



September 10, 2024

TO: DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Broadband Equity, Access, and Deployment (BEAD) Program: Alternative Broadband

FROM: MIMOSA NETWORKS, INC.
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ACTION: [Mimosa Response] Proposed BEAD Alternative Broadband Technology Guidance

Mimosa Networks Comments in Response to the National Information and Telecommunications Administration's Proposed BEAD Alternative Broadband Technology Guidance Request for Comment

Mimosa Networks (Mimosa) appreciates the opportunity to provide comments in response to the Proposed BEAD Alternative Broadband Technology Guidance shared by the National Telecommunications and Information Administration (NTIA).

Mimosa's Shared Expertise with Respect to Alternative Broadband Technologies

Mimosa is a pioneering force in wireless broadband solutions, offering service providers a cost-effective alternative to traditional fiber and licensed spectrum wireless broadband for connecting dense urban areas and challenging rural locations. With over one million radios deployed for hybrid fiber-wireless architectures with support for both point-to-point (PTP) and point-to-multipoint (PTMP) connections, Mimosa products serve a wide range of applications—from high-speed internet for residential and business use to surveillance, public safety, education, and hospitality networks. Mimosa has PTP and PTMP solutions that meet and exceed BEAD requirements for deploying broadband service to unserved and underserved locations with minimum speeds of 100 Mbps DL /20 Mbps UL. These solutions also exceed the latency performance tiers, beating out the capabilities of any copper, coaxial, or satellite-based solutions. Mimosa's technology excels in maximizing spectral efficiency, enabling the efficient and reliable sharing of scarce spectrum resources across multiple networks.



The Value of Encouraging All Alternative Broadband Technologies that Meet BEAD Requirements

Alternative Technologies will play a large role in closing the divide and providing true broadband access across unserved and underserved locations given the breadth and depth of the need. We strongly believe that the NTIA's guidance should include **all** technology that meets BEAD requirements rather than emphasizing a single technology.

While we appreciate the NTIA providing this guidance, as currently proposed the document focuses on a single Alternative Technology (LEO). There is only a brief mention of a second technology, Unlicensed Fixed Wireless (ULFW), as an option. The lack of guidance for ULFW technologies, as well as any other Alternative Technology that meets BEAD requirements, may have the unintended consequence of discouraging other truly acceptable options being submitted.

We strongly suggest the NTIA provide equal-footing guidance for any technology that meets BEAD requirements and not reduce or otherwise alter BEAD requirements for Alternative Technologies. There are in fact Alternative Technologies that meet the 100Mbps requirement as well as have proven reliability in line with BEAD requirements.

ULFW broadband solutions have been proven to provide high performing and reliable broadband access with ability to meet BEAD requirements, as substantiated by the over five million homes connected through more than 2000 WISPs in the US. The Preseem 2024 Q1 Fixed Wireless Network Report referenced in the proposed guidance indicates that unlicensed band FWA can achieve over 100Mbps, even at the 95th percentile.

This is evidenced in real world deployments as well. For example, three of the of WISPs that are directly working in the types of markets addressed by BEAD have voiced their support for Unlicensed Fixed Wireless based broadband solutions. Kent Urwiller, owner of Prairie Hills Wireless, Rory Conway, CEO of Triad Wireless, and Kevin Fisher, Co-Founder & Chief Product Officer of Sail Internet are supportive of this response. They each affirm ULFW has been proven to provide high performing and reliable broadband access to customers meeting the requirements of 100 Mbps DL and 20 Mbps UL speed, even delivering consistent download speeds over 100 Mbps. Sail Internet currently offers ULFW based broadband access to customers with speeds of 200 Mbps in DL and 100 Mbps in Uplink, far exceeding BEAD requirements. They agree that, compared to other Alternative Technologies, the ULFW based broadband solution leads to higher customer satisfaction and greater affordability of services which is key to successful broadband adoption.

ULFW provides broadband access that satisfies and even exceeds the throughput and latencies requirements of the BEAD program. ULFW solutions have provided up to Gbps broadband access to customers in many geographical areas. In addition, with the recent



approval for the use of the 6GHz band and Wi-Fi automated frequency coordination (AFC) Management Systems, ULFW solutions have up to 850MHz of additional spectrum available for providing broadband access. This is approximately five times the amount of spectrum held by most 5G operators, which is spectrum that must be shared among fixed wireless access and mobility customers.

