Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	**)**	
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AT&T Petition for Rulemaking and	**)**	**WT Docket No. 23-319**
Mobile Spectrum Holdings Policy	**)**	**RM-11966**
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To: The Wireless Telecommunications Bureau, Office of Economics and Analytics

COMMENTS OF

PUBLIC KNOWLEDGE AND

OPEN TECHNOLOGY INSTITUTE AT NEW AMERICA

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October 23, 2023

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Public Knowledge and the Open Technology Institute at New America (PK/OTI) file these comments in response to the September 22, 2023 Public Notice in the above captioned proceedings.[1] In addition to seeking comment on AT&T's specific petition to establish a targeted mid-band spectrum screen similar to the spectrum screen previously established by the Commission for low-band spectrum below 1 GHz,[2] the PN seeks comment on whether to make additional adjustments to the screen to promote competition, other spectrum policies that could encourage competition, and spectrum policies to promote digital equity and inclusion.[3]

[1] Public Notice, *Wireless Telecommunications Bureau and Office of Economic Analytics and Analytics Seek Comment on AT&T Petition for Rulemaking and Mobile Spectrum holdings Policies*, WT Docket No. 23-319; RM-11966 (released September 22, 2023) (PN).
[2] *Policies Regarding Mobile Spectrum Holdings Expanding the Economic Innovation Opportunities of Spectrum Through Incentive Auctions*, WT Docket No. 12-269, Report and Order, 29 FCC Rcd 6133, 6143-44 (2014) (*2014 Mobile Spectrum Holdings Order*).
[3] PN at 3.

SUMMARY

While Commenters have previously recommended a weighted screen that would take into account the unique qualities of mid-band spectrum as well as low-band spectrum or mmWave spectrum,[4] PK/OTI ***do not*** support simply granting AT&T's Petition for Rulemaking. Grant of AT&T's proposal as written would not enhance competition. Instead, it would foreclose the largest rivals to AT&T (especially T-Mobile) from competing with AT&T for valuable mid-band spectrum licenses while leaving AT&T free to outbid smaller competitors and would-be new entrants. AT&T's proposal should therefore not be seen as in any way consistent with, or a compromise with, PK/OTI's long-standing efforts to create rules which would genuinely promote competition, encourage new entry, and meet the Commission's statutory mandate to use spectrum policy to promote license acquisition by minority-owned and women-owned businesses.[5] If the choice were either to grant the AT&T Petition or do nothing, PK/OTI would urge the Commission to do nothing.

Happily, the Bureau has seen through this transparent effort to reinforce AT&T's dominance and broadened the inquiry to seek comment on policies that would genuinely enhance competition and promote digital equity and inclusion. PK/OTI recommend the following policy changes.

Restructure the screen to support four-firm competition rather than three-firm competition. Since its adoption in 2004, the Commission has structured its screen to support three equal sized providers per market.[6] But as both traditional antitrust analysis and the

[4] Comments of Public Knowledge, *In re Policies Regarding the Mobile Spectrum Screen*, WT Docket Nos. 12-269, 11-186 (filed November 28, 2012).
[5] 47 U.S.C. §§ 309(j)(3)(B) & (4)(C).
[6] *See* Wireless Telecommunications Bureau and Office of Economics and Analytics, *T-Mobile License LLC, Cellco Partnership, Applications for 3.7-3.98 GHz,*ULS File No. 0009446137, ULS File No. 0009446983, Memorandum Opinion & Order Par. 3.

Commission's own experience has demonstrated, subscribers need a minimum of four national providers to see vigorous competition between providers. Spectrum aggregation limits should reflect this reality.

Convert the current screen into a genuine hard cap. At present, the screen merely requires the Commission to take a "hard look" at specific markets where a carrier exceeds its limits. Prior to adoption of the screen, the Commission used a hard cap to limit spectrum aggregation. A hard cap rather than a soft screen would make it more difficult for the largest providers to absorb smaller players.

Adopt a weighting criteria that recognizes the different value of different spectrum frequencies. Although PK/OTI do not support the limited petition submitted by AT&T, our groups agree that the Commission's spectrum policies should reflect the differences in physical characteristics of the different frequencies. Because carriers need a suitable mix of frequencies to offer an increasingly wider suite of services, the Commission should use this weighting criteria for all spectrum bands.

Continue to use auction-specific limits in addition to general spectrum aggregation limits to promote new entry and enhance DEI. In addition to general spectrum aggregation limits, the Commission has used auction-specific limits to encourage new entrants, reduce concentration of licenses, and increase the likelihood of success for minority-owned and women-owned firms.[7] The Commission should continue this practice.

Address the vertical integration of MVNOs with facilities based providers and adopt policies to enhance MVNO competition. MVNOs are not substitutes for facilities-based providers. But they do provide some limited price competition with facilities based providers (as

[7] *See* n.4 *supra*.

well as competing with each other). The increasing vertical integration of MVNOs both reduces the likelihood that MVNOs will aggressively compete against facilities-based providers and reduces the likelihood that facilities-based providers will lease capacity to rival MVNOs, diminishing their capacity to compete with each other or for new MVNOs to enter the market.

Greater emphasis on unlicensed spectrum, shared access regimes, and opportunistic sharing. As cable operators have demonstrated, unlicensed spectrum and other forms of local and opportunistic access to shared spectrum can enhance competition. The Commission should adopt policies that go beyond increasing unlicensed spectrum for Wi-Fi and consider adopting policies designed to enhance competition.

