C. Project Narrative
1. Project Description and Timeline

Nature of Improvements

Wecom proposes a complete Fiber-to-the-Everything (FTTx / FTTP) solution for all residences, businesses, and tower locations which are connected to the electric grid in underserved and non-served Mohave County and La Paz County, Arizona. This project covers over 2,000 square miles of service area across the two counties – targeting Western Arizona's most broadband restricted communities.

Wecom's last-mile solution has been designed to ensure ubiquitous 1 gigabit and mulit-gigabit connectivity to every service location passed in the two counties. Wecom will build a FTTx network that is both financially beneficial and elevates the communities to end the digital divide. Wecom will use its robust established fiber network to create an expanded network that delivers true speed and reliability to all subscriber homes, public and private businesses, offices, hospitals, government offices, emergency services (Sheriff, Police, Fire), cell towers, State Parks, and more.

Two important network builds will be created through this project: Middle-Mile fiber optic network connecting the counties to redundant services; and a Last-Mile fiber optic network to deliver services directly to subscribers.

Wecom will build an all-new middle-mile network of more than 535 miles of high-capacity fiber that will span throughout Mohave County and La Paz County from the northern point of Meadview, AZ to the very southern point of La Paz. Plus, west to east providing connectivity and redundancy between Quartzsite, Lake Havasu, Kingman, and more. The middle-mile network will create redundant access to multiple Tier 1 carriers in the regions, allowing for faster failover and reliability in the event of a failure on a section of network. The middle-mile network will be used as transport for the Wecom network as well as made available to other carriers, entities, and last-mile providers who require alternate routes to interconnect their networks. Middle-mile network will be built with a minimum of 144 count fiber to allow for future growth of the communities. The middle-mile network is designed to be capable of both lit service with redundant ring, and dark fiber service for carrier/government dedicated circuits.

The constructed last-mile network will bring the highly redundant and incredibly fast middle-mile network directly to the subscriber. Over 662 miles of lateral fiber optic cable will connect street-level fiber access terminals to the middle-mile network. Drop cables will connect customer premise locations to efficient indexed fiber access terminals to join the subscriber to the network. Wecom will provide urbanized, affordable service to the Mohave County and La Paz County rural communities over this last-mile build. The last-mile network gives low latency, high reliability, and incredibly fast broadband speeds up to 10 Gbps to each subscriber location in these two counties' unserved and underserved areas.

Detailed maps of the proposed service areas are included in Section H – Maps. In Mohave County, Wecom will build middle-mile network to the unserved and underserved areas of Golden Valley, Chloride, Dolan Springs, Meadview, White Hills, North Kingman, Oatman, Yucca, South Yucca, Havasu Heights, and Lake Havasu City. This project includes last-mile network directly to subscribers in Golden Valley, Chloride, Meadview, Yucca, and North Kingman. This last mile covers most subscribers in the Mohave County area.

Areas in Mohave County with only middle-mile network built during this project will be included in development plans detailed later in this proposal. They will not be left out.

Continuing south from Mohave County, Wecom will build middle-mile and last-mile FTTx/FTTP gigabit connectivity to all population centers of La Paz County including Parker, Bouse, McVay, Vicksburg, Salome, Wenden, Brenda, Quartzsite, Morgantown, Ehrenberg, and La Paz Valley. This expansive project will cover all unserved and underserved areas of La Paz County.

Description of Materials
Wecom uses American-made All-Dielectric Self-Supporting aerial fiber with gel-free water-blocking, aramid yarn strength elements, and a robust polyethylene outer jacket. The result is an aerial cable that is lightweight, durable, reliable, and easy to install. Aerial installs use identification markers as required by the utility company for ID and reporting.

Every precaution is taken to ensure that cabling, risers, slack spans, closures, and fiber access terminals are properly secured and marked. Wecom takes pride in its network construction and performs audits to ensure cabling is secured and hardware remains in good condition. Wecom's installations have a clean-looking, professional fashion.