With the availability of the AFC systems to protect incumbent users and the large quantum of spectrum available for frequency agility, the 6GHz band provides the spectral resources necessary to enable local Internet Service Providers (ISPs) to provide reliable broadband service across the Broadband Serviceable Locations (BSLs). This important spectrum resource was not available to ULFW providers at the start of the BEAD program. However, with the ability to now use this resource, ULFW technology providers have a much more powerful tool for delivering on BEAD objectives and requirements.

Whereas LEO broadband access is an up-and-coming technology with promise for covering even the most remote areas, the ability for LEO to consistently meet BEAD requirements for throughput and latency has several dependencies. In fact, in results published by Ookla (*Research article dated 11 December 2023*), median LEO throughput has not achieved the 100Mbps requirement set forth for BEAD.

ULFW based solutions provide capacities and throughput rates exceeding BEAD requirements, and the continued evolution of ULFW technologies will lead to even higher capacities in the future.

Shared/unlicensed spectrum access allows for more efficient spectrum usage, higher capacity, and new deployments, extending broadband reach to rural parts of America that do not have access to licensed spectrum. Unlicensed spectrum provides a lower barrier of entry (spectrum is available for use free of licensing fees) for ISPs which leads to lower cost of deployment, and ULFW has a much broader global ecosystem of baseband and RF components than satellite. This not only multiplies capacity on a regular upgrade path but, more importantly, also optimizes the cost of Base Station and End Point equipment. Compared to other Alternative Technologies, this leads to customer equipment that is extremely affordable and easy to install, key to successful broadband adoption.

The vast chunk of unlicensed spectrum (over 1300 MHz) in 5Ghz and the 6GHz band enable the use of large 160 MHz channels to deliver Gigabit speed even over long-distance rural applications. In addition to large channel sizes, some ULFW solutions also introduce TDMA capabilities, integrated GPS, and beamforming with TX/RX nulling — all which dramatically reduce the impact of in-channel and adjacent channel noise to delivery near-reliable connectivity. These new techniques provide greater than 10 dB SNR improvement in noisy conditions, while also operating in the much quieter 6 GHz noise floor, making it possible to also achieve 1024 QAM modulations for much higher data rates. These technologies, together with simultaneous Multi-



User MIMO, greatly increase spectral efficiency enabling significantly larger subscriber client density per sector with lower latency.

If the NTIA were to provide guidance for multiple Alternative Technologies, such as ULFW, the thousands of small and medium ISPs in the US would benefit from greater choice as well as have a better opportunity to bid for BEAD funding.

The features and requirements suggested below are based on our years of experience in designing ULFW solutions that deliver carrier grade performance and reliable broadband service.

1. ULFW solutions should support TDMA as the channel access method to have a more reliable, scalable solution supporting larger subscriber client count density per sector.
2. ULFW Base Stations should support Integrated GPS to ensure a synchronized ULFW network and dramatically reduce in-channel and adjacent channel noise.
3. ULFW solutions should support three (3) or more MU MIMO to ensure the highest capacity per allocated channel with further reduced latency.
4. ULFW base Stations should support Beamforming with TX/RX nulling to efficiently manage interference in noisy conditions.

Mimosa Responses to BEAD Alternative Broadband Technology Policy Notice Additional Areas for Input

Note that we are only providing input where we can offer a unique perspective or have a specific concern we feel needs to be raised.

Question 1. *"In recognition of this, should NTIA allow Eligible Entities to make a supplemental reimbursement payment to recipients of LEO Capacity Subgrants early in the period of performance? Alternatively, should NTIA allow Eligible Entities to compensate a recipient of a LEO Capacity Subgrant for all BSLs in a project area—regardless of subscription rates—in the early years of the period of performance?"*

Any technology that has been deployed in project areas initially for purposes other than BEAD considerations should not be eligible for supplemental reimbursement. Subgrants should not be made to recipients for any technology, including satellite, that has not been deployed solely for the BEAD Project. This would reduce the amount of funding available to providers focused on delivering broadband service to unserved and underserved areas.

To maintain a level playing field, providers intending to use Alternative Technology should not be compensated for BSLs in a project area, regardless of subscription rates, even in the early years of the performance period.



