| Date | Version |
|---|---|
| **April 2, 2025** | Original Release |
| **July 3, 2025** | Benefit of the Bargain Round v1.0 |

**Arkansas BEAD Program**

**Engineering Design Package for a Fixed Wireless Project/ULFW Project**

Prepare a "Network Design Packet" in a pdf format, with clear labeling, indication of scale and a comprehensive legend to explain symbols and abbreviations used on drawings. Adhere to relevant industry standards for wireless network design and construction.

**Sections**

**1. Cover Page (One Page)**
Include your organization name as it exists in the BEAD Application Portal, your project number, and the date of your submission.

**2. Narrative (One Page)**
Explain how the design supports the number of proposed locations served, speeds, and latency.

Specify construction methods and materials.

Specify the age and condition of existing infrastructure (towers, water towers, etc.) that will host the new equipment.

Locations of transceivers: Locations of all project area static client antennas.

- How many are purely co-locations and how many are upgrades? Do you have the signed collocation agreements in place?
- How many are new tower builds? Do you have a ground lease agreement in place? Do you have access and utility easement agreements in place if needed.

**3. Spectrum (One Page)**

- Include proof of Spectrum License if applicable.
- List your frequency band and ranges.
- List your FCC Technology Code: 70, 71, or 72[1]

**4. Permitting & Regulatory (Multiple Pages)**
List all applicable permits and regulatory requirements for your project area and your permitting schedule. These may include but are not limited to:

- Local and State Permits and Zoning requirements *in the project area*

[1] *Terrestrial fixed wireless technology codes from the Broadband Data Collection - Data Specifications for Biannual Submission of Subscription, Availability, and Supporting Data, Section 4.1.1.*

- RF-EMF and RF Interference and Intermodulation studies
- FCC ASR Form 854 (47 C.F.R. Part 17)
- FAA OE/AAA Notices (CFR Title 14 Part 77.9), and AM Studies
- Federal permitting including NEPA

**5. Network Design (Multiple Pages)**

Upload an industry-standard **network design diagram** (in PDF format), certified by a professional engineer.

| | | |
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| A[2] | Area map | • A high-level aerial view of the entire network area, showing the location and type of backhaul, locations of base stations/towers (existing or TBD). Include key landmarks and labeling of streets, etc. |
| B | Base Station Info | • Tower ID: Unique identifier of tower or vertical structure<br>• Latitude/longitude of each structure<br>• Number of Sectors: Number of sectors served in the area (if applicable)<br>• Total Possible BSLs: Total number of BSLs that can be served from the tower location |
| C | Coverage maps | RF Propagation Maps showing factors such as terrain, buildings, and other obstacles; cover all location area, include Interference Analysis |
| D | Network Capacity: Demonstrate that network capacity is designed to provide service to the relevant locations in the project area at the same time | • List of Tier 2 providers and the type of connections with the Tier 2 providers (backhaul)<br>• Manufacturer and model of base node<br>• Capacity model including:<br>o Vertical sitings,<br>o Calculations of expected data throughput in each area based on spectrum being used and standard usage models that collectively show an ability to deliver 100/20 Mbps at peak demand times to a set of simultaneous users in each coverage area<br>o Transmission power<br>o How will you plan for peak usage times and monthly per-subscriber data transferred |

[2] If your area of coverage is large, please submit as 4 quadrants, 1 per page

| | | |
|---|---|---|
| E | Security protocols | Describe your encryption protocols to protect data transmitted over the wireless link |
| F | CPE | Manufacturer and model of CPE |
| G | Certification Statement and Stamp | Engineer's professional stamp on the drawing signifying review and approval of the design, confirming that the network plan meets technical specifications. |

*Attachment A*

**Arkansas BEAD Program – Professional Engineer Certification**

I, [PRINTED NAME_____], am a licensed professional engineer in the State of [____] with license number [_____].

I have reviewed the plans, specifications, and documents related to the proposed project.

I certify that, to the best of my knowledge and belief, the design and planned construction of the project comply with all applicable laws, regulations, and codes.

The project has been designed and prepared in accordance with accepted engineering practices and standards.

The project will meet the minimum requirements within the guidelines provided.

The proposed network can deliver broadband service that meets the requisite performance requirements[3] to all locations served by the project

Signed _____ Date _____

[PE STAMP HERE]

[3] According to the BEAD NOFO, the performance requirements for broadband service considered "Reliable Broadband Service" are a minimum download speed of 100 Mbps and a minimum upload speed of 20 Mbps, with 95% of latency measurements falling at or below 100 milliseconds round-trip time.