Other policies to encourage DEI. The 2.5 GHz window remains the most prominent example of using spectrum policy to enhance digital equity and inclusion. But in addition to building on this success, the Commission should consider other ways to use spectrum to enhance digital inclusion.

ARGUMENT

The market for mobile services remains extremely concentrated since the T-Mobile/Sprint merger. Although DISH continues to work to build out its national network,[8] many obstacles remain. Cable operators likewise provide green shoots of potential competition. But while the number of subscribers to cable-operated mobile networks has grown, it remains a modest fraction of the overall mobile market.[9] Additionally, although cable operators Comcast, Charter and Cox offer national coverage through a virtual mobile network operator (MVNO)

[8] *See* Monica Alleven, "DISH Gets FCC Blessing on 5G Buildout Requirements," *Fierce Wireless* (Oct. 2, 2023). Available at: https://www.fiercewireless.com/5g/dish-gets-fccs-blessing-5g-buildout-commitments.

[9] *See* Adam Levy, "How Are Cable Companies Growing Their Wireless Businesses So Fast? T-Mobile Has A Guess," *The Motley Fool* (May 15, 2023). Available at: https://www.fool.com/investing/2023/05/15/cable-companies-growing-wireless-biz-t-mobile/

agreement with Verizon,[10] they primarily market their services in their cable footprint, effectively making them regional competitors from a competitive perspective. Customers outside the footprints of the largest cable operators therefore have no access to these potential competitors.

For subscribers to have the choices needed to reap the benefits of vigorous competition, the Commission must take action to expand the national market beyond the "Big Three" of AT&T, Verizon, and T-Mobile. But as the availability of spectrum remains constrained, the market of potential competitors is shrinking, not growing. US Cellular, the largest remaining regional carrier, announced this summer it would look for a buyer rather than trying to expand to national coverage.[11] Additionally, the Big Three facilities-based providers have been buying the independent MVNOs, reducing even this limited competitive option. Unless the Commission takes aggressive action to promote competition, the market will continue to consolidate to a point where the oligopoly power of the Big Three will eliminate any pressure to compete.

I. THE COMMISSION SHOULD ADOPT SIGNIFICANT CHANGES TO ITS SPECTRUM HOLDINGS POLICY.

As the Commission has repeatedly explained, unlike the antitrust authorities, the Commission has an affirmative obligation to *promote* competition.[12] As a general matter, this comes from the Commission's public interest standard of review for license transfers.[13] But in

[10] See Chris Holmes, "Verizon MVNOs: Best Carriers on Verizon's Network," *WhistleOut* (Oct. 17, 2023). Available at: https://www.whistleout.com/CellPhones/Guides/verizon-mvnos.
[11] *See* Kelly Hill, "TDS Explores Sale of US Cellular," *RCR Wireless* (August 4, 2023). Available at: https://www.rcrwireless.com/20230804/carriers/tds-explores-sale-of-us-cellular.
[12] *See, e.g., Applications of AT&T Wireless Inc. and Cingular Wireless Corporation for Consent to Transfer Control of Licenses and Authorizations*, Memorandum report & Order, 19 FCCRcd 21522, 21554-55 Par. 42 (2004) (*Cingular-AT&T Wireless Order*). ("In addition to considering whether the merger will reduce existing competition, therefore, we also must focus on whether the merger will accelerate the decline of market power by dominant firms in the relevant communications markets and the merger's effect on future competition.")
[13] *Id.* at Par. 41-43.

spectrum policy, the Commission has an additional statutory obligation to: "promot[e] economic opportunity and competition and ensur[e] that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses."[14]

A. The Commission Should Structure the Spectrum Screen for 4-Firm Competition.

Initially, the Commission adopted a hard spectrum cap that limited the ability to aggregate frequencies in any given market to 45 MHz, and required a waiver to exceed the cap.[15] In 2001, "in light of the strong growth of competition in the CMRS marketplace," the Commission determined to sunset the cap in 2003 and adopt a case-by-case analysis.[16] In 2004, in its first wireless merger review following the sunset of the cap, the Commission announced that it would use a spectrum screen of 70 MHz, "a little more than one third" of the spectrum available at the time, as a trigger to examine whether grant of the application would serve the public interest or result in undue concentration.[17] This would therefore act to preserve a minimum of 3 firms in the market – a market considered highly concentrated under traditional measurements. The Commission justified using this measure on the grounds that it anticipated that new spectrum would become available for future competitors, and that many firms appeared to be able to compete successfully with less than 30 MHz in the market (meaning that even if one firm would control 70 MHz post-transaction, more than 2 other firms could be expected to compete).[18]

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[14] 47 U.S.C. § 309(j)(3)(B).
[15] *See In re 2000 Biennial Regulatory Review Spectrum Aggregation Limits for Commercial Mobile Radio Service,* Report & Order, 16 FCCRcd 22668, 22671 Par. 9 (2001).
[16] *Id.* at 22670 at Par. 6.
[17] *Cingular-AT&T Wireless Order,* 19 FCCRcd at 21569 Par. 109.
[18] *Id.*

The last 20 years has shown the failure of the Commission's predictive judgment in stark terms. Rather than maintaining the screen at its initial level so that more spectrum could go to competitors and new entrants, the Commission continued to raise the spectrum screen whenever it made new "usable spectrum" available in the marketplace.[19] The lengthy list of national and regional providers in the *Cingular-AT&T Wireless Order*, presented as proof that a screen of one third of available spectrum would support vibrant competition, has melted away to the three-firm competition the spectrum screen remains structured to support.

