



Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

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In the Matter of	)	
Unlicensed Use of the	)	ET Docket No. 18-295
6 GHz Band	)	
	)	
Expanding Flexible Use	)	
In Mid-Band Spectrum	)	GN Docket No. 17-183
Between 3.7 and 24 GHz	)	
	)	

**Ex Parte of the American Consumer Institute**

The American Consumer Institute Center for Citizen Research (ACI) is a nonprofit (501c3) educational and research institute with the mission to promote economic welfare by improving the understanding and impact that public policies and regulations have on consumers. ACI analyzes and projects the interests of consumers in selected legislative and rulemaking proceedings in information technology, health care, insurance, energy, and other matters.

ACI submits this *ex parte* in response to the Notice of Proposed Rulemaking released by the Federal Communications Commission (“Commission”) in the above-referenced dockets in regard to the proposal to expand unlicensed use of 1.2 Gigahertz of spectrum, located between 5.925 to 7.125 GHz (referred to as the *6 GHz band*).<sup>1</sup> The Commission is seeking comments on

<sup>1</sup> Proposed Rule in the Matter of Unlicensed Use in the 6 GHz Band, Federal Communications Commission, 83 FR 64506, ET Docket No. 18-295 and GN Docket N. 17-183, published December 17, 2018, <https://www.federalregister.gov/documents/2018/12/17/2018-26013/unlicensed-use-of-the-6-ghz-band>.

its proposal to give away, without auctioning, this spectrum for Wi-Fi and other unlicensed purposes.

In our comments, we discuss why allocating mid-band spectrum for 5G services should be the Commission's top priority in this matter. More specifically, having sufficient Wi-Fi and unlicensed spectrum to offload 5G traffic should be secondary to making sure that there is sufficient 5G traffic to offload. In other words, by not allocating this mid-band spectrum to 5G, there will be less wireless traffic than otherwise, and less need to offload that traffic using unlicensed spectrum.

However, we do see both unlicensed and licensed spectrum as essential to meeting a broad array of consumer communications needs and spawning investment and innovation. As such, we recommend that the Commission split the 1.2 GHz of spectrum between unlicensed/Wi-Fi (say, 600 MHz of the 5.925 to 6.525 band) and licensed 5G (say, 600 MHz of the 6.525 to 7.125 band), and do so for the following reasons:

#### **1. Economics and Finance**

The allocation of spectrum to the private sector should be based primarily on public auctions for the goal of attaining its highest and best use in the marketplace. Besides some public purposes, such as for national security and first responder uses, giving it away for private use is counter to the goal of attaining the highest and best use, creating an appearance of corporate welfare. Auctions are the best means to balance public interest and private interest, while reducing the influence of lobbyists and rent-seekers looking for free spectrum. We should not replace private stewardship for the tragedy of the commons. The Commission would be best served by sharing this spectrum for both licensed and unlicensed uses.

First, the absence of mid-band spectrum creates unseen costs for 5G operators and consumers. By removing this spectrum from licensed operators, without a plan to provide 5G operators mid-band spectrum beyond 2020, the Commission creates an opportunity cost. By limiting the availability of this spectrum, the Commission would create a mid-band imbalance

between wireless operators, adding to a spectrum shortage for some operators, requiring a patchwork of additional small cells to reach consumers, and raising 5G buildout costs for some to overcome these shortages. The increase in buildout costs and resulting delays would unnecessarily and adversely impact consumer welfare.

Second, free spectrum may not be free for consumers. Some businesses that use unlicensed spectrum, including airports, hotels, online services, cruise liners and other businesses, charge consumers hourly or daily rates for Wi-Fi use. If the Commission provides this scarce national spectrum for free, it will be a windfall for these businesses who will charge consumers for its use, while crowding out private investors willing to pay for it. In other words, free spectrum may not spare consumers the cost.

Third, giving away a scarce resource means no revenue for the treasury, while a public auction could fetch at least \$20 billion. This funding should be used for the national debt, relocating current spectrum users, and other public needs. Giving away the spectrum does not provide relief for taxpayers, and it represents yet another opportunity cost.

Fourth, the increased consumer welfare benefits of holding a spectrum auction will very likely exceed the benefits of giving the spectrum away. A recent study published by WiFiForward reported a 5-year cumulative \$2.9 billion consumer welfare benefit, if the 6 GHz spectrum goes to unlicensed uses.<sup>2</sup> However, the long-term consumer welfare value of licensing the spectrum may well exceed \$200 billion.<sup>3</sup> This is why auctions are an optimal tool

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<sup>2</sup> Raul Katz, "Assessing the Economic Value of Unlicensed Use in the 5.9 GHz and 6 GHz Bands, Telecom Advisory Services, LLC, April 2020.

