Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Expanding Flexible Use of the 12.2-12.7 GHz Band	)	WT Docket No. 20-443
	)	
	)	GN Docket No. 22-352
Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use	)	

COMMENTS OF THE PUBLIC INTEREST ORGANIZATIONS

PUBLIC KNOWLEDGE
NEW AMERICA'S OPEN TECHNOLOGY INSTITUTE
BENTON INSTITUTE FOR BROADBAND AND SOCIETY
CENTER FOR RURAL STRATEGIES
NEXT CENTURY CITIES
ACCESS HUMBOLDT
X-LAB

Michael Calabrese
Director, Wireless Future Project
Open Technology Institute at
New America
740 15th Street, N.W., Ste 900
Washington, DC 20005

Kathleen Burke
Policy Counsel
Admitted to the Bar under D.C. App. R. 46-A (Emergency Examination Waiver)
Public Knowledge
1818 N Street NW, Suite 410
Washington, DC 20036

August 9, 2023

TABLE OF CONTENTS

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Expanding Flexible Use of the 12.2-12.7 GHz Band	)	WT Docket No. 20-443
	)	
	)	GN Docket No. 22-352
Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use	)	

COMMENTS OF THE PUBLIC INTEREST ORGANIZATIONS

New America's Open Technology Institute, Public Knowledge, Benton Institute for Broadband & Society, Center for Rural Strategies, Next Century Cities, Access Humboldt and X-Lab (together the "Public Interest Organizations" or "PIOs"), submit these Comments in response to the Further Notice of Proposed Rulemaking ("*FNPRM*") and Notice of Proposed Rulemaking ("*NPRM*") in the above-captioned proceedings.[1] The Commission requests comment in this combined proceeding on proposals for expanded terrestrial use of the 12.2-12.7 GHz band (the "12.2 GHz band") and on proposals to repurpose the separate 12.7-13.25 GHz band (the "12.7 GHz band"). Our groups are pleased to share our views and proposals with the Commission.

[1] *Expanding Flexible Use of the 12.2-12.7 GHz Band, Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use*, WT Docket 20-443, GN Docket No. 22-352, Report and Order and Further Notice of Proposed Rulemaking and Notice of Proposed Rulemaking and Order, FCC 23-36 (rel. May 19, 2023) ("*FNPRM*" or "*NPRM*").

I. INTRODUCTION AND SUMMARY

The Public Interest Organizations ("PIOs") believe that expanding access to spectrum for terrestrial broadband use in the currently underutilized 1,050 megahertz between 12.2-13.25 GHz can facilitate the deployment of 5G services, promote competition, enhance the benefits of next generation Wi-Fi, spur innovation, and help to address the digital divide in underserved communities. But our groups also believe that these public interest goals can be best optimized if the Commission adopts rules that include the following proposals:

First, the PIOs urge the Commission to authorize non-exclusive and coordinated shared access to the 12 GHz band for both point-to-point ("PtP") and point-to-multi-point ("PtMP") services. This proceeding provides an excellent opportunity for the Commission to take another innovative leap forward in spectrum management policy to fuel the nation's wireless future. Accordingly, our groups believe the public interest is best served by a new framework for fixed wireless access in 12 GHz that protects the operations of all band incumbents – including MVDDS licensees – but that greatly expands both the utility and usage of the band for terrestrial broadband. Conceptually, the PIOs propose a framework analogous to the three-tier Citizens Broadband Radio Service ("CBRS"): A primary tier that protects the fixed customer locations of the incumbent DBS and NGSO satellite services; a priority access tier for the expanded FWA deployments of incumbent MVDDS licensees; and a third tier of coordinated general authorized access on an opportunistic, non-interfering basis.

The PIOs believe the Commission should take advantage of the need for an automated coordination system in 12 GHz to further expand use of the band to include not only priority access licensees (viz., the MVDDS incumbents), but also to open unused spectrum in the band on the same basis for general authorized access on a license-by-rule basis. Moreover, our groups believe that any grant of new and valuable terrestrial use spectrum rights for incumbents should

be accompanied by a corresponding obligation to cooperate with opportunistic sharing on a use-it-or-share-it basis. Opportunistic access to as much as 500 megahertz for PtP and PtMP terrestrial broadband will promote the most intensive and efficient use of the band and facilitate the deployment of higher-quality broadband connectivity, promote competition, enhance the benefits of next generation Wi-Fi, and help to address the digital divide in rural, Tribal and other underserved communities in particular.