The Department of Justice has consistently maintained that protecting competition requires four national firms, not three. In 2011, the Department of Justice challenged the acquisition of T-Mobile by AT&T to preserve the availability of four national competitors.[20] Approximately 10 years later, the Department of Justice acquiesced to the merger of T-Mobile and Sprint only after imposing numerous divestitures and conditions to replace Sprint with DISH as the fourth national competitor.[21] Only last month, the DoJ reiterated the importance of four-firm competition by supporting DISH's request for an extension of time to purchase T-Mobile's 800 MHz licenses.[22] Additionally, while 3-firm concentration was considered "highly

[19] PN at n.10 & n.11 (citing cases).

[20] *See* Department of Justice, "Justice Department Files Antitrust Lawsuit to Block AT&T's Acquisition of T-Mobile," Press Release (August 31, 2011). Available at: https://www.justice.gov/opa/pr/justice-department-files-antitrust-lawsuit-block-att-s-acquisition-t-mobile#:

[21] *See* Department of Justice, "Justice Department Settles with T-Mobile and Sprint by Requiring a Package of Divestitures to DISH," Press Release (July 26, 2019). Available at: https://www.justice.gov/opa/pr/justice-department-settles-t-mobile-and-sprint-their-proposed-merger-requiring-package.

[22] *See* United States Response to Defendant DISH Network Corp.'s Motion for Relief From Judgement and Motion for Modification of Final Judgement, *United States v. Deutsche Telekom, A.G.*, Civil Action No. 1:19-cv-02232-TJK at 7 (filed Sept. 18, 2023)("there is no more cost-effective way for DISH to catch up to the Big Three carriers and replace the competition that was lost when T-Mobile acquired Sprint than to purchase the 800 MHz spectrum").

concentrated" under the old merger guidelines, the new proposed merger guidelines take an even stricter view of appropriate levels of market concentration.[23]

As a first step in creating a vibrant competitive market, therefore, the Commission must recognize that a spectrum screen that triggers only when a transaction would allocate a third of the spectrum in a market to one carrier is a spectrum screen that will inevitably create 3-firm competition. That is even more true today and going forward as the leading 5G mobile services rely on wider channels of contiguous spectrum for high-capacity and low-latency connectivity. The Bureau should recommend to the Commission that it consider how to restructure the screen to promote four-firm competition rather than three-firm competition.

B. The Commission Should Replace the Spectrum Screen with a Hard Cap.

At present, the screen merely triggers an additional level of review. Transactions that do not trigger the screen (and do not produce a significant enough change in the Herfindahl-Hirschman Index (HHI)) are generally presumed to serve the public interest. Where a transaction triggers the screen, the Commission will take a "hard look" to determine whether the transaction would result in excessive concentration in those markets that trigger the screen. This level of review has contributed to the concentration in the current market, allowing the largest providers to accumulate spectrum without the need to secure any sort of waiver for approval. As a result, it is relatively easy for the largest carriers to acquire small carriers that have either not deployed or have relatively few customers (and thus do not trigger a significant change in HHI). To use the old cliche, this has allowed the Big Three to "eat the elephant" one bite at a time, acquiring small providers without significant review.

[23] Draft merger guidelines available at: https://www.justice.gov/d9/2023-07/2023-draft-merger-guidelines_0.pdf.

The Bureau should therefore recommend that the Commission consider converting the existing spectrum screen to a hard cap. With a hard cap in place, a carrier must apply for a waiver to exceed the market limit. This additional level of review would help to trigger increased scrutiny of these small market transactions by the largest firms. Even if the small firms cannot themselves provide service, it would increase the likelihood that they would be acquired by smaller firms, allowing firms to grow into potential competitors with the Big Three firms.

C. The Commission Should Adopt a Weighted Screen That Considers the Unique Properties of the Spectrum and Ensures Competitors Have Sufficient Access to All Needed Frequencies.

In 2012, when the Commission last sought comment on general policies for spectrum holdings, Public Knowledge submitted comments urging the Commission to adopt a weighted spectrum screen.[24] As PK argued, it is an "unhealthy fallacy" to treat all spectrum as conferring equal capacity. Different frequency ranges have different physical characteristics, and carriers require a reasonable suite of low, mid and high frequencies to compete effectively with one another. Indeed, even what constitutes "low, mid and high" changes over time. At one time, frequencies above 5 GHz were considered too high for commercial mobile wireless and were allocated for unlicensed use and DSRC. Today, frequencies between 3 GHz and 20 GHz are considered "mid-band" and highly desirable for their compatibility with 5G.

PK/OTI continue to support the concept of a weighted spectrum screen that recognizes the differences between these bands. Additionally, the Commission should from time to time revisit the weighting to reflect changes in the value of spectrum as a result of changes in technology or in business practices. At the same time, however, the Commission should be wary of proposals such as that of AT&T, which are structured in ways that give a competitive

[24] *See* Comments of Public Knowledge, *In re Policies Regarding the Mobile Spectrum Screen,* WT Docket Nos. 12-269, 11-186 (filed November 28, 2012).

advantage to the largest incumbents at the expense of competition. Rather than simply grant AT&T's Petition for Rulemaking, the Commission should consider how best to structure a weighted screen in a manner that best promotes competition (and, ideally, promotes new entry and promotes innovative uses of spectrum beyond commercial mobile services). The simplest way would be to restructure the screen to reflect four-firm competition rather than three-firm competition, as recommended above in Part I.A.

