

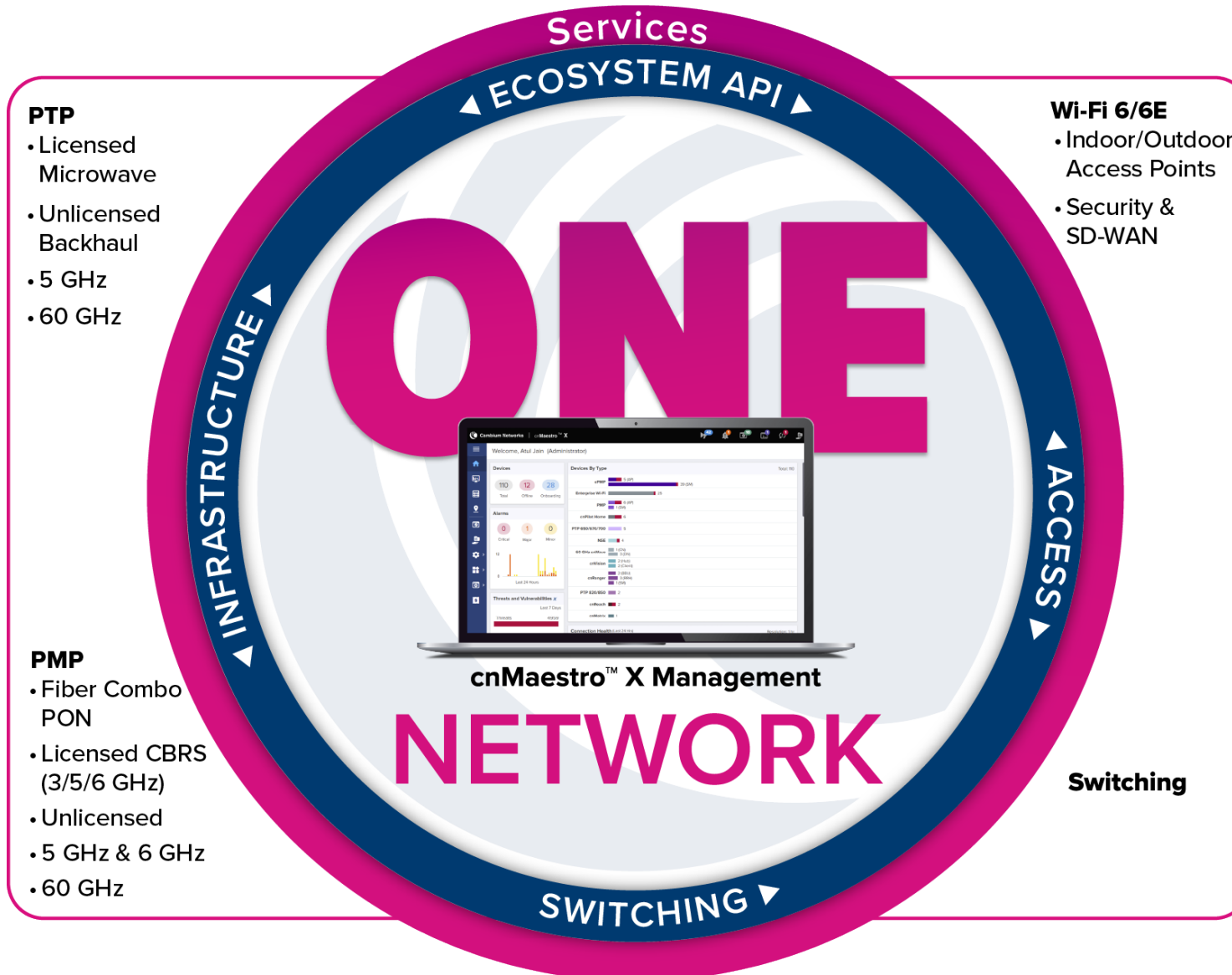


Cambium Networks™

How WISPs Win with New NOFO Rules and Cambium Networks

July 15, 2025

Cambium ONE Network Summary



ONE Network

Wi-Fi, switching, security & backhaul in one solution



Superior Performance

- Application optimized
- High density, long range



Simple to Operate

- Cloud managed
- Integrated automation



Economical

- Less equipment
- Lower TCO

1. **BEAD Rules Now Embrace Unlicensed Wireless and Low-Cost Solutions:** The updated NOFO removes fiber-first mandates and explicitly allows unlicensed wireless if performance benchmarks are met, opening a new path for WISPs to win funding.
2. **Cambium Delivers BEAD-Ready Performance:** With ePMP™, PMP 450v, and cnWave™, Cambium meets 100/20 Mbps+ with low latency, nLOS support, and BEAD-compliant interference mitigation.
3. **Superior ROI Compared to Fiber, LEO and Other Wireless Options:** Cambium's wireless solutions deliver service at \$200–\$350 equipment cost per location—faster, cheaper, and more scalable than fiber or satellite alternatives.
4. **Tools and Kits Accelerate Deployment:** cnMaestro and cnHeat streamline planning and management; limited-time starter kits help operators trial BEAD-ready gear at up to 50% off.
5. **Trusted Partners to Guide the Process:** Distribution partners like WAV/ISP Supplies, CTIconnect, Winncom, and Alliance offer turnkey support for grant writing, network design, and BEAD compliance.

What Changed?

- **Fiber is no longer mandatory; tech neutrality affirmed**
- **Low-cost, fast-deployment solutions are favored**
- **Priority project redefined: must deliver 100/20+, scalable, low-latency**
- **Unlicensed wireless eligible if performance benchmarks are met**
- **Local coordination, DEI, and rate-regulation requirements eliminated**

Cambium Products Meet BEAD Unlicensed Requirements



- ✓ Service Plans: 100 Mbps / 20 Mbps
- ✓ Latency: < 100ms
- ✓ Base Capacity: 5 Mbps simultaneous per customer
- ✓ Scalability
- ✓ Interference Mitigation
- ✓ cnHeat and LINKPlanner create defensible coverage maps
- ✓ Economics



Addressing the National Telecommunications and Information Administration's Broadband Equity, Access, and Deployment Program Unlicensed Fixed Wireless Service Requirements with Cambium Networks' Solutions