Second, the PIOs believe that a low-power, indoor-only unlicensed underlay in the 12 GHz band – ideally under the same technical rules as LPI in the 6 GHz band – can coexist with expanded terrestrial use for fixed wireless services (PtP and PtMP) that are inherently outdoors, higher power and directional by nature. We believe that LPI can coexist with higher-power FWA outdoors, as well as with the two incumbent satellite services. All of the licensed services would rely on outdoor antennas, rendering the signal attenuation from building entry loss a potentially decisive factor considering the propagation of at 12.2-12.7 GHz. Providing the LPI bandwidth needed to distribute the gigabit or greater connectivity from future fiber and other high-capacity broadband services also promotes the Commission's digital equity and inclusion goals. We urge the Commission to task the Office of Engineering and Technology to explore this further once a decision has been made about the rules for terrestrial FWA.

Third, Tribal reservations (especially in rural areas) remain among the least served areas in the United States for wireless services (and communications services generally), in large part because high costs and low incomes make them less profitable for commercial operators. Accordingly, the PIOs urge the Commission to adopt a Tribal set-aside in 12.2 GHz and a Tribal Priority Window before any auction of the 12.7 GHz band. In 12 GHz, if the Commission expands the rights of incumbent MVDDS licensees to include FWA, a license modification

should include a condition that all or at least a substantial portion of the channels on Tribal lands will be made freely available for broadband deployment at the request of Tribal authorities. The Commission should also move rapidly to adopt these provisions so that tribes can take advantage of the BEAD funding that could subsidize tribal deployment in the 12.2 and 12.7 GHz bands.

Fourth, in the 12.7 GHz band, the PIOs urge the Commission not to apply the same old 'exclusive use' and preclusive licensing area rules that respond only to the siren song of the three Big Mobile carriers. We urge the Commission to include a use-it-or-share-it condition as part of any exclusive licensing framework. We believe this is both exceptionally relevant and workable in this band, particularly if the Commission authorizes an automated frequency coordination system and opportunistic use in the adjacent 12.2 GHz band, as we propose above. As in the CBRS band, an automated spectrum management system in the adjacent 12.2-12.7 GHz band would allow GAA use of locally-unused spectrum with no risk or downside to the primary licensee.

Finally, the PIOs urge the Commission to auction the 12.7 GHz band in licensing areas no larger than counties. There is little need nor possibility that the 12.7 GHz band will be used as a ubiquitous coverage band over entire counties, let alone over PEAs that often combine metropolitan, rural and remote communities. Given the propagation of 12.7-13.25 GHz, the band will be used to add capacity to sites on a targeted basis in relatively high-revenue areas. Auctioning licenses as large as Partial Economic Areas would be a decision to foreclose competition and to leave the spectrum fallow for many, many years in rural, tribal and other underserved areas. The alternative path is to license areas no larger than counties, which would also spur competition in a way that PEAs will not, particularly from new mobile market entrants that now include the three largest cable companies.

II. THE FREQUENCY COORDINATION SYSTEM NECESSARY FOR TERRESTRIAL SHARING IN THE 12.2 GHZ BAND SHOULD ALSO FACILITATE OPPORTUNISTIC ACCESS BY DIVERSE LOCAL FIXED WIRELESS USERS

This proceeding provides an excellent opportunity for the Commission to take another innovative leap forward in spectrum management policy to fuel the nation's wireless future. The PIOs urge the Commission to authorize non-exclusive and coordinated shared access to the band for both point-to-point ("PtP") and point-to-multi-point ("PtMP") services. Our groups further believe that the public interest is best served by a new framework for fixed wireless access ("FWA") in 12 GHz that protects the operations of all band incumbents – including MVDDS licensees – but that greatly expands both the utility and usage of the band for terrestrial broadband. Conceptually, the PIOs propose a framework analogous to the three-tier Citizens Broadband Radio Service ("CBRS"): A primary tier that protects the fixed customer locations of the incumbent DBS and NGSO satellite services; a priority access tier for the expanded FWA deployments of incumbent MVDDS licensees; and a third tier of coordinated general authorized access on an opportunistic, non-interfering basis.

The PIOs believe that the Commission should take advantage of the need for an automated coordination system in 12 GHz to further expand use of the band to include not only priority access licensees (viz., the MVDDS incumbents), but also to open unused spectrum in the band on the same basis for general authorized access ("GAA") on a license-by-rule basis. Moreover, our groups believe that any grant of new and valuable terrestrial use spectrum rights should be accompanied by a corresponding obligation to cooperate with opportunistic sharing on a use-it-or-share-it basis. Opportunistic access to as much as 500 megahertz for PtP and PtMP terrestrial broadband will promote the most intensive and efficient use of the band and facilitate the deployment of higher-quality broadband connectivity, promote competition, enhance the

benefits of next generation Wi-Fi, and help to address the digital divide in rural, Tribal and other underserved communities in particular.