But even without adopting this specific recommendation, the Bureau should recommend that the Commission seek comment on ways to structure a spectrum screen that simultaneously recognizes the differences between frequencies and the value associated with diverse holdings. Unless the Commission intends to require divestitures (which it has authority to do, but is highly unlikely to order), the screen should reflect the existing holdings of incumbents rather than a mechanical approach which would give advantage to a specific Big Three carrier. For example, the Commission might consider whether the value of a carrier's low-band portfolio offsets the lack of mid-band spectrum.

To be clear, while PK/OTI support the general concept of a weighted spectrum screen they cannot support the specific screen proposed by AT&T. The AT&T proposal is, unsurprisingly, designed to advantage AT&T by limiting T-Mobile (and to a lesser degree Verizon) from acquiring mid-band spectrum without conferring any significant advantage to other competitors or potential new entrants. This would simply entrench the Big Three even further, the exact opposite of the purpose of spectrum aggregation rules.

D. The Commission Should Continue to Use Auction-Specific Limits.

The PN specifically seeks comment on whether to recommend continuing the practice of adopting pre-auction limits in addition to general spectrum aggregation limits.[25] PK/OTI emphatically support continuing this practice. The Commission's use of pre-auction limits over and above the existing spectrum remain one of the Commission's most effective spectrum policy tools for promoting competition and encouraging new entry. These policies allow smaller companies and new entrants who generally cannot compete with the largest incumbent carriers the opportunity to acquire necessary licenses. Outside of divestitures required as a merger condition, these auction-specific limits are the primary means by which smaller competitors and new entrants can acquire licenses. Smaller companies cannot afford to outbid the entrenched Big Three carriers, nor do they have the same access to capital markets. This reality is generally reflected in auctions without pre-auction limits, where the largest carriers capture the lion's share of licenses in the major markets.

The Commission should therefore consider not merely adopting pre-auction limits on a case by case basis, but should consider adopting a general policy of pre-auction limits. This would be consistent with the requirement of Section 309(j)(B) that the Commission structure auctions to avoid excess concentration of licenses.[26] This would have the further salutary effect of requiring the Commission to justify imposing limits on an auction-by-auction basis. Establishing a general policy of imposing pre-auction limits would shift the burden to those arguing that in any specific auction a pre-auction limit would affirmatively harm the public interest.

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[25] PN at 3.
[26] 47 U.S.C. § 309(j)(B)(3).

II. THE COMMISSION MUST TAKE STEPS TO PROTECT AND FOSTER A COMPETITIVE MVNO MARKET.

Although MVNO competition does not provide a direct substitute for facilities-based competition, it does create some competitive pressure. As the Commission has previously recognized, MVNOs: "increase the range of differentiated services offered to consumers within the broader mobile telephony/broadband services product market" and acquire capacity that allows them to "compete downstream against facilities-based service providers' service offerings."[27] MVNOs, therefore, "provide additional constraints against any anticompetitive behavior."[28]

It is therefore a matter of considerable concern that nearly all independent MVNOs have been acquired by one of the Big Three dominant carriers. Boost is owned by DISH. And while cable operators use MVNO agreements to offer national service, they market themselves to customers as facilities-based wireless carriers rather than as lower-cost, limited-feature MVNOs.

Vertical consolidation of the MVNO market has several potential negative impacts for consumers. First, carriers have incentive to restrict MVNO agreements to their own subsidiary, or to charge prices to rival MVNOs that make it increasingly difficult for MVNOs to compete on price or offer innovative new services or plans. In addition, MVNOs owned by facilities-based carriers have incentive to avoid cannibalizing their existing customer base by offering high-quality competing services. Instead, vertically integrated MVNOs have incentive to convert their MVNO customers into more profitable customers of their facilities-based parent. As the number of independent MVNOs diminishes, the need to compete against independent MVNOs

[27] *Applications of T-Mobile US, Inc., and Sprint Corporation For Consent To Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification, 34 FCC Rcd. 10578, ¶ 63 and n.196, ¶ 78 (Oct. 16, 2019).
[28] *Id.* at ¶ 78

diminishes leaving carriers free to pursue this strategy without fear of losing their MVNO customers to non-vertically integrated MVNOs offering lower prices for higher-quality service.

As part of its consideration of spectrum policy to promote competition, the Commission should consider how to protect remaining independent MVNOs and how to promote new entry by independent MVNOs. Such steps are necessary to protect the competitive constraints that the Commission has identified as flowing from a healthy MVNO market.

III. THE COMMISSION SHOULD USE SHARED SPECTRUM POLICIES TO PROMOTE COMPETITION AND DIGITAL EQUITY.

While the focus of the Bureau's Notice is mobile carrier spectrum holdings, the Commission's public interest goals with respect to promoting competition, consumer choice and bringing "affordable, reliable, high-speed broadband to everyone in the country"[29] suggests the need to consider this issue in the context of the need for a balanced policy that makes more mid-band spectrum available for unlicensed, exclusively licensed, and shared/lightly-licensed use by a wide variety of providers. As our groups stated in our National Spectrum Strategy comments on behalf of the Public Interest Spectrum Coalition (PISC), we believe the Commission and NTIA should prioritize policies that promote more unlicensed and shared, license-by-rule allocations for fixed and mobile services alike; that adopt auction frameworks that make interference-protected spectrum available in much smaller geographic areas and at lower power; and that move quickly to identify additional underutilized bands in that can provide local and shared spectrum access using either an unlicensed underlay (as in the 5 and 6 GHz bands) or coordinated access on a lightly-licensed basis (as in CBRS and the 70/80/90 GHz bands).[30]

[29] PN at 5.