This document was authored by Cambium Networks to provide insight to our customers on techniques used to mitigate interference on our ePMP™, PMP 450, and cnWave™ 60 GHz networks, and support their efforts in addressing the Unlicensed Fixed Wireless Service Requirements reflected in Appendix A of the National Telecommunications and Information Administration's Broadband Equity, Access, and Deployment (BEAD) Program: BEAD Restructuring Policy Notice published on June, 6, 2025. The material can also be freely used to prepare responses to state broadband committees seeking evidence that they provide the required service in a defined geographic area, thus preventing overbuild, or to prepare grant applications for BEAD funding.

Please contact Cambium Networks with any questions, requests for assistance with responding to state grant committee requirements, or requests for additional supporting materials.

Appendix A of the BEAD Restructuring Policy Notice, published on June 6, 2025, and titled *Unlicensed Fixed Wireless Service Requirements*, outlines several examples of strategies that unlicensed fixed wireless providers may implement to mitigate potential interference. The table below summarizes how Cambium Networks supports each of these recommended strategies, along with references to the relevant sections in this document that detail the corresponding features.

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Download the whitepaper:
www.cambiumnetworks.com/bead-program-funding/

- **Comprehensive Interference Mitigation**
 - Cambium systems use beamforming, GPS synchronization, narrow beam antennas, down-tilt, OFDMA, and channel puncturing to dynamically minimize interference and optimize signal quality in real-time.
- **Advanced Non-Line-of-Sight (NLOS) Operation**
 - Features like single-stream fallback, Golay codes, and smart beam steering enable reliable service in difficult NLOS conditions, including foliage and urban clutter.
- **Adaptive Spectrum and Power Management**
 - Radios support automatic channel selection (ACS), adaptive CCA thresholds, and automatic power control to reduce noise impact and improve spectral efficiency in unlicensed and hybrid bands.
- **High Spectral Efficiency and Scheduling**
 - Cambium leverages MU-MIMO, intelligent schedulers, air fairness, and rate adaptation to maintain performance across dense deployments with 60–120 users per AP.
- **Integrated Coordination Tools and Protocols**
 - Supports both AFC (6 GHz) and SAS (CBRS) protocols to operate legally in shared spectrum, and includes planning tools (cnHeat, LINKPlanner) for interference-aware network design.