Underground cable, where required, is placed in color coded and marked SDR-13.5 innerduct with tracer wire for easy Blue Stake locates to reduce accidental fiber cuts. Underground fiber is armored, even when placed in innerduct, for maximum protection from rodents and utility work. Underground vaults are rated for proper traffic and marked for identification and utility reporting.

Cabinets for electronics are weather rated with proper cooling and anti-tamper security features. Passive Optical Network terminals, splitters, and splice closures are industry leading products from Clearfield, CommScope, Channell, and Preformed Products. Wecom uses products that are designed on industry standards to allow for rapid, modular service and replacement, and future-proofed expansion. Utilizing multiple vendors with similar product lines allows us to keep construction in progress if a single vendor has availability or manufacturing delays.

Electronics
Wecom's core network relies on all carrier-grade Juniper Networks routing and switching systems with fault-tolerance and redundancy. DWDM and fiber backbone network is built on leading Ciena fiber platforms for middle-mile, metro access, and service aggregation. All network electronics are spared locally, have high-tier service, and support plans with the equipment vendors for rapid support or replacement.

Existing relationships with Calix and Ciena give the Wecom network immediate access to GPON and XGPS-PON technologies. XGS-PON from the network to the subscriber location provide obtainable speeds up to 10 Gbps symmetrical, already built into the network as demands for higher bandwidth connections rise.

Expanding from Wecom's High Reliability Network

Wecom's proposed FTTx/FTTP network will connect to and utilize its existing and redundant core network infrastructure.

Wecom peers with Tier 1 internet carriers in both our Las Vegas and Phoenix core datacenters using carrier-grade Juniper Networks routers. Each core is directly connected in an Active/Active configuration to provide the highest automatic fault-tolerance in the event of a rare hardware or upstream carrier failure. Wecom datacenter locations are Tier III certified or higher, with 100% uptime Service Level Agreements with Wecom. Wecom has maintained a network ring in Mohave County to create a highly reliable, fault-tolerant network. This project brings the design to a much greater scale to provide redundant and fault-tolerant services throughout Mohave County and La Paz County. Automated designs allow for 50-millisecond or less network re-routing to keep the middle-mile network connected and critical traffic online during network upgrades, software updates, or unexpected fiber cuts.

Multi-Homed Network

Wecom performs multi-homing of Wecom-provided IP space. This provides greater reliability and allows for redundant routes to the Internet if any Wecom-peered Tier 1 providers lose connectivity or undergoes routine maintenance. Wecom peers with multiple Tier 1 providers including Level 3, CenturyLink (Lumen), Zayo, GTT, Cogent, and more. Wecom monitors our peering relationships and routes around providers who may have an issue further upstream from Wecom or the local region. Routing away from providers who may be experiencing issues ensures connectivity for our customers. The Wecom network is BGP peered with IPv4 and IPv6 connectivity – ensuring access to the whole internet for our subscribers.

DDoS Protection and Mitigation

Wecom has maintained an always-on and always-ready Arbor Networks appliance at our network core to detect and automatically mitigate Distributed Denial of Service (DDoS) attacks towards our customers and network infrastructure. The Arbor Networks appliance and our leading-edge core routers automatically mitigate any detected attacks without any manual intervention. Wecom's threat protection is backed by industry-leading threat intelligence and is proudly provided to our customers as an included service at no cost.

Proactive Monitoring

Wecom Inc. uses a three level Proactive Monitoring approach on both our Direct Internet Access and Wide Area Network Transport offerings. Wecom monitors network, site, and customer statistics including power, temperature, signal strength and quality, bandwidth utilization, latency, jitter, packet loss, interface errors, optical light levels, and BER/frame loss to ensure we're providing the highest quality connection and performance to our customers.

Customer Service Performance

Wecom provides sales, installation, and support internally to ensure a quality experience to our customers. The technicians that customers speak to are local and have great knowledge of the network. All technicians have access to advanced tools for setup, troubleshooting, and resolution of most customer requests.

Residents of Kingman selected Wecom for the "Kingman Readers' Choice Awards" for Best Internet Provider in 2019 and 2020. This is a true testament to Wecom's dedication to providing a reliable service and comprehensive support to our community.