<sup>3</sup> There are many economic studies noting that a dollar of auction revenue yields roughly ten dollars of long-term consumer welfare. Therefore, failing to collect \$20 billion in auction revenues would mean a loss of \$200 billion of consumer welfare. For a few examples where this estimation approach was used, see Gregory L. Rosston, "The Long and Winding Road --The FCC Paves the Path with Good Intentions," Standard Institute for Economic Policy Research, December 2001; Thomas W. Hazlett and Roberto E. Munoz, "A Welfare Analysis of Spectrum Allocation Policies," The RAND Journal of Economics, Volume 40, Issue 3, p. 3, Autumn 2009; and Coleman Brazelon, Charles Jackson and Dorothy Robyn, "Unlicensed Operations in the 600 MHz Guard Bands: Potential Impact of Interference on the Outcome of the Incentive Auction," Research Conference on Communications, Information and Internet Policy, 43<sup>rd</sup> conference, posted April 1, 2015, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2587527](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2587527).

for spectrum to reach its highest and best use. The Commission should be less concerned with whether unlicensed uses produces economic benefits (of course it does), but whether other uses of that spectrum would produce more benefits.

Finally, while the Commission always retains the ability to take spectrum back and redeploy it (as it has done with television broadcast channels in the recent past), once spectrum is given to Wi-Fi, because of the myriad of different devices and applications, and indeterminate users, repurposing the spectrum at some future date would be next to impossible. Spectrum is a scarce commodity, so the Commission should not permanently hamstring its use for future purposes.

For these economic and financial reasons, the Commission should pause its decision, or it should consider allocating only a portion of this spectrum for unlicensed purpose – such as allocating the 5.925 to 6.525 band for unlicensed uses, while reserving the remaining portion for licensed applications, particularly 5G services.

## **2. The Internet Should Come First**

Allocating spectrum for unlicensed use should be regarded as secondary in importance, compared to supporting internet deployment and infrastructure deployment. When consumers send their Wi-Fi traffic over the internet, they usually use a wireline-based Internet Service Provider (ISP) to carry the traffic in the direction of the backbone. Alternatively, consumers could also use a wireless hotspot, but that option today may be 10 times slower. By limiting spectrum for 5G use with potentially gigabit-class speeds, the Commission would be hampering the future development of faster 5G hotspots, while defaulting to and giving regulatory preference to wireline-based connectivity.

Moreover, as this country faces the serious outbreak of the coronavirus and as Americans are asked to socially distance themselves, self-quarantine, work and learn from home, ISP networks (both homebased and wireless) should be the supreme concern of the Commission. The massive spike in demand for and traffic on these services should tell

regulators and policymakers that our immediate focus and national interest should not be Wi-Fi in a café. ISP infrastructure investment should be the prime concern for the Commission.

While both licensed and unlicensed are important for consumers, and both need spectrum, the Commission's primary focus should be on the network.

### **3. Cyber Vulnerabilities**

There are more mobile phones in the U.S. than people and, as of 2018, only 4.1% of adults were wireline only.<sup>4</sup> In other words, wireless services are extremely important to consumers, particularly for access to the Internet, including access by low-income consumers.

Protection against cyberthreats is also very important. As a mobile subscriber, I never use public Wi-Fi in hotels or cafés or any other location away from home, because they are often open networks and could be vulnerable to hackers. By focusing valuable spectrum for Wi-Fi use, consumers are being encouraged to use services that are unprotected from vulnerabilities, such as viruses, malware, hacking, and identity theft.

To highlight this problem, consider the use of technologies that mimic legitimate Wi-Fi networks. For as little as \$100, a hacker can buy a [Wi-Fi Pineapple](#), create a fake hotel Wi-Fi network within minutes, steal your online credentials and your online data, and then tap into your bank account.<sup>5</sup>

How will the Commission protect consumers on open networks from these vulnerabilities? If the Commission were to allocate some of the 6 GHz spectrum to wireless operators, consumers could instead use licensed connections, which would be a safer option.

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<sup>4</sup> "Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July—December 2018, National Center for Health Statistics, U.S. Department of Health and Human Resources, Center for Disease Control, June 6, 2019, Table 1, p. 5, <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201906.pdf>.