- **End-to-End Scalability**
 - Scales users, throughput, coverage, geography and services with TDD Synchronization and Centralized Network Management
- **Smart Traffic Management**
 - CIR/MIR and airtime fairness maintain QoS and low latency
 - QoE (Quality of Experience) for application specific prioritization
- **High-Efficiency Radio Tech**
 - Beamforming, MU-MIMO, and high modulations (e.g. 4096QAM) boost capacity and performance
- **Channel Aggregation & Load Balancing**
 - Dynamically selects best channels to optimize throughput and avoid congestion

cnHeat generates highly accurate RF predictions and derivative services that precisely represent the reality of the RF world. (2 – 5 GHz as well as 28 GHz and 60 GHz)

cnHeat supports LOS/NLOS

- 2 – 5 GHz

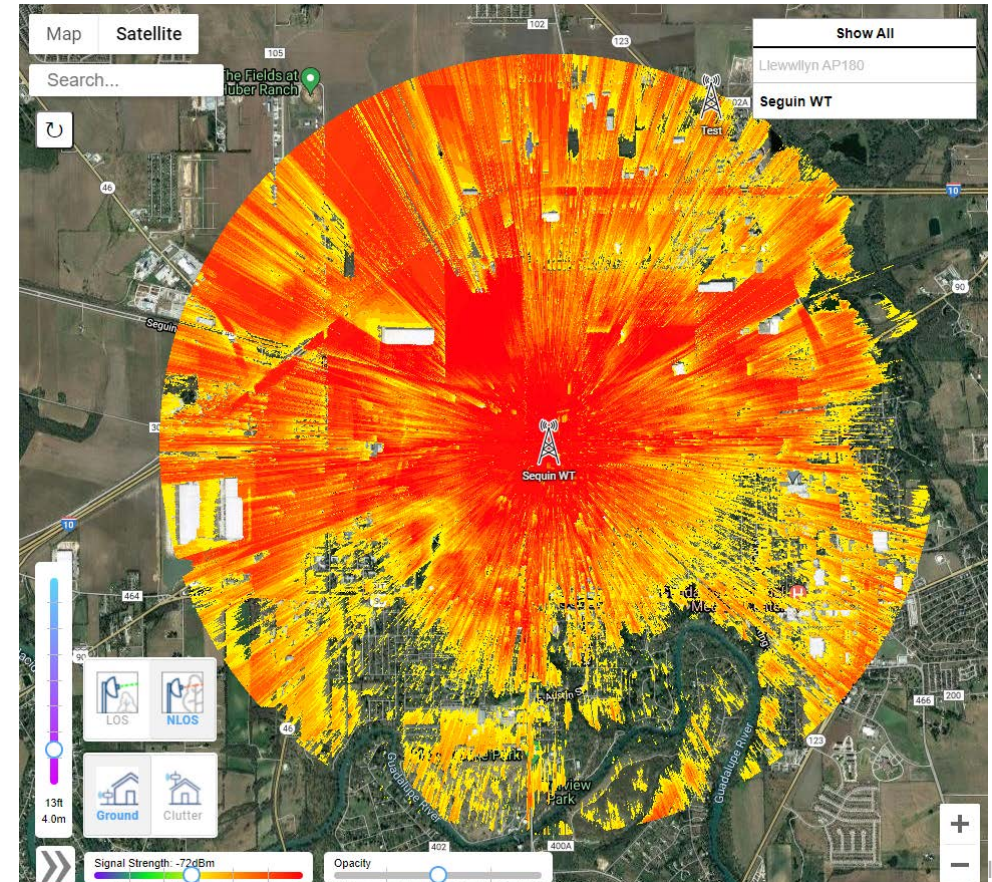
cnHeat supports LOS only

- 28 / 60 GHz

Best in class nLOS/NLOS propagation model

- Going through trees
- Diffracting around trees and buildings

Know optimal install height at every square meter instantly!



cnHeat Capability

cnHeat works due to use of high-resolution GIS data (Using LIDAR data)

GIS data at 1-meter resolution (shown to right)

Provides an accurate representation of

- Terrain
- Clutter (buildings and trees)

cnHeat coverage maps use high performance computing

- 100-900x more computations than competitive solutions



Plan sites with optimal coverage

- Maximize covered customers with cnHeat 2.0
- Determine optimal site height / AP mount locations
- Save time / money for site configuration
- Confidently respond to grants

