# 2.4 C - Project Narrative

## 1. Project Description and Timeline

a. **Nature of Improvements**: Bring underground multi-strand fiber from LUMEN Demark in Winslow Arizona, up Highway 87 and County Road 15 to Dilkon Chapter Headquarters in Dilkon AZ. Fiber capacity will be a minimum 10 Gbps and is scalable for future growth.

b. **How does proposed project address the broadband needs of the area(s) that is will serve**? Dilkon Chapter currently does not have broadband that meets the FCC minimum of 25/3 Mbps. The internet they have is not reliable, and often drops completely during daytime usage. Existing federal metrics measuring broadband (Ookla Median Speed Tests of the area, the American Community Survey, and the FCC Form 477) were all evaluated in November 2021, and all confirm that Dilkon (town of) and Dilkon Chapter is underserved and unserved.

c. **Number of Households served**. 528 (3.8/household)

d. **Number of businesses served**. Twenty (20); See Appendix for List

e. **Total population served**: 2004 (1188[4] in Dilkon plus 816 in surrounding area )

**f. Anticipated economic development achieved by construction of such improvements.** Dilkon Chapter has been working for over 5 years to build a Justice Center and The Dilkon Medical Center. The Dikon Medical Center is scheduled to open in April, and the Justice Center is awaiting funding. A 109 Unit Housing Unit developed by Indian Health Services will be completed in April 2022. The Dilkon Chapter House hosts meetings with the Navajo Nation, requiring reliable internet connectivity, and reliability has been a major issue. In addition, a forty (40) unit veteran and elder housing unit is in development The Broadband System will bring connectivity required for these anchor institutions to operate successfully. The Navajo Nation Dilkon Shopping Center expansion development plans include a restaurant and more shops

**g. Total miles of fiber to be installed.** It is estimated that the initial fiber link from Winslow to Dilkon will be approximately 45 miles.

**h. Location of new fiber (Aerial or Underground).** The fiber will be underground.

**i. Stated commitment to operate and maintain the network for a minimum of five (5) years upon completion of the improvements.** Attached is a letter of commitment from LUMEN. LUMEN intends meet a long-term commitment. The commitment will require finalized negotiations with Dilkon Chapter once the project is funded. LUMEN will provide managed services to support this project and can also move forward to train and support the tribe if they wish to operate and maintain the system in the future, a model which was successfully

[4] https://worldpopulationreview.com/us-cities/dilkon-AZ-population, Most recent ACS survey; 93.6% Native Americans

implemented with the Duck Valley Shoshone Paiute Tribe. The participation of LUMEN will ensure a successful and sustainable project.

j. **Party or Parties that will perform the infrastructure construction.** LUMEN, Aquila Cubed Consulting, LLC (Aquila[3]), and TTC Wireless (TTC).

k. **Intended uses of the ABDG Rural funds in respect to the construction or planning.** The funds will be used for project management, purchase of fiber and associated networking and head-end equipment, purchase of customer premises equipment, microwave links to connect eNodeB base stations together, and installation of demark equipment to support future wireless expansion, construction costs.

l. **Specific information required under Section 1.4 for Eligible Projects.** This is an eligible project because it will benefit a very large group of intended beneficiaries. Initially it will service Dilkon (town of), and surrounding areas. It will support download/upload speeds of 100 Mbps/ 100 Mbps ("100/100") with minimum 100/25 speeds to Dilkon town's anchor institutions, businesses and homes.