[30] Comments of the Public Interest Spectrum Coalition, In the Matter of Development of a National Spectrum Strategy, NTIA Docket No. 230308-0068, at 30-35 (April 17, 2023) (hereinafter "PISC NSS Comments").

There are two basic reasons why the Commission should explicitly keep the goal of making substantially more mid-band spectrum available on an unlicensed and shared, lightly-licensed basis at the forefront of its spectrum access policies. First, competitors and innovators need more local and diverse spectrum access because the world's most robust, productive and competitive wireless ecosystem will not be built out by the dominant mobile carriers alone or solely with exclusively licensed spectrum. America's "5G" and future "6G" wireless ecosystems, like the current 4G wireless ecosystem, will rely on a combination of big national or regional carrier networks for truly "mobile" connections (for use 'on the go') and a far larger number of complementary, high-capacity and customized networks deployed by individual enterprises, households and community anchor institutions to meet their particular needs at a lower cost. This latter category, relying on shared spectrum, includes mobile market entrants, such as Charter and Comcast, that are using an innovative combination of unlicensed, shared and exclusively licensed spectrum (and MVNO agreements) to promote mobile market competition and choice.

A second basic reason to make mid-band spectrum available on a licensed, unlicensed and shared/lightly-licensed basis is that a guiding goal of the Communications Act is to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans."[31] While there are heated disagreements about progress towards this goal, there is no question that we can and must do better in addressing the rural and low-income digital divides. Rural, small town, Tribal and historically marginalized communities are most likely to find themselves on the losing side of the digital divide. More mid-band unlicensed (in the 5.9, 6 and 7 GHz bands) and lightly-licensed shared spectrum (in the lower 3 GHz band, as

[31] 47 U.S.C. § 1302(a).

well as upper mid-band) can serve as the public infrastructure that enables higher-capacity and more affordable wireless broadband connectivity in underserved areas.

A. Extend Unlicensed Access at Least Another 450 MHz Above and Contiguous to 7125 MHz for Low-Power, Indoor-Only (LPI) Use

Unlicensed spectrum is what ultimately makes both mobile and fixed broadband service more available, fast and affordable to consumers and businesses nationwide. Far more unlicensed spectrum will be needed in five-to-ten years to distribute the multiple gigabits of bandwidth that will be available and needed for new applications to all the users and mobile devices in our nation's homes, offices, schools and other venues. Wi-Fi is the workhorse of the Internet. Low-cost, off-the-shelf routers and devices easily and affordably offer access to wide channels of unlicensed spectrum that provide high-capacity connectivity in homes, at work, at school, in libraries, restaurants, retailers, and virtually every public place. Wi-Fi already carries more than 80 percent of all mobile device data traffic in the U.S. and Europe – and more than 85 percent on the hybrid ("Wi-Fi first") mobile networks deployed by cable companies – never touching mobile carrier spectrum or infrastructure.[32]

While the FCC's historic 2020 Order authorizing unlicensed sharing across four band segments from 5925 to 7125 MHz will fuel the new Wi-Fi 6E connectivity coming to market today, there is no question that next generation Wi-Fi 7 and Wi-Fi 8 will be far more useful to consumers. With advances that will leverage channel sizes up to 320 megahertz with multi-gigabit throughput and deterministic, interference-minimizing protocols, the next two generations of Wi-Fi will be able to affordably support all of the very high-bandwidth, low-

[32] Press Release, Charter Communications, Charter Launches Spectrum One, Offering Customers Unrivaled Connectivity and Value (Oct. 31, 2022) ("more than 85 percent of mobile customers' activity occurs over Wi-Fi"). Available at: https://corporate.charter.com/newsroom/charter-launches-spectrum-one.

latency applications expected to populate our homes, offices, schools and public spaces a decade hence. This will be crucial to making "5G" and "6G" applications such as AR/VR available affordably in every household with fast fixed broadband access. However, making these applications available and affordable in every location—and especially in high-traffic settings such as schools, offices and venues—will require additional wide channels of unlicensed access.

In the short term, our groups and PISC have urged the Commission and NTIA to immediately begin a consultation aimed at authorizing unlicensed operations up to 7250 MHz on an indoor-only, low-power (LPI) basis, thereby enabling a fourth 320-megahertz channel for use by next generation Wi-Fi (as well as an additional 160-megahertz-wide channel).[33] This new allocation can be expedited by deciding initially to limit this additional unlicensed underlay to LPI devices. The federal fixed-link incumbents in this band segment can have exactly the same protection from LPI use as do commercial fixed links in the U-NII-5/7 band segments. No AFC coordination is needed since all use would be restricted to the form factor the FCC requires for LPI operation in the band just below (e.g., plug-in power only, no weatherization, no external antenna). Longer term, our groups believe that NTIA should study the remainder of the 7 GHz band—up to 8.4 GHz—with a goal of making at least a fifth 320-megahertz channel available for unlicensed sharing and ideally contiguous to the U-NII-9 band (7125-7250 MHz).