A. A Three-Tier Sharing Framework Would Optimize the Public Interest Benefits of Authorizing Shared Terrestrial Use for Fixed Wireless Broadband

The Public Interest Organizations strongly support the Commission's efforts to expand access to spectrum for terrestrial broadband use in the currently very underutilized 500 megahertz between 12.2-12.7 GHz band. Despite the conclusion that terrestrial mobile operations are not compatible at this time with satellite service incumbents, our groups believe that authorizing non-exclusive and coordinated shared access to the band for both PtP and PtMP services can facilitate the deployment of higher-quality broadband connectivity, promote competition, enhance the benefits of next generation Wi-Fi, and help to address the digital divide in rural, Tribal and other underserved communities in particular.

This proceeding provides an excellent opportunity for the Commission to take another innovative leap forward in spectrum management policy to fuel the nation's wireless future. Accordingly, the PIOs urge the Commission to adopt a new framework for fixed wireless access in 12 GHz that protects the operations of all band incumbents – including MVDDS licensees – but that greatly expands both the utility and usage of the band for terrestrial broadband. Conceptually, the PIOs propose a framework analogous to the three-tier Citizens Broadband Radio Service ("CBRS"): A primary tier that protects the fixed customer locations of the incumbent DBS and NGSO satellite services; a priority access tier for the expanded FWA deployments of incumbent MVDDS licensees; and a third tier of coordinated general authorized access on an opportunistic, non-interfering basis.

The PIOs propose that this three-tier framework for expanding FWA should include three key components. First, the Commission should authorize bidirectional FWA for both PtP and PtMP operations at a conducted power limit substantially higher than the current MVDDS limit (e.g., 20 dBm). Second, fixed terrestrial use should be authorized on a secondary, shared basis through non-exclusive licenses with individual links and operations coordinated by a certified Automated Frequency Coordination ("AFC") system. Third, in addition to priority access rights for MVDDS incumbents within their current license areas, the Commission should authorize opportunistic access on an open, shared, coordinated basis to encourage local deployment and use of vacant spectrum in the band by a diverse range of users nationwide.

As our groups explained at in our comments on the National Spectrum Strategy, the three-tier CBRS framework is now a well-established success story. A key part of that success hinges on the innovation of a Spectrum Access System that facilitates – on an automated basis at low cost – intensive spectrum sharing that has both completely protected U.S. Navy operations while ensuring that all of the spectrum in the 3550-3700 MHz band can be put to productive use.[2]

The three-tier CBRS framework also provides an important precedent for a use-it-or-share-it approach to expanding terrestrial rights in the 12 GHz band. As the Commission itself has acknowledged, the CBRS framework, including its authorization of General Authorized Access ("GAA") use of locally-vacant spectrum in PAL channels, "set the stage to (1) promote investment in the band; (2) encourage rapid and robust network deployment; and (3) protect

[2] Comments of the Public Interest Spectrum Coalition, NTIA, *Development of a National Spectrum Strategy*, at 17-18 (April 17, 2023).

federal and non-federal incumbent users."[3] Just as use-or-share rules did in the CBRS band, opportunistic, shared access in this band will promote investment and encourage rapid, robust buildout. Not only does this help alleviate the Commission's concerns about deployment and investment within the 12 GHz band, it also benefits rural constituents by increasing their access to mobile and satellite broadband services.

Local access to unused wide channels of spectrum for both PtP and PtMP, on a coordinated and lightly-licensed basis, will be most accessible where it is needed most, which is in rural, tribal and other less-densely-populated communities still lacking fiber or more than one high-capacity home broadband option. Additional backhaul spectrum is needed to support higher-capacity service and better coverage by wireless internet service providers (WISPs) and others, as the Coordinated Sharing Coalition explained in its petition for rulemaking last fall seeking shared access to the federal 10-10.5 GHz band.[4] A joint letter from 242 WISPs supporting that petition explained that as data rates and usage surge, there is presently a shortage of available upper-mid-band spectrum available for both PtP backhaul and to enhance the throughput and quality of PtMP deployments.[5] The 12 GHz band can serve as an alternative to fiber backhaul and support improved broadband capacity and quality for video streaming, telehealth, and remote work and learning.

---

[3] FCC, Report, *In the Matter of Report to Congress Pursuant to Section 1008 of the Spectrum Pipeline Act of 2015, As Amended by the Ray Baum's Act of 2018*, 33 FCC Rcd 11033, ¶ 18 (rel. Nov. 2, 2018), available at https://ecfsapi.fcc.gov/file/1102648911320/DA-18-1128A1.pdf.
[4] *See* Coordinated Sharing Coalition, *Petition for Rulemaking, Amendment of Part 101 of the Commission's Rules to Enable Greater Commercial Use of the 10.0-10.5 GHz Band (filed Oct. 4, 2022).*
[5] *Ex Parte* Letter of 242 Wireless ISPs, *Amendment of Part 101 of the Commission's Rules to Enable Greater Commercial Use of the 10.0-10.5 GHz Band* (Dec. 8, 2022).

