

Re: NTIA-2024-0001 - BEAD Alternative Broadband Technology Policy Notice

Date: 5 September 2024

Dear Assistant Secretary Davidson and NTIA Staff,

I write on behalf of WiFrost Inc., a California based fixed wireless company pioneering the use of 4G/LTE technology in the TV White Space (TVWS) spectrum to deliver broadband in rural and underserved areas. We commend NTIA for its thoughtful approach to incorporating alternative technologies in the BEAD program, as outlined in the Alternative Broadband Technology Policy Notice.

1. Commendation for Flexible Approach

We applaud NTIA's recognition that alternative technologies play a crucial role in achieving universal broadband access. The three-case framework for evaluating existing deployments provides a clear path for consideration of technologies like TVWS.

2. TVWS as a Proven, Robust Alternative Technology

WiFrost's TVWS technology aligns closely with BEAD's goals and has a proven track record:

- a. Global Deployments:** We have successfully implemented 40+ deployments across 8 countries, demonstrating the scalability and adaptability of our solution.
- b. Performance:** Our current 4G LTE TVWS solution delivers 90/10 Mbps service, with a clear upgrade path to 200/50 Mbps using 5G technology. This exceeds the 100/20 Mbps BEAD minimum and approaches gigabit-class service.
- c. Latency:** WiFrost TVWS solution offers low-latency performance (<30ms) well below the 100ms requirement, enabling real-time applications critical for telehealth, remote work, and distance learning.
- d. Capacity:** Our network design ensures at least 5 Mbps dedicated capacity per location, meeting the proposed standard for alternative technologies.
- e. Cloud-Native Management:** Our 100% cloud-native Network Management System (NMS) enables efficient, scalable operations and management of TVWS networks.

3. Cost-Effectiveness and Rapid Deployment

TVWS technology offers significant advantages in rural and challenging environments:

- a. Lower infrastructure costs compared to fiber deployments
- b. Superior propagation characteristics, with proven Non-Line-of-Sight (NLOS) range 2-3x that of CBRS band equipment based on field trials
- c. Ability to rapidly deploy and begin service provision, potentially well before the 4-year deadline
- d. Leverages existing infrastructure, augmenting CBRS deployments by using the same towers, backhaul, and power systems to extend coverage

4. Complementary Role in Broadband Ecosystem

TVWS is uniquely positioned to fill critical gaps in broadband coverage:

- a. Ideal for sparsely populated areas where other technologies are cost-prohibitive
- b. Extends coverage beyond the reach of higher frequency bands like CBRS and 5/6 GHz
- c. Excels in challenging terrain and high-clutter environments where other wireless technologies struggle

5. Spectrum Efficiency and Rural Focus

TVWS makes efficient use of the otherwise fallow spectrum, aligning with federal goals for spectrum utilization. Its superior propagation characteristics make it particularly well-suited for sparse rural populations that are often the most challenging to serve with traditional technologies.

6. Recommendations

We respectfully suggest the following considerations:

- a. Ensure TVWS and other unlicensed technologies are explicitly included in the definition of Alternative Technologies eligible for BEAD funding.
- b. Consider TVWS's unique advantages in propagation and obstacle penetration when evaluating cost-effectiveness compared to other alternative technologies.

- c. Recognize the upgrade path of TVWS to higher speeds, allowing initial deployments that meet BEAD minimums with a clear roadmap to gigabit-class service.
- d. Acknowledge the complementary role of TVWS in extending and enhancing existing CBRS and other fixed wireless deployments.
- e. Maintain technology neutrality in evaluation criteria, focusing on delivered performance and cost-effectiveness rather than specific technology choices.

We appreciate the opportunity to comment on this important policy notice. TVWS technology, as demonstrated by WiFrost's global deployments, stands ready to play a significant role in closing the digital divide, particularly in the most challenging rural environments. We look forward to working with NTIA and Eligible Entities to leverage this powerful tool in achieving BEAD's ambitious goals.

Sincerely,

Umair Qayyum
Chief Technology Officer and Co-Founder

WiFrost Inc.
Palo Alto
California

A handwritten signature in black ink, consisting of stylized, overlapping loops and strokes, representing the name Umair Qayyum.