcontractors prepared to bid on the construction promptly as soon as an award is made.

The intended uses of the ABDG Rural/Urban funds in respect to the construction or planning

The intended use of ABDG funds for construction will include detailed engineering and construction ready drawings; overhead fiber construction and tower construction suitable for local conditions; materials including but not limited to conduit, fiber cable, hand holes, splice enclosures and customer premise equipment; conduit installation, fiber pulling or blowing, splicing, network test and turn up.

The specific information required under Section 1.4 (to the extent relevant)

- Providing 100/100 speeds

Broadband service to unserved areas will be achieved by the proposed project by connecting community anchor institutions directly to last mile extensions to NTUA's existing middle mile network. The resulting fiber connections will allow the community anchor institutions to receive up to symmetrical 10 Gbps connections, well above the baseline of 100 Mbps service. The addition of the tower in Nazlini will result in 100Mb connections. Currently, the only available wireline service at the community anchor institutions is provided by Frontier Communications DSL service which is unreliable, oversubscribed, over reported and severely underperforming advertised speeds. There is no possible way Frontier can improve existing service to provide symmetrical 100 Mbps service.

- Increase speeds to 100/100

The proposed infrastructure will provide new fiber infrastructure as an alternative to existing DSL service. The new fiber infrastructure will be capable of providing service up to symmetrical 10 Gbps.

The community anchor institutions will receive last mile extensions from NTUA's existing middle mile network. While this will greatly benefit the connected community anchor institutions, and will also benefit additional community anchor institutions and businesses the last mile extensions pass as they will be able to receive low cost connections. Since NTUA's existing middle mile network extends through large portions of the 26,000 square mile Navajo Nation, local last mile extensions won't contribute much to increasing middle mile redundancy.

2. Timeline for completion of the infrastructure improvements

[redacted]

Matching Funds

- The timing of such match

NTUA will [redacted] for the project. Matching funds are available and approved for use on this project upon grant award.

- The intended uses of the match

Matching funds will be used to offset the cost of allowable project expenses such as detailed engineering, construction labor and materials.

- The identity of any sources other than the applicant who are responsible for such match or portions thereof

All of the matching funds will come from Navajo Tribal Utility Authority (NTUA).

- The nature of the commitment by the Applicant or other parties to deliver the match including whether such commitment is in writing and binding in all circumstances

NTUA has attached to this application a commitment of matching funds.

Due to the rural nature of communities along highway 191 in Apache county, and the limited operating budgets of the community anchor institutions included in the proposed project, in the absence of ABDG-Rural/Urban funding, the proposed project would not proceed within the same time frame or would not otherwise be as effective in advancing the objectives of the Program. In fact, without subsidy funding the majority of the proposed project would likely not proceed at all. Community anchor institutions on the Navajo Reservation Reservation generally need subsidy funding for broadband infrastructure improvement projects.

3. Project Description and Timeline – Development

The proposed project will allow the connected community anchor institutions to offer improved services to their communities. Many of the community anchor institutions offer computer access and Internet

access and serve as a critical resource for online services unavailable at locations without Internet access, due to either service availability or affordability. The development and implementation of online programs for job training, education and telehealth will follow the deployment of improved broadband infrastructure.

The improved infrastructure will allow community anchor institutions to participate in and implement job training programs such as those provided by the Navajo Department of Workforce Development including their Occupational Skills Training (OST), Work Experience (WEX) program and Adult Basic Education (ABE) program[1], programs from the Navajo Nation Division of Economic Development including their Job Training Partnership Act (JTPA) program and Job Opportunity Basic Skills (JOBS) program,[2] and others. The local community anchor locations can also offer improved public WiFi access via hotspots located at these buildings based on the building's underlying Internet access service.

The improved infrastructure will also allow community anchor institutions to offer residents access to telehealth services available from the Indian Health Service (HIS) including two-way audiovisual links between patients and a health care provider as well as other telehealth services such as the HIS Teleophthalmology Program and Telebehaviorial program.[3]

- The nature and scope of the project

The Navajo Tribal Utility Authority proposes to extend its existing middle mile fiber network to eight (8) community anchor institutions in greater Ganado area, Arizona, Apache County, on the Navajo Reservation. The community anchor institutions include the Kin Dah Lichi'l Olta School, Nazlini Community School, Wide Ruins Community School, Klagetoh Fire Department, Kinlichee Chapter House, Klagetoh Chapter House, Nazlini Chapter House and Wide Ruins Chapter House. For these eight locations, NTUA would splice into their existing middle mile fiber network and construct last mile fiber laterals to these community anchor institutions. The last mile fiber laterals would be constructed overhead, using NTUA's existing electric poles, modified to allow the placement of fiber cable. Make ready, the process of ensuring poles are up to the National Electric Safety Code has been completed prior to grant award to facilitate a expedited construction schedule.