As the Commission observed in the FNPRM, facilitating expanded and robust fixed terrestrial operations in the 12 GHz band will require coordination with incumbent DBS and NGSO operators.[6] Both DBS and NGSO incumbents serve hundreds of thousands of customer locations, some of which change on a daily basis as customers add or drop service. That fairly complex reality suggests that any two-way, higher-power FWA licensing scheme will require a reliable and low-cost coordination mechanism – that is, some version of the automated frequency coordination (AFC) systems that the Commission is currently certifying to conduct a similar task in the 6 GHz band.

The PIOs believe that the Commission should take advantage of the need for a frequency coordination system in 12 GHz to further expand use of the band to include not only priority access licensees (viz., the MVDDS incumbents), but also to open unused spectrum in the band on the same basis for general authorized access ("GAA") on a license-by-rule basis. The PIOs believe that any grant of new and valuable terrestrial use spectrum rights should be accompanied by a corresponding obligation to cooperate with opportunistic sharing on a use-it-or-share-it basis. While it is in the public interest to expand the terrestrial rights of incumbent licensees to facilitate FWA, these rights need not be "exclusive." The public interest will benefit even more by also authorizing opportunistic access to unused spectrum by a wide variety of users across the country, current and aspiring users who can serve the unique needs of diverse communities, community anchor institutions, business establishments and consumers at home.

Although the three-tier sharing framework outlined above is analogous to CBRS, our groups believe that coordinated sharing can be far simpler and streamlined in this band. With respect to the priority access tier, no auction is necessary. MVDDS licenses can be modified to

[6] *See FNPRM* at ¶¶ 50-52.

make them Priority Access Licensees within their service area. MVDDS incumbents would not need to relocate or modify their existing operations and, most importantly, would presumably have priority and protection for each of their new higher-power FWA deployments once they commence commercial service.

With respect to general authorized access, we proposed that GAA access should be based on nationwide, non-exclusive licensing of secondary fixed terrestrial services and subject to coordination by a dynamic spectrum management system similar to the AFC system used in the 6 GHz band. Once licensed, a GAA user could seek to coordinate an unlimited number of PtP or PtMP links by registering them in the AFC. As required prior to operation at standard power in the 6 GHz band, each base station would be required to register its location and other technical information. As in 6 GHz, GAA base stations would need to receive authorization (and periodic reauthorization) from the AFC to use the particular frequency channels at a location. This could include variable power limits that would depend on the geographic and spectral proximity of protected satellite incumbent locations. The role of an AFC-like system is discussed further in the next section.

General authorized access for fixed, point-to-multipoint ("P2MP") terrestrial broadband can ensure the most intensive and efficient use of the band. Mobile carriers, such as DISH (the largest MVDDS holder of licenses), are very likely to incorporate 12 GHz spectrum in their 5G networks with a focus on urban, inner suburban and other high-traffic areas for the foreseeable future. In those locations, they can add 12 GHz capacity to existing towers and base station sites, whereas rural and many small town areas with lower mobile average revenue per user ("ARPU") would presumably be built out many years in the future, if ever. In the meantime, opening access to unused capacity in the 12 GHz band would provide rural ISPs and other entities with

the spectrum-for-infrastructure they need to improve the quality and coverage of fixed broadband services and help to bridge the digital divide.

Authorizing GAA on at least a use-it-or-share-it basis will not only promote more intensive use of the band by rural WISPs and other operators, it will also incentivize and identify potential demand for secondary market transactions. As two of our PIO groups have previously explained, "[u]nleashing opportunistic, shared access to fallow spectrum creates a general incentive for licensees to build out services more quickly, or to make greater efforts to partition or lease… This will reduce spectrum warehousing and increase access to operators that are ready to deploy, but who lack spectrum access in a local area."[7] Not only does this stimulate secondary markets, it ultimately "ensure[s] that rural and other underserved areas are more likely to receive coverage and higher-capacity broadband service sooner rather than years and years later."[8]

B. An Independent Automated Frequency Coordination System Can Best Protect Primary Incumbents and Facilitate Both Priority and General License-by-Rule Access

As described in the preceding section, the PIOs urge the Commission to adopt a three-tier sharing framework that authorizes fixed terrestrial use on a secondary, shared basis through non-exclusive licenses with individual links and operations coordinated by an independent and FCC-certified Automated Frequency Coordination system. The FNPRM seeks comment on whether a database-driven AFC system would be capable of protecting primary incumbent operations from interference. Our groups believe that yes, an AFC system similar to those currently being

[7] Comments of Open Technology Institute at New America and Public Knowledge, *In the Matter of Partitioning Disaggregation, and Leasing Spectrum*, WT Docket No. 19-38, at 9 (June 3, 2019).
[8] *Id.*

certified for the 6 GHz band would be far more reliable and cost-effective than the sort of manual coordination that has in the past been used in bands shared by the Fixed Service (PtP) and fixed satellite services. At the same time, however, we acknowledge that the Commission will need to expect certain reciprocal obligations on the part of satellite incumbents who – unlike MVDDS licensees – paid nothing for their valuable spectrum rights.