Market with results

- Extremely accurate building location data
- Allows for best-in-class targeted marketing campaigns

New Feature

- Form 477 and BDC Reporting

Pre-qualify customer installs

- Avoid failed installs
- Quicker successful installs
- More installs per day
- Decreased costs per install (labor and machinery)
- Share certainty of service with customer in minutes



- **Cost-Efficiency is Key**
 - States must deliver the "Benefit of the Bargain" for taxpayer dollars
- **Technology Neutrality Enforced**
 - Wireless and satellite are eligible if they meet performance standards
- **Fiber Not Required**
 - States may reject expensive fiber builds if lower-cost options exist
- **Selection Scoring**
 - Prioritizes lower BEAD subsidy, speed to deploy, and affordability

DEPARTMENT OF COMMERCE NTIA Broadband Equity, Access, and Deployment (BEAD) Restructuring Policy Notice

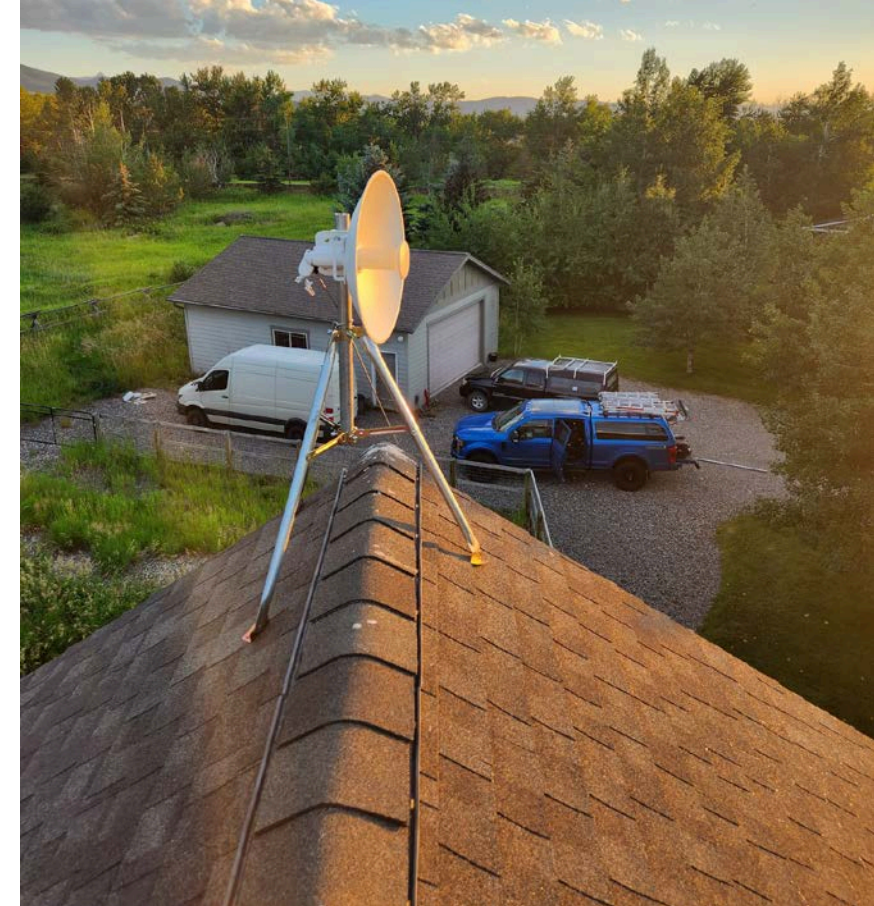
"...guidance for Eligible Entities...to ensure American taxpayers obtain the greatest value for their broadband investment or 'Benefit of the Bargain' under the BEAD Program."

Example: ePMP 4600 Is Value Leader in 6 GHz Lightly Loaded or Dense Sectors

	Subscribers per Sector	Estimated Street Price per Line (AP and SM hardware)	Other Guys
Light Sector	10	~ \$370	~ \$2,000
Medium Sector	20	~ \$360	~ \$1,400
Dense Sector	100	~ \$250	~ \$850

- ✓ 6 GHz is clean spectrum (including up to 160 MHz)
- ✓ Provides performance over range (including up to 4096QAM)
- ✓ Superior market price
- Unquestionable ROI leadership

Every existing 5 GHz sector from any supplier is a candidate for a 6 GHz overlay. Cost effectively offload congested sectors → lower churn, upgrade service plans and ARPUs.