Addressing the Needs of the Served Areas

Fiber broadband services provide connectivity to telework, remote learning, telehealth, and other online services. High-speed broadband is essential to innovation, economic opportunity, healthcare, and civic engagement in today's modern society (Broadband Deployment Report, 2021).

In addition to revolutionizing connectivity for Mohave County and La Paz County's underserved population, FTTx/FTTP broadband access attracts more businesses, remote workers, keeps residents in rural areas, and may increase home values by 3% or more. In 2020, over 1,400 new building permits were filed in both counties. The demand for new growth and renovation is strong in Arizona.

Broadband enhances education. According to findings from The PEW Charitable Trusts, students with fast home internet access had approximately half a letter grade higher overall GPA than students with no or slow-home internet access. Students with better home internet access had better digital skills and scored higher on the preliminary SAT testing (PEW Trusts, 2020).

The COVID-19 public health emergency intensified demands for broadband services in rural counties. Arizonans turned to remote work, telehealth, telemonitoring, and distance education to find that a broadband connection was not available to them at an affordable rate – or that their current broadband speeds were insufficient to access all these critical resources. Wecom is working to provide services that will keep more rural Arizonans connected faster and more affordably than ever.

How this Project Helps Address These Needs

Wecom has emphasized three key points when designing this FTTx/FTTP network. The subscriber's service must be affordable, the service must be fast, and the service must be reliable.

Broadband has become a staple in our lives—these rural communities are no exception to this. They rely on broadband directly and indirectly every day. Wecom has set our mission to ensure that these communities receive the broadband they not only need—but require.

Residential Subscriber Affordability

Wecom services include a Fiber ONT (Optical Network Terminal) which connects the subscriber to the Wecom fiber network. This provides a fast, reliable hardwired and dual-band Wi-Fi connection to the subscriber's devices. The ONT ensures all the subscriber's devices connect at their fastest speeds. The "Plug and Play" design makes the installation quick and easy. WiFi and service setup and troubleshooting is almost effortless for the subscriber.

ONT devices also feature voice ports to easily activate single line phone services. The ONT is remotely managed to allow non-invasive monitoring and remote customer service support without a required truck roll to the subscriber location. Wecom plans to include a consumer phone application to allow subscribers to manage the network settings of their ONT without requiring customer service to assist and improving customer self-service options.

Wecom has an established Digital Inclusion Plan to keep Arizonans connected. In summary, the plan ensures connectivity to several public Wi-Fi areas in county facilities, libraries, parks, colleges, and non-profit organizations for public use. The plan includes service to non-profit organizations supporting these communities, participation in federal, state, and local subsidies, also coordinating access to education services such as the Sun Corridor Network.

Service Package Speeds and Pricing

Service Type	Download Speed	Upload Speed	Price Range*
Residential Fiber 1 Gig	1 Gbps	1 Gbps	[redacted]
Residential Fiber 2 Gig	2 Gbps	2 Gbps	[redacted]
Business Fiber 1 Gig	1 Gbps	1 Gbps	[redacted]
Business Fiber 2 Gig	2 Gbps	2 Gbps	[redacted]
Business Fiber 10 Gig	10 Gbps	10 Gbps	[redacted]
Residential Voice Line			[redacted]

**Ranges based on accessibility to property. Business locations often have more complex installation needs and require a higher recurring cost to account for installation.*

- Service includes ONT with built-in Wi-Fi Router at no additional monthly cost.
- Free professional standard installation.
- Unlimited data use – no data caps or utilization-based slowdowns.
- No annual contracts for residential service.

- Additional services are available on-demand including ProtectIQ to enhance protection against malicious websites, anti-virus, and anti-ransomware. ExperienceIQ provides extensive customized parental controls, online rules, and content filtering—all as easy as downloading an app and enabling the service.

The offered broadband speeds will be revolutionary for the Mohave County and La Paz County unserved and underserved areas where even 25 Mbps is currently unattainable. The affordability comes with price ranges directly comparable to popular fiber provider names in urban metro centers.

