A Cloudy Future for 6 GHz Wi-Fi, but Clear Skies Above

By Peraso Inc.

As the demand for ultra-fast, reliable wireless connectivity has surged in recent years, the sub-6 GHz unlicensed spectrum has become heavily congested and unsuitable in many areas for reliable ISP service delivery. Additional spectrum above 6 GHz was allocated in 2021 bringing hope for further expansion affordable of unlicensed band service. Now a proposed Senate budget reconciliation bill could reduce or reallocate parts of the 6 GHz band currently used for unlicensed Wi-Fi. If enacted, this move threatens to curtail the rollout of Wi-Fi 6E, Wi-Fi 7 and other next-gen technologies that rely on this spectrum.

Wireless Internet Service Providers, consisting of a vibrant group of small and medium businesses, rely on unlicensed spectrum to provide affordable service to urban, suburban, rural and underserved populations. These local providers lack financial resources to compete with large carriers in auction-based models. Growing discussions in Washington around auctioning off the 6 GHz spectrum threaten to lock them out of essential spectrum needed to expand or maintain service. This policy shift, biased toward large operators, could further entrench the digital divide, leaving many communities without viable broadband options.

Congestion and Complexity: The Hidden Costs of 6 GHz Wi-Fi

The utility of the 6 GHz band as a reliable medium for internet service faces challenges even if all, or a portion, of the 6 GHz band remains unlicensed. The spectrum which is clear today will evaporate quickly as consumer adoption ramps up to saturation levels in a few years. Additionally, the requirement to include Automated Frequency Coordination (AFC) for outdoor applications adds cost and complexity to system hardware.

While the battle for a small spectrum slice of about 1 GHz looms, there is 14 GHz of unlicensed spectrum free from regulatory turbulence available today and already

utilized by many WISPs to provide reliable, fiber class service: 60 GHz mmWave.

Why 60 GHz Is the Right Fit for High-Density Environments

Lower-frequency Wi-Fi bands (like 2.4 and 5 GHz) are crowded and prone to interference, especially in dense urban areas. By contrast, the 60 GHz band offers fiber-class multi-gigabit wireless performance with minimal interference. It's an ideal solution for congested environments where traditional Wi-Fi fails to keep up.

Today, Peraso is the dominant provider of 60 GHz mmWave technology with over 1 Million fielded radio terminals. Backed by decades of mmWave and phased array innovation, Peraso's chipsets and modules are optimized to deliver high-capacity, low-latency connections, even in the most complex urban deployments.

Solving Real-World Urban Connectivity Challenges

Urban deployments come with tough constraints including crowded spectrum, physical barriers and infrastructure costs. Peraso's technology directly addresses these pain points:

- **Fiber class performance:** True multi-gigabit throughput, without trenching or aerial fiber stringing.
- **License-free spectrum**: Rapid market entry. No costly auctions or requirement for frequency coordination
- **Energy-efficient:** Suitable for solar or battery-powered deployments in power-unstable areas
- **Communication security**: Narrow antenna beams at mmWave frequencies provide a level of inherent signal security and are hard to intercept or jam
- **Relief from congestion**: Free from common Wi-Fi and other consumer wireless interference, the 60 GHz band enables reliable, smoother service in high-density zones.
- **Scalable**: Peraso's network protocol can support 48 clients per sector which can scale to over 250 clients per tower. Furthermore, beamforming and intelligent network isolation techniques mitigate potential interference between neighboring 60 GHz networks.

- **Cost-effective:** 60 Access Point and CPE terminal equipment are very affordable supporting Grow-as-you-go deployment with low up-front cost for baseline infrastructure. Hardware from Peraso's partners has also earned a reputation for reliability and longevity resulting in low long-term cost of ownership.

A Smarter Way to Bridge the Digital Divide

Millions of Americans still lack access to high-speed broadband, especially in underserved urban pockets where fiber deployment is costly or logistically impractical. With low infrastructure requirements and rapid deployment capability, Peraso's 60 GHz technology empowers ISPs and service providers to reach these markets quickly and cost-effectively.

The result? Faster internet to underserved communities, reduced customer churn and scalable growth opportunities, without the red tape of spectrum auctions or large-scale cellular deployments.

A Clear Path Amid Uncertainty

With the future of 6 GHz Wi-Fi hanging in the balance, providers and equipment makers are left with difficult decisions. But the need for fast, reliable and secure connectivity doesn't pause for politics. If you're a WISP, network builder, or community broadband advocate, now is the time to explore 60 GHz mmWave.

60 GHz mmWave isn't just an alternative, it's a proven, scalable solution. Peraso is at the forefront, delivering the performance, flexibility and freedom from regulatory hurdles that next-generation networks require.

When spectrum becomes congested and legislation delays progress, 60 GHz clears the way. It's not just the future of wireless, Peraso's 60 GHz technology is leading the charge and making an impact today.

Connect with us to explore certified 60 GHz equipment or find the right partner solution for your needs.