B. Coordinated and Lightly-Licensed Spectrum Sharing Should be Expanded to Give a Wide Variety of Enterprise, Rural ISPs and Public Entities Direct Local Access to Spectrum

As part of its consideration of spectrum policies that promote competition and choice, the Commission should make substantially more spectrum available for coordinated sharing on a

[33] PISC NSS Comments at 39-40.

localized basis by the widest possible variety of small and rural ISPs, individual business enterprises, critical infrastructure, campuses of all types, schools and other public institutions. A principal rationale for heightened scrutiny of mobile spectrum holdings is that the low- and mid-band spectrum most valuable for wide-area mobile services has become more and more difficult to clear and repurpose for exclusive licensing. However, contrary to assumptions of scarcity, innovative and forward-looking spectrum sharing policies can unlock an abundance of wireless bandwidth in a larger number of underutilized bands – including in unused portions of licensed mobile carrier bands – for a very diverse range of users and use cases.

In a 5G and emerging 6G world, customized and purpose-built small cell networks using Next Generation Wi-Fi, private LTE/5G and other technologies at relatively low power enhance the wireless ecosystem and fuel advanced applications such as home and industrial IoT and automation, virtual reality and near-real time interactive video. The distinction between spectrum for coverage (which fits the traditional cellular licensing model) and spectrum for capacity in localized areas (which is the rationale for unlicensed and lightly-licensed, shared spectrum) is even more relevant for private 5G/LTE networks in light of the fact that an increasing share of mobile device data traffic (more than 80 percent) is consumed indoors, on a nomadic and not mobile basis.

The Citizens Broadband Radio Service (CBRS) is a successful example of how occupied but underutilized spectrum can be coordinated for more intensive licensed and opportunistic use by an unprecedented variety of users that range from big mobile carriers (e.g., Verizon) to local school districts and libraries. CBRS has been among the FCC's most successful spectrum policy innovations, one being replicated by regulators in the United Kingdom, Germany, Sweden and

more than a dozen other nations (albeit with manual coordination to date).[34] The rules for CBRS include a use-it-or-share-it provision that authorizes any operator to coordinate access to both the GAA portion of the band and to unused PAL spectrum on an opportunistic basis. The SAS database thereby facilitates—on an automated basis at low cost—intensive spectrum sharing that both protects U.S. Navy operations and ensures that all the spectrum in the 3.5 GHz band is available for use.

The diverse and rapid profusion of CBRS deployments include many very localized and innovative wireless network deployments that would either not be possible or overly expensive in a wireless ecosystem that depended only on large-area and exclusive licensing. Within 3 years of becoming available, there are more than 1,000 users of GAA shared spectrum access. Among these are dozens of Tribes, schools and libraries, as well as small wireless ISPs in rural and underserved areas, relying on CBRS to extend the reach of their broadband networks and to enhance their communities' basic connectivity.[35]

Extending and adapting the three-tier CBRS framework is likely the most expeditious and productive way to make federal radar and other bands below 3450 MHz available for 5G-capable networks and services.[36] Our groups and PISC have recommended that the National Spectrum

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[34] *See, e.g.*, Ofcom, "Shared Access Licenses," Available at: https://www.ofcom.org.uk/consultations-and-statements/category-1/enabling-opportunities-for-innovatio; "CBRS Leading a Global Trend of Private LTE/5G: HP," *Communications Daily* (April 13, 2023).

[35] For example, school districts in Texas, Colorado, California and other states responded to the pandemic remote learning crisis by leveraging CBRS to connect tens of thousands of low-income students at home directly to the school's network, ending the "homework gap" for good. *See* Michael Calabrese and Matthew Marcus, "Case Studies of School and Community Networks Able to Close the Homework Gap for Good," New America and Schools Health & Libraries Broadband (SHLB) Coalition report, at 25-29 (August 2022). Available at: https://newamericadotorg.s3.amazonaws.com/documents/Anchor-Nets-Case-Studies-revisedFINAL_091422.pdf.

[36] See Reply Comments of New America's Open Technology Institute, Facilitating Shared Use in the 3.1-3.55 GHz Band, WT Docket No. 19-348 (March 23, 2020).

Strategy include a plan to study and make available for at least opportunistic shared use all of the band segments from 2900 to 3450 MHz.[37] According to NTIA spectrum use studies, compared to the 3450-3650 MHz bands already made available for commercial sharing, the sub-bands below 3450 MHz are heavily occupied by DOD systems from all branches of the military and thus less amenable to clearing for traditional wide-area, high-power and "exclusive" use.[38]

Immediately below this 3 GHz military spectrum is the 2900-3100 MHz sub-bands allocated to federal and commercial shipborne radars required on most passenger and cargo ships for safety under an international maritime treaty, as well as for weather monitoring.[39] Similar to the 3100-3650 MHz bands, it appears that the band could be open for licensed-by-rule and/or unlicensed (GAA) shared use across most of the nation.

Once the incumbent protection criteria are established, the Commission can leverage the Spectrum Access Systems (SAS) already operating in the nearby CBRS band to coordinate at least General Authorized Access – and possibly Priority Access Licenses as well – in local areas where and when the spectrum is not in use by military, maritime or other incumbent operations. Our groups believe it is in the public interest to designate most of the frequencies between 2900

[37] See PISC NSS Comments at 41-46.