Our groups believe that an automated coordination system for managing shared use of the 12.2 GHz band has many advantages and can be modeled on the AFC systems that are currently being tested and certified for the 6 GHz band, with appropriate modifications. Indeed, it's likely that one or more of the certified 6 GHz AFC systems could be adapted fairly quickly to manage interference protection in the 12 GHz band, avoiding years of delay.

The nature of the coordination is the same and simpler than the dynamic coordination necessary in CBRS, since the services being coordinated are fixed (with an exception discussed further down). The primary difference is the larger and more rapidly changing set of incumbent customer locations that would need to be protected. However, this is a difference in degree, not in kind. This would potentially increase the reporting burden (the frequency of which should be voluntary), but not the reliability of the protection from interference. AFCs clearly have the computational capability to calculate the separation distance associated with even millions of locations, a calculation that should be far easier, in fact, than the three-dimensional protection contours that the 6 GHz AFC systems must calculate for more than 100,000 fixed link receive sites.

Indeed, the large and growing number of satellite customer locations – and the need to account for churn as customers add or drop service – suggests that an AFC is the only practical and cost-effective method to coordinate robust FWA in the 12 GHz band. Part 101 coordination

between fixed links (FS) and the fixed satellite service (FSS) has traditionally been done on a manual basis.[9] For each link, an operator typically contracts with a qualified private firm to prepare the coordination analysis, which must be sent to other registered users in the area (who have up to 30 days to raise objections). Only then can the user file an application for authorization. Although larger firms such as Comsearch – which coordinates over 10,000 links each year – now use proprietary databases to streamline the process, the cost and coordination time required to license a point-to-point link can be substantial.[10]

More relevant here is that manual coordination relies on up-to-date incumbent location data in the Universal Licensing Service. The reality of hundreds of thousands of incumbent locations – and a regular churn among customers – means that 12 GHz incumbents would need a web portal to report frequent changes to customer locations whether or not the coordination is manual (and relies on ULS) or automated (and managed by a certified AFC). It would clearly not be sufficiently fast, reliable or cost-effective to rely on ULS and manual coordination for this band.

Relying on one or more AFCs for coordination would also be the only reliable way to account for changes in satellite customer locations if opportunistic GAA users are required to move off channels that become occupied by higher-tier incumbents. Precise location data from GAA devices can be transmitted automatically if an AP has that capability, or manually verified and entered by a professional installer. As in 6 GHz and CBRS, the authorization to transmit in a

---

[9] 47 C.F.R. § 101.103(d). *See Fixed Satellite Service and Terrestrial System in the Ku-Band*, First Report & Order, 16 FCC Rcd 4096, 5015, ¶ 51 (rel. Dec. 8, 2000), available at https://tinyurl.com/mr2yf775. "The applicant must, through appropriate analysis, select operating characteristics to avoid interference in excess of permissible levels to other spectrum users." *Id.*

[10] *See* Dynamic Spectrum Alliance, *Solving the Spectrum Crunch: Dynamic Spectrum Management Systems* (April 2023), at 14-16.

location, on particular channels, and at a specific maximum power level, should expire and base station devices would be required to request a reauthorization from the AFC. In this band, as in 6 GHz, these periodic re-checks should be no more often than every 24 hours. Similarly, the capability to shut down a device is not necessary if users are registered and device certification requires periodic reauthorization.

The AFC can maintain a web-based portal for location data updates from incumbents. The AFC protection areas could then be refreshed every 24 hours, assuming that new location data has been provided by incumbents. Incumbents should be given the flexibility to provide updated customer locations as often as they deem necessary. This would not be burdensome. As the FNPRM notes, DBS providers track customer locations. Even if NGSO operators determine that they need to report customer locations to protect them adequately from interference, this should not be burdensome given the direct billing relationship. Moreover, knowing this information has benefits for the NGSO, both in terms of planning satellite capacity by geography and with respect to any coordination they need to undertake to protect the first-in-time rights of MVDDS incumbents.

Another advantage of using an AFC system in 12 GHz is that it can calculate protection distances by applying propagation models that take account of both topography and clutter (e.g., trees, buildings). Propagation analysis that accounts for clutter is particularly important at 12 GHz, since at higher frequencies the attenuation due to distance, terrain and clutter are very substantial.[11] An AFC also has the capability to coordinate by sector (e.g., 30 or 60 degrees), which would allow more users to coexist. The Commission should consider coordination by

[11] *See id.* at 28, 47.

sector (sectorized base station antennas) and requiring the use of directional antennas as potential ways to promote more efficient sharing and reduce risk interference to higher-tier users.