Wecom participates in Universal Service Administrative Co. (USAC) programs including E-Rate for Schools and Libraries, Rural Healthcare, and Lifeline programs including the Affordable Connectivity Program (formerly Emergency Broadband Benefit Program). Wecom's SPIN Number 143032163 / 827421.

Enterprise, Carrier, Transport (including Virtual Private LAN Service (VPLS), Metro Ethernet, and Dark Fiber) circuits are on an individual case basis and will be custom engineered by Wecom to maximize service and affordability.

The potential impact is very high and life changing for residents in these areas. Wecom is ready and capable of making these improvements to our communities throughout Mohave County and La Paz County.

Information on Community Served

Mohave County

Mohave County is in the Northwest corner of Arizona covering 13,461 square miles, making it the fifth largest county in the contiguous United States. The estimated 2020 population was 217,206 people with a median household income in 2019 of $49,712.00. The 2020 estimates include 86,889 households and 114,573 total housing units.

According to BroadbandNow.com, approximately 14,000 people in Mohave County do not have access to any version of wired internet, and 48,000 or more people do not have access to even 25 Mbps download speeds. Those households who do have access to 25 Mbps may not be getting even 80% of the advertised 25 Mbps speed. Fiber optic internet is only available to 2% of Mohave County Residents.

NTIA maps included in Section H – Maps show large portions of the rural county lacking 25 Mbps download and 3 Mbps upload minimum service through FCC 477 reports, Ookla Median Speed Test, and M-Lab Median Speed Tests. The need for broadband in these areas is more critical than ever.

Mohave County has no awarded CAF funding for anything with speeds greater than 10 Mbps download, 1 Mbps upload.

La Paz County

La Paz County is in the western edge of Arizona covering 4,499 square miles, The 2020 population was 16,557 people with a median household income in 2019 of $34,643.00. The 2020 estimates include 9,346 households and 16,316 total housing units. 80% of households have a computer, and 62% have a broadband subscription.

According to BroadbandNow.com, approximately 5,000 (almost 30%) or more people do not have access to a minimum of 25 Mbps download speeds. Those households who do have access to 25 Mbps may not be getting reliable, high-bandwidth options as many population centers in the county have 90 percent or more DSL coverage and no fiber options.

NTIA maps included in Section H – Maps show large portions of the rural county lacking 25 Mbps download and 3 Mbps upload minimum service through FCC 477 reports, Ookla Median Speed Test, and M-Lab Median Speed Tests. The need for broadband in these areas is more critical than ever.

Wecom has designed the proposed project to provide revolutionary broadband access to end the digital divide in these critical areas. The design also provides the latest technologies to further support mobile backhaul for cellular and 5G backhaul access, Metro Ethernet Foundation certified transport, and scalable IPTV support. The network is designed to truly bring these communities up to speed and prepare for future technology.

Present Services

Wecom currently provides service to over 1,700 customers in Arizona using both Fixed Wireless Access and Fiber Optic technologies. Speeds ranging from 20 Mbps to 10 Gbps based on available technology in the subscriber area and subscriber selected plan.

Economic Development Benefits

Rural broadband, and access to the resources that come with it, lead to higher priority values, increased job and population growth, higher rates of new business formation, and lower unemployment rates (Brookings. 2021). Mohave County has 3,907 and La Paz County has 337 employer establishments who will benefit from Wecom's fast, low-latency, reliable Gigabit, or faster broadband service to perform business transactions, e-Commerce, and outreach to support county development.

Businesses entering Mohave County often ask realtors and the economic development team where and how broadband can get to their new locations. This project with ABDG-Rural funding will ensure that connectivity is available throughout the county – wherever those business may choose to establish services.

Gigabit and faster broadband services open new opportunities for those looking to establish residency in Mohave and La Paz counties. Working from home, telehealth, and recreational connectivity will no longer be an obstruction to selecting Western Arizona as a new home.

Total Project Coverage and Location

Wecom's proposed project area covers over 2,000 square miles of area in Mohave and La Paz counties, more than 13,682 households, 390 businesses, and 2,153 miles of fiber optic network. To illustrate the amount of fiber being proposed, If the amount of fiber required for this project were laid in a single path, it would equal the driving distance from Phoenix, Arizona to Tampa, Florida!