<sup>5</sup> Jackulic, "What is a Wi-Fi Pineapple, and Can It Compromise Your Security?" Android Headlines, August 11, 2019, <https://www.androidheadlines.com/2019/08/what-is-a-wifi-pineapple-and-can-it-compromise-your-security.html>.

This would protect consumers from vulnerabilities and give them marketplace choices. With the high prevalence of severe vulnerabilities present with router firmware and with the vast majority of manufacturers not updating router firmware over the life of these products, it is critical that the Commission encourage consumer online safety, and not moral hazard.<sup>6</sup>

#### **4. Wrong Spectrum; Questionable Demand**

Mid-band is paramount for 5G. It is sometimes called the *goldilocks spectrum*. The combination of high-, mid- and low-band spectrum is needed to serve rural, suburban and urban markets. Since Wi-Fi networks generally serve smaller coverage areas, like a coffee shop or hotel lobby using spectrum at 2.4 GHz and 5 GHz bands, any deficiency in bandwidth or throughput would be better alleviated by high-band rather than such as large block mid-band spectrum. Mid-band may not be ideal for Wi-Fi, compared to higher band spectrum.

Richard Bennett, co-inventor of Ethernet and the protocol for Wi-Fi Mac, contends that the current allocation of high-band spectrum, known as *Gig-Wi-Fi*, is currently being underutilized and that it will take a long time before the 6 GHz mid-band will be utilized.<sup>7</sup> We think it would be wise to split the spectrum to satisfy both unlicensed and licensed uses.

#### **5. Competition**

As mentioned earlier, dedicating a portion of this mid-band spectrum for auctions would encourage 5G providers to compete amongst each other, as well as enable intermodal rivalry between 5G, wireline and other Internet providers. It would also allow the development of faster hotspots, which would be a future alternative with Wi-Fi networks. Increased industry

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<sup>6</sup> For a study on the prevalence router vulnerabilities, see “Securing IoT Devices: How Safe is Your Wi-Fi Router?” American Consumer Institute, September 2018, <https://www.theamericanconsumer.org/wp-content/uploads/2018/09/FINAL-Wi-Fi-Router-Vulnerabilities.pdf>.

<sup>7</sup> Richard Bennett states that Wi-Gig “has moved slowly” and predicts a similar uptake for 6 GHz. See, Richard Bennett “Resolving the 6GHz Conundrum,” High Tech Forum, March 6, 2020, <https://hightechforum.org/resolving-the-6-ghz-conundrum/>.

competition would solve or mitigate some of the contention surrounding ISP market conduct, structure and performance that have led some to call for increased industry regulations. Competition will heighten consumer welfare, encourage industry investment, spur service innovation and product differentiation, and put downward pressure on rates. Providing all of the 6 GHz spectrum for unlicensed uses may not.

## **6. The 5G Race**

Countries that are the first to deploy widespread 5G services, applications, and equipment manufacturers will have first to market advantages. They will set industry trends and practices, providing opportunities for their applications, developers, and manufacturers.

U.S. first mover advantage is currently in jeopardy, as the US is lagging other nations in terms of mid-band spectrum allocation. A study sponsored by Analysys Mason compared the allocation of spectrum across fourteen countries and found the U.S. currently has a five-fold deficit of mid-band spectrum and would need to double its allocation of mid-band to keep up with other nations.<sup>8</sup> With no formal Commission plan for the auction and allocation of additional mid-band spectrum beyond 2020, the U.S. will likely squander much of its leadership position to the likes of China and others.

To keep up with the race to 5G, we recommend that the Commission give only a portion of the 6 GHz band to Wi-Fi and unlicensed uses, while giving the remaining portion to licensed 5G uses.

### **Summary**

Based on the economic and financial advantages of public auctions over regulatory fiat, the importance of the ISP infrastructure investments, the cyberthreats associated with open

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<sup>8</sup> Janette Stewart, Chris Nickerson and Tamlyn Lewis, "5G Mid-Band Spectrum Global Update," Analysys Mason, REF# 2020391-62, prepared for CTIA, March 2020.

networks vulnerabilities, the importance of mid-band spectrum to the 5G buildout, the need for intermodal competition, and the national necessity for the U.S. to win the 5G race, we conclude and recommend that the Commission split the 1.2 GHz of spectrum between unlicensed/Wi-Fi (such as, 600 MHz of the 5.925 to 6.525 band) and licensed 5G (such as, 600 MHz of the 6.525 to 7.125 band). Both uses are important and the allocation of this valuable band should reflect this importance.

Respectfully,

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