One challenging coordination scenario is the coexistence of FWA with NGSO earth stations in motion ("ESIMs"). As the FNPRM points out, last year the International Bureau "authorized SpaceX and Kepler to serve earth stations in motion (ESIMs) in the 12.2 GHz band on an unprotected, non-harmful interference basis."[12] The Bureau explicitly stated that any ESIMs operating in 12.2-12.7 GHz are unprotected pending the outcome of this proceeding.[13] It would seem to be virtually impossible for any coordination mechanism to anticipate the location of an ESIM and adequately protect the user from potential interference from FWA, whether PtP or PtMP. On the other hand, the market for ESIMs is heavily weighted to uses in areas far less likely to have FWA deployments, including in particular boats on water and recreational vehicles in relatively remote areas.

The PIOs strongly recommend that the Commission prioritize more extensive and robust use of the 12 GHz band for terrestrial FWA, even if that means that ESIMs must either operate in other portions of the 2,000 megahertz of FSS downlink spectrum (i.e., on 10.7-12.2 GHz), another satellite band, or on an unprotected basis (as they do now). In a co-primary band allocated for fixed services, NGSO providers should not expect that introducing an effectively mobile service will preempt more intensive and efficient use of the band for terrestrial fixed broadband.

[12] *FNPRM* at ¶ 7 & n. 23.
[13] *Id*. and ¶ 50 ("under the current authorization NGSO FSS ESIMs are not afforded protection").

III. THE COMMISSION SHOULD AUTHORIZE AN UNLICENSED UNDERLAY IN 12.2 GHZ BAND TO THE EXTENT THAT IT IS FEASIBLE

The Commission seeks "comment on whether, and, if so, how to permit unlicensed use of the 12.2 GHz band," as well as "comment on the benefits and costs" of doing so.[14] The PIOs believe that a low-power, indoor-only unlicensed underlay – ideally under the same technical rules as LPI in the 6 GHz band – can coexist with expanded terrestrial use for fixed wireless services (PtP and PtMP) that are inherently outdoors, higher power and directional by nature. We urge the Commission to task the Office of Engineering and Technology to explore this further once a decision has been made about the rules for terrestrial FWA.

As an initial matter, the PIOs urge the Commission to consider multiple efficiency metrics that promote the public interest, including economic impact,[15] user impact,[16] and technical usage,[17] rather than overly focusing on the monetary "economic value"[18] of a particular use. In the context of spectrum policy, economic value often "fails to serve the public interest by giving more weight to the revenues generated by spectrum for the government and corporate interests than the value consumers receive from those spectrum uses."[19] In contrast, economic

---

[14] *FNPRM* at ¶53.
[15] "Under an economic impact metric, spectrum efficiency is determined by looking at the value-add a particular use has on the overall economy." Kathleen Burke, *Back to the Spectrum Future: the 20th Anniversary of the Spectrum Policy Taskforce*, Public Knowledge, at 20 (2023), https://publicknowledge.org/policy/back-to-the-spectrum-future-the-20th-anniversary-of-the-spectrum-policy-task-force/.
[16] "Under a consumer impact metric, spectrum efficiency is determined by looking at how many consumers are served by a spectrum use and how much consumers are paying for a spectrum service." *Id.*
[17] "Under a technical usage metric, spectrum efficiency is determined by looking at how often and how much data is being transferred across particular spectrum frequencies." *Id.*
[18] "Under an economic value metric, spectrum efficiency is determined by looking at the monetary value a particular spectrum use generates either for the government or the service provider." *Id.*
[19] *Id.* at 21.

impact "takes a holistic view of the economic value a particular spectrum use creates for society;"[20] consumer impact "focuses on how many end users are served by a particular spectrum use and how much end users have to pay for that service;" and technical usage "val[ues] spectrum services that actually use their spectrum allocations to their fullest potential and devaluing services that leave spectrum fallow."[21] By balancing these metrics the Commission can maximize the public benefits of the 12.2 GHz band.

Accordingly, the PIOs urge the Commission to authorize an unlicensed underlay in the 12.2 GHz on a non-interfering basis.[22] Given the propagation characteristics of the 12.2 GHz band, we believe a low-power and indoor-only unlicensed underlay can coexist with inherently outdoor and directional PtP and PtMP operations. An unlicensed underlay will benefit the public by facilitating affordable access, encouraging innovation, and increasing competition. Moreover, an unlicensed underlay will help the Commission meet its diversity, equity and inclusion goals and statutory requirements by democratizing spectrum access to 500 megahertz of spectrum.