[38] U.S. Dept. of Commerce, Feasibility of Commercial Wireless Services Sharing with Federal Operations in the 3100-3550 MHz Band, at 11 (July 2020) ("NTIA July 2020 Report") ("the lower portion of the band is more congested and includes additional systems that have not been analyzed"). Available at: https://www.ntia.doc.gov/files/ntia/publications/ntia_3100-3550_mhz_mobile_now_report_to_congress.pdf. *See also* C. Todd Lopez, "Spectrum Sharing is Way Ahead to Maintain Economic Dominance," DOD News, U.S. Department of Defense (Sept. 21, 2022). Available at: https://www.defense.gov/News/News-Stories/Article/Article/3165774/spectrum-sharing-is-way-ahead-to-maintain-economic-dominance-defense-official-s/.

[39] See NTIA, Federal Government Spectrum Use Reports 225 MHz-7.125 GHz, "2900-3100 MHz Report" (Dec. 1, 2015) ("NTIA 2900-3100 Use Report"). Available at https://www.ntia.doc.gov/page/federal-government-spectrum-use-reports-225-mhz-7125-ghz. The International Convention for the Safety of Life at Sea (SOLAS) is an international maritime treaty that sets minimum safety standards in the construction, equipment and operation of merchant ships.

and 3450 MHz for a three-tier sharing framework similar to CBRS, with small-area PALs and GAA use coordinated across the entire band by a dynamic spectrum management mechanism.

C. A Default Policy of 'Use it or Share it' Should Apply to Any Band Where Opportunistic Access Can be Coordinated to Protect Primary Licensed Incumbents

As part of a spectrum policy aimed at promoting consumer choice and competition, authorizing opportunistic access on a use-it-or-share-it basis in underutilized bands should be embraced by the Commission as a default approach aimed at expanding local spectrum access for small and non-traditional ISPs in rural, tribal and other underserved areas, as well as for a wide variety of business enterprises, venues, schools, libraries and other community anchor institutions.[40] A use-it-or-share-it authorization can expand productive use of spectrum without risking harmful interference or undermining the deployment plans of primary licensees. Opportunistic access policed by an automated coordination mechanism can empower a wide variety of small and alternative providers to use fallow spectrum in local areas to provide high-capacity broadband and other services, while retaining the licensee's right to exclusive use of that spectrum whenever the carrier commences service.

A use-or-share approach promotes important public interest goals, including more intensive use of fallow spectrum capacity, lowering barriers of entry to a diverse range of uses and users. This in turn facilitates innovation and competition, improving choices and lowering costs for consumers, and promoting service in rural and other underserved areas, thereby helping to narrow the digital divide. The FCC has already adopted several world-leading precedents in opportunistic spectrum sharing that all apply a variation of the use-it-or-share-it approach—

[40] See Michael Calabrese, "Use It or Share It: A New Default Policy for Spectrum Management," Open Technology Institute at New America (March 2021). Available at: https://tinyurl.com/m7v2rkre.

including the Citizens Broadband Radio Service (CBRS), TV White Spaces and an unlicensed underlay across 1,200 megahertz between 5925-7125 MHz. It is notable that in the licensed portion of the CBRS band, GAA users routinely put locally-unused PAL spectrum to productive use without causing harmful interference to license holders.

These precedents, and the proven effectiveness of automated frequency coordination mechanisms, can pave the way to an authorization of opportunistic access as the default policy for a far larger number of underutilized and newly-allocated bands. Indeed, the Commission's forward-looking approach to incorporating a use-it-or-share-it approach in CBRS—where the SAS assigns GAA users to vacant, flexible-use PAL spectrum on a local and opportunistic basis—is being recognized and replicated globally. In June 2021 the European Union's Radio Spectrum Policy Group issued an opinion urging more innovation and experimentation in spectrum sharing: "The RSPG seeks to nudge a change of mindset: all considerations in the field of spectrum by policy makers, spectrum managers, users and industry should be done by pursuing better spectrum efficiency through more spectrum sharing, including by following the principle of 'use-it-or-share-it'."[41]

In licensed mobile carrier bands, unleashing opportunistic, shared access to unused spectrum also creates a general incentive for licensees to build out more quickly and to make greater efforts to lease or sell unused spectrum, facilitating secondary markets. As our groups explained at length in comments responding to the Commission's proceeding on secondary markets in 2019, a use-it-or-share-it rule expands productive use of spectrum without risk of

[41] European Commission, Radio Spectrum Policy Group, "RSPG Opinion on Spectrum Sharing—Pioneer Initiatives and Bands," RSPG21-022, Final (June 21, 2021). Available at: https://radio-spectrum-policy-group.ec.europa.eu/system/files/2023-01/RSPG21-022final_RSPG_Opinion_Spectrum_Sharing.pdf.

harmful interference and without undermining the deployment plans of primary licensees.[42] Authorizing opportunistic, shared access to fallow commercial spectrum creates a general incentive for licensees to build out services more quickly, or to make greater efforts to partition or lease their spectrum. This will reduce spectrum warehousing and increase access to operators ready to deploy, but who lack spectrum access in a local area.

IV. THE COMMISSION SHOULD ADOPT NEW POLICIES TO MAKE SPECTRUM AVAILABLE TO NATIVE AMERICAN TRIBES, AND STUDY EXPANDING OPPORTUNITIES FOR MINORITY-OWNED AND WOMEN-OWNED BUSINESSES.