   Initially there will be approximately 216 last-mile households near the town of Dilkon which receive services. The long-term goal is to provide broadband to the last-mile very remote unserved users in the 6 Chapters (Dilkon Chapter and surrounding Chapters) a minimum Wireless speed of 25/3 Mbps per the FCC Standard. It is anticipated that future fiber will be extended to the other Chapter houses. The NTIA Broadband Grant has been applied for, and if awarded will allow the project expansion to all 6 Chapter. The 6 Chapters have many residents, so this potential benefit is large. The costs to the intended beneficiaries will be provided at a lower rate than equal urban-area costs.

m. **Timeline for completion of the infrastructure projects.** LUMEN will be installing fiber to bring high-speed internet to Dilkon Chapter Headquarters. The timeline for this project, depending upon supply chain availability is estimated to be less than a year. The supporting microwave and customer premises equipment installation is estimated to be done in less than a year, depending upon supply chain availability and FCC Microwave license approval. It is estimated 9 to 18 months to complete the installation of the projects. The timeline will be determined by permitting approvals from right-of-way owners and Navajo Nation, and supply chain availability.

n. **Cash Match Details:** LUMEN has committed [redacted] match. Please see the appendix F sections A and B for letters from LUMEN. All costs will be documented as the project proceeds. The final commitment between Dilkon Chapter and LUMEN will be in writing and binding, and will be executed upon funding of the project.

## 2. Project Description and Timeline – Development

The project will bring high-speed fiber from a LUMEN-owned demark in Winslow AZ to Dilkon Chapter Headquarters in Dilkon AZ. The fiber will support an initial broadband connectivity of 10 Gbps to the area around the town of Dilkon. From the demark at the Dilkon Chapter Headquarters, Broadband will be extended to local anchor institutions, businesses and homes in Dilkon and the surrounding areas. There is an additional Grant application with NTIA, with an accompanying shovel-ready engineering design/build report to extend this broadband to last-mile unserved remote end users located in a 6 Chapter region of District 7 (The Chapters of Dilkon, Greasewood Springs, Indian Wells, Jeddito, Teesto, and White Cone). As funds are available it is anticipated that fiber would be extended to the various Chapter houses. Total population of all 6 Chapters is estimated to be approximately 3800 households.

The initial timeline, depending upon supply chain availability, is expected to be 1 year to 18 months.

A Gnatt timeline for future developments is attached in Appendix G

a. This is a **hybrid fiber/wireless project** and will bring High-capacity Tier-1 fiber to Dilkon AZ, wirelessly distribute to local anchor institutions, businesses, and homes.

b. A Hybrid Fiber/Wireless is the **technology** that will be used. Fiber will be used to bring high-speed Tier-1 Internet from Winslow AZ. Wireless licensed microwave and Telrad PtMP 3.5 GHz CBRS technology will be used to distribute wireless to the anchor institutions, businesses, and homes in the town of Dilkon and the surrounding area.

   As funding becomes available the final goal is all last-mile residents in the six (6) Chapters. All home locations have been documented and mapped, and a complete wireless system has been done to deliver connectivity to these last mile users. The final build-out is dependent upon additional funding.

c. **Construction** will be underground fiber from Winslow to the town of Dilkon. Distribution to end-users will be wireless.

d. The **Partners** include **Aquila Cubed Consulting, LLC,** a highly-qualified telecommunications consulting and design/build firm who will provide project management and oversight of the wireless installation, and **LUMEN,** an FCC Designated Tier-1 provider who has the largest fiber network in the world, who will be in charge of the fiber construction, maintenance and management of the network.

e. **Engineering Analysis** for the fiber will be done by LUMEN, Aquila[3] is providing the engineering and project design for the Point-to-Point (PtP) Microwave Backhaul and the Point to Multipoint (PtMP) Distribution to the end users.

f. The **Project approach** is to construct high-speed fiber to the town of Dilkon, extend the infrastructure by Licensed FCC Point to Point Microwave Links, and a high capacity 80 GHz link. LUMEN will provide managed services which will

support and maintain the infrastructure to the demark in Dilkon Chapter House. LUMEN will work to help train the tribal members to build capacity and skills necessary to eventually take over an maintain the system, if they desire.

g. The background of the project began in 2019 when Dilkon Chapter hired Aquila$^3$ to assist them in writing a US DOI BIA Tribal Broadband Feasibility Grant. The grant was successfully awarded to the Dilkon Chapter. Aquila$^3$ designed and engineered a completed wireless network system design for the Dilkon Chapter and District 7, which includes Dilkon Chapter and 5 other chapters. The grant requirement was to provide a feasibility study only.