Community Anchor Institutions Served	Households Served	Businesses Served	Total Population Served
124	13,682	390	31,468

Community Anchor Institutions include education, healthcare, government, infrastructure, state parks, farms, and large enterprise businesses. A partial listing of these institutions is included in the appendix.

These subscribers are served through an all-new fiber build of middle-mile and last-mile construction.

Middle-Mile Fiber Constructed	Last-Mile Fiber Constructed	Subscriber Drop Fiber Constructed (70% take rate)	Total Fiber Constructed
432 Miles	527 Miles	1,194 Miles	2,153 Miles

This project will prefer aerial construction on existing utility poles in established Right-of-Ways. Middle-mile, last-mile, and subscriber drops will follow existing overhead utility to the home. Aerial construction type often reduces costs and expedites the construction process. Wecom will utilize underground construction as required for boring under paved ROW, where aerial utility does not exist, and for underground service entrances to subscribers where no aerial entrance exists.

Wecom and Our Commitment to the State of Arizona, Mohave County, and La Paz County

Wecom has been in the telecommunications business in Arizona for over 61 years, having been founded in 1956. The company was a C-Corp until 1980 and an S-Corp since that time. Wecom is privately owned, not publicly traded, and has not experienced any ownership or management changes in the last 10 years. Wecom is not part of a larger telecommunications conglomerate, which gives Wecom the flexibility to be agile, responsive, and proactive with customers' needs and growing demands. We can offer customers greater flexibility with design, higher performance, and better local support than our competitors.

5 Year Commitment Wecom commits to operate and maintain the network for a minimum of 5 years upon completion of the improvements.

Performing Infrastructure Construction Wecom maintains a valid Arizona Contractor Licenses, will perform and coordinate most of the network construction in-house. Wecom utilizes contractors for special construction and to help expedite construction in new service areas. These contractors include Integrated Cable & Splicing, HMW Construction, and others based on availability and bid.

- Wecom holds contractor licenses in Arizona (CR67 license #066605, KE license #075287) and is bonded to preform work in Arizona.
- Wecom holds Dun & Bradstreet (DUNS) number 041455015.
- Wecom is registered in SAM.gov, CAGE 3GWR4 with SAM ID Q3JNRNL6UKA1.
- Wecom FCC Registration Number (FRN) is 0001599976.
- USAC SAC for Lifeline, Affordable Connectivity Program, and other services is 845075.
- USAC SPIN for Schools & Libraries and Rural Healthcare is 143032163.

Intended Use of ABDG-Rural Funds Funds from ABDG-Rural will be used for the purchase of materials, hardware, engineering, construction labor, and electronics needed for building the middle-mile and last-mile connectivity to Arizona residents and businesses. Only qualifying costs per the ABDG-22 guidelines will be submitted for reimbursement as part of this grant.

Section 1.4 Relevant Information Within 24 months of the award date, Wecom plans to provide the unserved and underserved areas of Mohave County and La Paz County with gigabit fiber optic access, operating over the requested minimum of 100 Mbps download and 100 Mbps upload "100/100" at a very competitive, urban-market rate.

The proposed network will provide middle-mile redundancy across both counties and create redundant rings within cities in each county.

Wecom has no pending applications or requests for funding from any federal awarding agency for the project proposed in this application. Wecom can execute an agreement with the ACA within 60 days of the notification of grant award and start construction within 90 days of contract award.

Wecom will demonstrate financial capacity to pay incurred expenses while grant reimbursements are processed. Please see section D – Project Budget.

Census Tracts in Mohave County covered by this project, listed from North to South:

04015950402[1]
04015950401
04015950500
04015950600
04015950704
04015954800[1]
04015952400
04015952500
04015952600
04015953200
04015953402

[1]A portion of this Census Tract is not served as part of this project.

Mohave County NTIA NBAM Map.
Outside of the major population centers of Kingman, Bullhead City, and Lake Havasu City --the county has little to no coverage of 25x3 Mbps service.