Question 2. *"Even when subscription rates in a project area stabilize, recipients of LEO Capacity Subgrants will presumably need to hold in reserve a small amount of network capacity to dedicate to new subscribing BSLs in a project area. To account for this, should NTIA allow Eligible Entities to employ a tiered subscription reimbursement structure?"*

The proposed tiered subscription reimbursement structure solely benefits one specific technology and encourages subgrantees to only meet a minimum subscriber target. This approach is counter to the objective of having universal coverage providing broadband access to all BSLs in unserved and underserved Project Areas.

A level playing field is absolutely necessary to ensure the thousands of ISPs using Alternative Technologies can choose the best solutions to deliver dedicated broadband capacity, with an inherent incentive to maximize the number of BSLs. Guidance prescribing special objectives for a single technology is contrary to the drive for a truly competitive marketplace that delivers the best in quality and price to the largest number of users.

Question 3. No response.

Question 4. *"Are there issues not addressed in this guidance that might dampen participation in the BEAD program by Alternative Technology providers?"*

Section 3.2 of the proposed guidance includes the following statements: *"Case 2 requires the Eligible Entity to determine whether an Alternative Technology provider serving some or all locations in the project area can demonstrate that it currently meets the BEAD Program requirements. If Alternative Technology service is already meeting BEAD program requirements, then BEAD funds are not necessary for those locations and will not be allowed."*

To this point, the policy is very important and protects the investments made by the thousands of ISPs that provide critical broadband services today.

However, section 3.2 continues to state the requirement for demonstrating capacity as the following: *"To show technical capacity, existing Alternative Technology providers must demonstrate that they can provide a capacity of at least 5 Mbps or a usage allowance of 2 terabytes (TBs) per month for each broadband serviceable location (BSL) in the project area within four years."*

Though we understand the concept of oversubscription, requiring existing providers to only demonstrate 5Mbps undercuts the core NTIA objective of providing true broadband of 100Mbps Downlink and 20Mbps UL.



To maintain equality of requirements for ALL technologies (Reliable and Alternative), providers of any existing Alternative Technology must be required to demonstrate simultaneous delivery of 100Mbps/20Mbps to all, or a majority, of BSLs in the project area.

As currently written, this particular guidance could prevent any other Alternative Technology from being deployed, even in areas where other technologies may be better suited to provide the capacity, consistent throughput, and scaling necessary to ensure broadband access that meets BEAD requirements. This could further dissuade local service providers from seeking to participate in the BEAD Program.

It is our suggestion that section 3.2 be modified to maintain compliance with the 100Mbps/20Mbps BEAD program requirements.

In addition, we suggest new service areas deployed with Alternative Technologies be required to implement the features and requirements enumerated below. These are based on our years of experience in designing ULFW solutions that deliver carrier grade performance and reliable broadband service.

1. Solutions should support TDMA as the channel access method to have a more reliable, scalable solution supporting larger subscriber client count density per sector.
2. Solutions should support Integrated GPS to ensure synchronized networks and dramatically reduce in-channel and adjacent channel noise.
3. Solutions should support three (3) or more MU MIMO to ensure the highest capacity per allocated channel with further reduced latency.
4. Solutions should support Beamforming with TX/RX nulling to efficiently manage interference in noisy conditions.

Question 5. *"For Eligible Entities that elect to make LEO Capacity Subgrants, NTIA will issue a no-cost extension of the period of performance for the Eligible Entity's grant."*

Please clarify the reasoning for extending the period of performance when LEO Capacity Subgrants are used. Question number 6 indicates that LEO providers may be able to substantially accelerate the service timeline, since services may be able to be deployed without the construction of additional terrestrial infrastructure. Given the ability to accelerate services timelines, why would the period of performance need an extension? What would be the conditions for such an extension?

We sincerely believe this impacts the thousands of ISPs, jobs, and opportunities in rural America to provide affordable 100Mbps broadband service. The proposed model is a regressive model that will keep our rural communities rooted in underserved status and from advancing with access to true broadband service.



Question 6. *“To account for these considerations, should NTIA consider alternative LEO reimbursement models where LEO subgrantees may begin providing service and receive corresponding grant funds through LEO Capacity Subgrants before certifying the completion of network build out?”*

As stated previously, this proposed alternative reimbursement model would provide preferential treatment for a single technology, creating different rules and requirements as compared to those that must be followed by other technologies and service providers. This would allow such subgrantees to be paid for available shared capacity and services in a specific project area rather than for building committed capacity verified through submission of corresponding completion certificates. Such a model would create an uneven playing field to service providers using other Alternate Technologies that may be better suited for BEAD grants that create committed capacity for universal broadband services.