In addition, NTUA and its majority owned subsidiary, NTUA Choice Wireless, will construct and connect a new tower location in Nazlini, AZ.

- Type of technology to be utilized

Eight (8) community anchor institutions will be connected to NTUA's existing fiber middle mile network with last mile fiber laterals and will utilize point to point carrier Ethernet technology.

- Type of construction to be undertaken (aerial or underground)

[1] https://www.ndwd.org/
[2] https://navajoeconomy.org/employment-and-training-programs/
[3] https://www.ihs.gov/telehealth/telehealthprograms/

The eight (8) community anchor institutions receiving fiber connections will be connected using a combination of overhead and underground construction. NTUA would install overhead fiber on existing electric poles and underground fiber for drops from nearest pole to dwelling.

- Qualifications of the vendors/contractors

While NTUA performs much of their own construction, subcontractors may be utilized to expedite construction. Only contractors with significant experience and an excellent track record will be considered and utilized for this project. There are qualified HDD contractors located in Flagstaff and Phoenix that can be leveraged for this project. Microwave equipment installation will be coordinated with NTUA's majority owned subsidiary, NTUA Choice Wireless, which has vast experience with the installation of wireless equipment on towers and buildings.

Providers for electronics and materials will be industry leading vendors of state of the art manufacturers and materials will be procured soon after grant award with respect to the current supply chain issues and expanded lead times.

- Engineering analysis

NTUA has done a preliminary engineering analysis for both the fiber optic construction and tower construction and microwave installations including radio frequency analysis. This preliminary engineering analysis was necessary to accurately estimate project costs. Upon grant award NTUA will complete the field engineering of the overhead construction locations to determine best practices of installation method for each segment and to produce construction ready drawings.

- Project approach

NTUA would install last mile fiber laterals using their existing utility easements, modified to allow the placement of fiber cable. The majority of the easements are acquired. [redacted] The microwave transceivers will be installed on existing vertical assets in Nazlini.

- Background of the project

Unserved Community anchor institutions in Greater Ganado area have long suffered due to insufficient broadband capacity to serve their communities. Each of the eight community anchor institutions proposed to be served in this application have experienced insufficient Internet access to provide for the needs of their communities. Some of the chapter houses offer access to computers and the Internet in addition to many other online services such as job training in association with Navajo colleges. Community anchor institutions also offer public WiFi access using their underlying Internet connection. These public WiFi hot spots have been very heavily utilized since the onset of the pandemic and the current service levels available at these locations, based on DSL service delivered on obsolete twisted pair copper lines, is not adequate for the demand or critical nature of the service.

- Population to be served

This proposed project is to connect eight (8) community anchor institutions. The eight (8) community anchor institutions together serve the entire communities of the greater Ganado, Arizona. As of the 2019 Navajo Nation population estimates there were 7179 people in the combined cities.

- Number of households served

This proposed project is to connect eight (8) community anchor institutions. The eight (8) community anchor institutions together serve the entire communities of the greater Ganado, Arizona. As of the 2019 Navajo Nation population estimates there were 3272 households in the combined cities.

- Number of anchor institutions served

This project would serve six (8) currently unserved community anchor institutions.

- Number of businesses served

This project would serve eight (8) currently unserved community anchor institutions and will not directly connect businesses. However, businesses shall be able to receive fiber connections at reduced cost based on their proximity to the new last mile fiber laterals.

- Ways in which the project will improve redundancy and reliability

The unserved community anchor institutions proposed to be served by this project can, if they choose to, keep their existing though inadequate Internet access service to improve redundancy, even though that service does not meet the Program's definition of broadband Internet access.

[redacted]

3. <u>Other Project Outcomes</u>

The proposed project to connect eight (8) currently unserved community anchor institutions, will benefit not only the particular community anchor institutions but the community at large due to the fact that many of the community anchor institutions use their underlying Internet connection to power WiFi hotspots located at the community anchor institution buildings. These WiFi hotspots have been very heavily utilized since the onset of the coronavirus pandemic. However, many of these hotspots are currently have providing poor performance due to the insufficient bandwidth of the underlying Internet

connection and heavy utilization. Utilization has included distance learning as students attempt to participate in remote programs and practice social distancing, telecommuting as remote workers have been unable to work from their normal office locations, and telehealth appointments which have become increasingly available since the onset of the pandemic.

The current capacity of these community anchor institution is inadequate for the current and anticipated future demand. With the grant assistance, NTUA can adequately provide highspeed connectivity to an area is desperate need.

Type	Project	Applicant	GEOID
Rural	Apache County CAIs	NTUA	04001944000
Rural	Apache County CAIs	NTUA	04001944302
Rural	Apache County CAIs	NTUA	04001944901
Rural	Apache County CAIs	NTUA	04001945001
Rural	Apache County CAIs	NTUA	04002944902
Rural	Apache County CAIs	NTUA	04002945002