3 Approaches for WISPs

1

Prevent BEAD-funded overbuilds where you already provide 100/20 coverage

2

Re-submit previous BEAD requests to include low-cost wireless alternatives

3

Consider submitting a new BEAD application based solely on unlicensed wireless technologies.

Actions you can take today:

- Request a BABA waiver:
 - <https://www.cambiumnetworks.com/bead-build-america-buy-america-certification/>
- Save on starter kits (ePMP, PMP 450, Fiber, cnWave 60GHz):
 - <https://www.cambiumnetworks.com/promotions/bead-nofo-special-north-america/>
- Use cnHeat to report your coverage:
 - <https://www.cambiumnetworks.com/products/software/cnheat/>

Experience the Breakthrough Advances of the Latest Cambium PMP Solutions with a Starter Kit at Up to 50% Off List Price

- One (1) ePMP 4500 or ePMP 4500L access point (AP) and four (4) Force 4525 subscriber modules (SM)
- One (1) ePMP 4600 or ePMP 4600L AP with a sector antenna and four (4) Force 4625 SMs
- One (1) PMP 450v AP with four (4) 2x2 SMs or four (4) 4x4 SMs
- One (1) cnWave 60 GHz with V5000 and two (2) each of V3000, V2000, V1000



 **BEAD NOFO SPECIAL**

- Deliver 100/20 Mbps or better
- Lowest cost per location
- Built for rural scale and speed

Attention US WISPs: Get Your Starter Kits!

PMP 450v ♦ ePMP ♦ cnWave 60 GHz



GRANT WRITING
SERVICES



**BROADBAND
EQUITY, ACCESS, &
DEPLOYMENT PROGRAM**



Winncom Grant Writing Assistance Program

We support service providers through every phase of the BEAD application process with expert resources and actionable insights.

Our Services Include:

- **Project Area Selection** – Target the most competitive areas using eligibility data and funding priorities
- **Advanced Network Design** – Customized heat maps with overlays for Towers, BSLs, CAIs, and Project Areas
- **Comprehensive Grant Support** – Full narrative development, budget modeling, technology plans, and performance justifications

Simple, Transparent Billing

Rate: \$500/hour

Typical Investment:

- Prequalification: 20 Hours
- Application: 30–40 Hours

Reimbursement Guarantee

Whether you win or not, you'll receive a **75% credit towards product purchases** from any vendor in our portfolio.

Example:

\$25,000 total service cost
> \$18,750 credit

*Credit applies to **any vendor product** in the Winncom portfolio.*



Supplying BEAD-Compliant Equipment and Expertise to Build Next-Gen Wireless Networks



Broadband Access &
Private Wireless Networks



LMR & Two-Way
Communications



DAS & In-Building Solutions



Power Systems & Enclosures



Fiber & Structured Cabling



Wireless Infrastructure

Dan Soles | Director of Broadband Solutions



813-523-6975



Dsoles@alliancecomm.com



Jeff Holdenrid | Director of U.S. Commercial Sales



704-604-6093



Jholdenrid@alliancecomm.com



WAV & ISP Supplies: Supporting Your BEAD Strategy

Your Trusted Distribution Partner for BEAD Success

Value-added services to help you maximize BEAD funding and accelerate deployments:

- **Sales Consultation** – Navigate BEAD opportunities with dedicated account support
- **Product Guidance** – Get expert recommendations tailored to BEAD-compliant solutions
- **Design Services** – Lean on our engineering team for FWA and fiber planning
- **Staging & Kitting** – Streamline your deployments with preconfigured, ready-to-install gear



7 Stocking Locations Across North America

Supporting timely fulfillment and project readiness wherever you are



CTIconnect™

CTIconnect offers full turnkey site kitting of cabinets, cables, routers, power shelf, backup power, load center, air conditioning, access points and backhaul.

- *Shipped to the site and fully configured and ready to plug in and go.*
- *Power and cabling solutions to support your Cambium FWA networks.*
- *A full suite of BABA compliant products for your BEAD deployments.*

CTIconnect also offers consulting and services to get you to market faster.

- *BEAD consulting, grant assistance, heat mapping, backhaul licensing.*



Contact CTIconnect to help with your BEAD strategy!
sales@CTIConnect.com | www.cticonnect.com

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