   Dilkon Chapter worked with Aquila$^3$ throughout 2020 to try to communicate with NTUA to work with Dilkon Chapter to implement the project, and to provide collocation and accessibility to NTUA towers, and access to NTUA fiber. A detailed letter was written in October 2020 requesting NTUA to work with Dilkon Chapter. To date, after multiple phone calls, letters, emails and meetings, NTUA has failed to respond to the initial letter, and has made every attempt to keep the project from proceeding.

   Dilkon Chapter was advised in mid August that the project would not be included in the Broadband NTUA's NTIA grant submission. At that point, Dilkon Chapter decided to seek funding on their own and prepared and submitted the NTIA grant, as well as submitting an application for the Arizona Commerce Authority Broadband Grant.

   Aquila$^3$ had also sought alternate ISPs to NTUA, since they were being unresponsive, and finally in November was able to get a letter of commitment from LUMEN Technologies Inc. to support and provide ISP services to Dilkon Chapter. A copy of that letter of commitment is included with this grant application.

h. The population (over 93% Native American) to be served is rural Native-American Navajo tribal members located in Dilkon AZ and surrounding areas. The service will extend to anchor institutions, businesses and homes in the area of the town of Dilkon, and to last-mile end users near the town of Dilkon. Future growth, when funded will extend the service being brought to the entire area of the Dilkon Chapter, and 5 contiguous Chapters in District 7 of the Navajo Nation, with a population of approximately 10,000 people.

i. Approximately 312 households will be served in the town of Dilkon and surrounding areas.

j. Approximately 24 anchor institutions will be served in the town of Dilkon, future wireless will serve an additional 21 anchor institutions in the other 5 Chapters.

k. Approximately 20 businesses will be served in the town of Dilkon and surrounding areas.

## 3. Other Project Outcomes

a. **Remote Learning –** It is reported that approximately 90% of the student (K-12) failed school this last year because they did not have access to broadband to attend remote learning in their schools. The availability of broadband is critical to the education of the students.

b. **Health and Medical** – Many of the population, including a large number of elders, have inadequate medical access and support. Telehealth has been a definite need, but without broadband and with very limited cellular phone access, it has been unavailable. The availability of high-speed broadband will meet these needs.

c. **Public Safety** – The lack of communications in the area extends beyond broadband. Broadband connectivity will also make it possible to install and support public safety radio communications (two-way land-mobile voice) over the area.

d. **Dilkon Medical Center –** Opening this spring – Any 21st century medical facility needs broadband connectivity to provide quality services to their patients. There is no reliable internet at this time.

e. **Justice Center** – A new justice center has been designed and is in final funding stages. As with any justice center, reliable internet is not even an option. This will support the justice center.

f. **Two new housing projects -** One to be completed this spring, and one is still in the planning stage.

   1. A 109 Unit Housing by Indian Health Services will be completed in April of 2022.
   2. A 40 Unit Veteran and Elderly Housing Unit is in planning stage.

g. **With increased economic development in the town of Dilkon** (a new medical center, a new Justice Center**,** and new housing for the new workers), reliable broadband will be needed.

h. **A list of businesses** is attached. Many of the businesses cannot market or sell their goods and services without internet access.

| Type | Project | Applicant | GEOID |
|---|---|---|---|
| Rural | Navajo County | Dilkon Chapter - Aquila Cubed - Lu | 04017940013 |
| Rural | Navajo County | Dilkon Chapter - Aquila Cubed - Lu | 04017940014 |
| Rural | Navajo County | Dilkon Chapter - Aquila Cubed - Lu | 04017940015 |
| Rural | Navajo County | Dilkon Chapter - Aquila Cubed - Lu | 04017944902 |
| Rural | Navajo County | Dilkon Chapter - Aquila Cubed - Lu | 04017960400 |