A. An Unlicensed Underlay in the 12.2 GHz Band Will Generate Widespread Public Interest Benefits By Facilitating Affordable Access, Encouraging Innovation, and Maximizing Spectrum Usage

PIOs continue to urge the Commission to authorize an unlicensed underlay with Part 15 technical rules as similar as possible to the low-power, indoor-only ("LPI") authorization the Commission adopted in the 6 GHz band. Our groups believe that LPI indoors should be able to coexist with higher-power FWA outdoors, as well as with satellite incumbents. All of the

[20] *Id.*
[21] *Id.*
[22] Should the Commission decide not to move forward with mobile use in the 12.7 GHz Band, PIOs would urge the Commission to consider an unlicensed underlay in the 12.7 GHz band as well.

licensed services would rely on outdoor antennas, rendering the signal attenuation from building entry loss a potentially decisive factor considering the propagation of at 12.2-12.7 GHz.

It is no secret that as frequencies increase their propagation characteristics decline. The higher the frequency the more susceptible a signal is to path loss due to building and wall penetration, atmospheric attenuation, rain fade, foliage attenuation, diffraction, and body/obstruction loss. While for some use cases this is a problem, for LPI unlicensed use it is a benefit. LPI signals are more likely to remain indoor-only at higher frequencies—making it less likely that LPI unlicensed users will interfere with other services in the same band. Generally, as propagation challenges increase, interference concerns decrease. This is why our groups believe that an LPI unlicensed underlay using similar rules to the 6 GHz band is feasible without risking harmful interference to the current co-primary satellite services.

Additionally, authorizing an LPI unlicensed underlay in the 12.2 GHz band will have a positive consumer impact by facilitating affordable access to service, generate economic benefits by encouraging innovation, and maximize technical usage of the 12.2 GHz band.

*1. **Unlicensed spectrum access positively impacts users by increasing the availability and affordability of telecommunications services.***

The ever-widening digital divide and the lack of telecommunications access to communities of color, rural areas, and Tribal nations is a critical issue that the Commission should address—not only by making it easier for wireless broadband providers to serve people in the U.S., but also by allowing people in the U.S. and marginalized communities to control their own use of spectrum. Unlicensed spectrum, for instance, has a democratizing effect that puts consumers in the driver's seat, rather than being subject to the service offerings of licensed companies. By leveraging the 12.2 GHz band effectively, our nation can finally move towards a future that serves and includes all people of the United States.

Ultimately, unlicensed spectrum is also what makes both mobile and fixed broadband service more available, fast and affordable to consumers and businesses nationwide. 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. The vast majority of data consumed on smartphones and other mobile devices—more than 80% in the U.S. and Europe—flows over Wi-Fi networks, never touching mobile carrier spectrum or infrastructure.[23] Because unlicensed spectrum access positively impacts consumers by decreasing their costs and increasing their access to connectivity, the Commission should authorize an unlicensed underlay in the 12.2 GHz band.

*2. **Unlicensed spectrum positively impacts the economy by encouraging innovation.***

Opening up the 12.2 GHz band for unlicensed use has significant potential for innovation that will positively impact our economy. Unlicensed technologies, such as WiFi have continued to spur digital growth and innovation. For example, a comprehensive study commissioned by WiFi Alliance estimated that the global economic value of Wi-Fi was $3.3 trillion in 2021, and projected it will reach $4.9 trillion by 2025.[24] The growth of Wi-Fi has also impacted the economy writ large by facilitating significant growth of the internet economy. A 2021 study commissioned by the Interactive Advertising Bureau (IAB) found that the internet economy's contribution to the U.S. GDP grew 22 percent per year since 2016, in a national economy that grows between two to three percent per year. Since IAB started tracking the internet's economic

[23] Comcast, "Xfinity Rated as the Fastest Internet Provider Inside and Outside of the Home," (Jan. 25, 2023), available at https://tinyurl.com/yy4sfkj9 ("[m]ore than 80 percent of mobile traffic runs over WiFi").
[24] https://www.wi-fi.org/beacon/alex-roytblat/economic-value-of-wi-fi-exceeds-expectations.

impact in 2008, the internet's contribution to GDP has grown eightfold, from $300 billion to $2.45 trillion.[25]

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 grow the internet economy even more. Each new generation of WiFi ushers in a new era of wireless innovation. Opening up the 12.2 and 12.7 GHz bands for an unlicensed underlay will provide an additional 500 megahertz of contiguous spectrum capable of supporting a 320 megahertz wide channel in addition to smaller channels which is necessary to support the very high-bandwidth, low-latency applications—such as AR/VR—expected to populate our homes, offices, schools and public spaces a decade hence. Supporting these applications and use cases in every location with backhaul—and especially in high-traffic settings such as schools, offices and venues—will require additional wide channels of unlicensed access.