The PN seeks comments on "policies that we could recommend to the Commission to address digital equity concerns through spectrum holding policies." In addition to the recommendations above with regard to unlicensed spectrum and spectrum sharing, PK/OTI urge the Commission to consider other policies explicitly designed to encourage digital equity and inclusion. For example, the Commission should consider whether to employ a non-commercial window prior to auctions on condition that the non-commercial entity provide low-cost service or assume specific build-out obligations that would require deployment first in areas with high rates of digital exclusion. The Commission rejected a similar proposal in its 2019 2.5 GHz Order, although that proposal dealt exclusively with educational entities.[43] The Bureau should recommend the Commission consider such a proposal going forward.

[42] Comments of OTI and Public Knowledge, Partitioning, Disaggregation and Leasing of Spectrum, WT Docket 19-38 (June 3, 2019).
[43] *In re Transforming the 2.5 GHz Band,* Report and Order, WT Docket No. 18-120, 34 FCCRcd 5446, 5469-72 (2019).

A. Special Consideration for Native American Tribes.

As the Commission is well aware, the Federal Trust Relationship between the Federal Government and Tribes includes the Federal Communications Commission.[44] The 2022 Memorandum of Understanding between the FCC, the Department of the Interior, and NTIA pledges all three agencies to work jointly on ways to enhance Tribal access to spectrum so that Tribes may provision their own networks. This both recognizes the importance of Tribal sovereignty and the persistent failure of commercial wireless providers to adequately serve Tribal lands. Additionally, the Commission has, from time to time, sought comment on how Tribal entities use spectrum or how its spectrum policies can enhance Tribal connectivity.[45]

So far, however, these commitments and inquiries have yielded little fruit. Although the current Commission has taken some action to promote Tribal access to spectrum, most notably by eliminating the unwarranted additional build out requirements imposed on tribal 2.5 GHz licenses,[46] more must be done. For example, despite the success of the 2.5 GHz Tribal window, the Commission has yet to adopt a similar window for any subsequent auction. The Commission should rectify this by adopting a policy of holding a Tribal window prior to any new spectrum auction. The Commission should also adopt a policy of meeting regularly with DOI and NTIA, reporting to the public when these meetings occur, and providing an annual report on steps taken pursuant to the MoU.

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[44] *See* Memorandum of Understanding Among the U.S. Department of the Interior and the Federal Communications Commission and the U.S. Department of Commerce National Telecommunications and Information Administration (Nov. 23, 2022). Available at: https://www.bia.gov/sites/default/files/dup/inline-files/mou_esb46-009818_doi-fcc-ntia_electromagnetic_spectrum_on_tribal_lands_2022-11-23_final_fcc_ntia_doi_signed_508.pdf

[45] *See* Public Notice, "Wireless Telecommunications Bureau and Office of Native Affairs and Policy Seek Comment on Tribal Nation and Native Hawaiian Access to Spectrum and Related Data," GN Docket No. 23-265 (released August 4, 2023).

[46] *See* Public Notice, "Wireless Telecommunications Bureau Waives 2.5 GHz Rural Tribal Window Specific Interim and Final Performance Deadlines," 37 FCCRcd 7829 (2021).

PK/OTI stress these are simply a few suggestions. The Commission must increase its outreach and consultations with Tribal governments to hear from the Tribes directly. These consultations should occur regularly, not sporadically. The Commission should issue an annual report of its outreach to Tribes, and describe what concrete recommendations, policies and rule changes flow from these consultations.

B. Consideration of Expanding Access to Spectrum for Minority-Owned and Women-Owned Businesses.

Section 309(j)(3)(B) directs the Commission to structure auctions to promote distribution of licenses to minority-owned and women-owned businesses. Section 309(j)(4)(C) instructs the Commission to consider how license area and frequency assignments can promote economic opportunity for minority-owned and women-owned businesses. But, aside from bidding credits, the Commission has done little to further these goals. While court decisions following adoption of Section 309(j) have severely limited the ability of the Commission to consider race-specific and gender-specific remedies, it nevertheless has a statutory duty to act within those limits.

In particular, the Commission should consider how license area and build out obligations can promote economic opportunity for minority-owned and women-owned businesses. Given the limited propagation characteristics of high-band spectrum, the Commission should consider whether smaller license areas within urban markets that center on minority-majority neighborhoods would further the goals of the statute. The Commission should also consider whether build out obligations that center on minority-majority neighborhoods would further the goal of advancing economic opportunity for minority-owned businesses.

In addition to considering these specific suggestions, the Commission should initiate a general proceeding on how to further these statutory goals consistent with current court precedent. As part of such a proceeding, the Commission should consider how its new statutory

responsibility to eliminate existing digital discrimination and prevent future digital discrimination[47] interplays with its explicit obligations under Section 309(j) and its general public interest obligations to promote access to spectrum to all Americans. For example, does the inclusion of preventing digital discrimination on the basis of income provide further reason to consider changes in policy on build out and license area to center particular neighborhoods or communities? Should the Commission target particular areas where it finds not merely a market-based failure to deploy wireless services, but active discrimination on the basis of race or income, for changes in its spectrum holdings policy? Any recommendation by the Bureau to proceed to an additional inquiry should include these and other questions to make the commitment embodied in Section 309(j) a reality.

CONCLUSION

The Commission last considered how to use its spectrum holdings policies to promote competition ten years ago. The increased consolidation in the market since then makes it clear that another review is desperately needed. The Bureau's request for comment on how to use this inquiry to promote digital equity and inclusion is most welcome. The Bureau should proceed to the next step and recommend that the full Commission consider how to use spectrum holdings policy to promote competition and DEI.

Respectfully submitted

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[47] 47 U.S.C. § 1754.

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October 23, 2023