3. ***Unlicensed spectrum maximizes the technical usage of spectrum.***

An unlicensed LPI underlay on a non-interfering basis would also promote the most intensive use of the 12 GHz band. The band can offer utility for both outdoor and indoor terrestrial use. Given the propagation characteristics of the 12.2 GHz band, we believe a low-power and indoor-only unlicensed underlay can coexist with inherently outdoor and directional PtP and PtMP operations. More unlicensed spectrum access will allow any device or service to access the higher-capacity connectivity that is provisioned to the home, business, school or other indoor location. By enabling substantially more devices, applications and technologies to access

[25] https://www.iab.com/news/study-finds-internet-economy-grew-seven-times-faster/

whatever fiber, fixed wireless or other connectivity is available, more unlicensed capacity maximizes the technical usage of a particular band of spectrum.

In contrast, exclusively licensed spectrum is exactly what it sounds like—an exclusive right to use the public resource *or to leave it fallow*. This is one reason that making a megahertz-to-megahertz comparison between unlicensed and exclusively licensed spectrum is a false equivalency. Simply put, the two are complementary but not directly comparable.[26] Take, for example, the disparity between GAA and PAL grants in the CBRS band. At the start of 2023 there were 612,617 GAA grants to operate on the band, but only 107,479 PAL grants.[27] This makes sense: GAA grants allow anyone to access the CBRS band so long as they follow the GAA technical rules. In contrast, PAL licenses were auctioned off to the highest bidder. With more than 400,000 more grants, GAA's dramatic outpacing of PALs also demonstrates that when spectrum is opened up for use without a license, there is a higher probability that the spectrum will be put to use rather than sitting fallow. The same is likely true for the 12.2 GHz band—an unlicensed underlay will maximize the technical usage of the band.

B. Unlicensed Access Serves the Commission's DEI Goals & Statutory Requirements by Granting Spectrum Access to All

The PIOs urge the Commission to seriously explore whether an unlicensed LPI underlay can coexist with the inherently outdoor and higher-power fixed wireless services that are authorized to share the band. An important reason to make this effort is that allocating spectrum

[26] *See* 1 MHz of Licensed Spectrum ≠ 1 MHz of Unlicensed Spectrum, Wi Fi Forward (Nov. 3, 2022), https://wififorward.org/wp-content/uploads/2022/11/Unlicensed-Licensed-Spectrum-1-Pager.pdf.

[27] Douglas Boulware, Anthony Romaniello, Rebecca L. Dorch, and Michael G. Cotton, "An Analysis of Aggregate CBRS SAS Data from April 2021 to January 2023," NTIA Report 23-567 at 11 (May 2023), https://its.ntia.gov/umbraco/surface/download/publication?reportNumber=TR-23-567.pdf.

on an unlicensed basis in the 12.2 GHz band will further the Commission's statutory goals by permitting "businesses owned by members of minority groups and women"[28] to directly access spectrum without going through an intermediary licensee. Authorizing an unlicensed underlay on a non-interfering basis will ensure that minority and women owned businesses are "given the opportunity to participate in the provision of spectrum-based services"[29] without risking harmful interference to incumbents.

An unlicensed underlay would not only create access for businesses owned by minority groups and women and underserved communities, but also significantly lowers the cost of equipment through economies of scale, thereby lowering barriers to entry. The flexibility of unlicensed spectrum allows businesses and communities to customize their deployments to suit their individual needs. Similarly, allocating shared use for point-to-multipoint or for backhaul enables women and minority owned businesses—as well as anchor institutions and non-profit organizations—to bring broadband networks into communities neglected by traditional providers.

As it contemplates how to open up access to the 12.2 GHz band, the Commission should consider the tradeoffs between protecting licensed services from potential harmful interference and how these measures may inhibit use and adoption by traditionally marginalized communities. For example, the need to use a professional installer increases the cost of deployment and presumes that rural, Tribal and other digitally excluded communities have ready access to trained professional installers. Tighter emission masks will drive up the cost of equipment. Setting power levels at needlessly low levels to assuage the concerns of licensees

[28] 47 U.S.C. § 309(j)(4)(D).
[29] *Id.*

rather than based on engineering evidence of what is genuinely necessary to protect licensed services will decrease the utility of the spectrum access under reduce the DEI benefits of access.

Of course, the Commission should (and must) impose rules that protect licensed services from harmful interference. But the Commission must give careful consideration of the tradeoffs involved. The Commission should seek to find the most cost-effective mitigation measures to protect against genuine risk of harmful interference, rather than to seek to protect licensed services against all risk (however unlikely or unreasonable) or all interference (whether harmful or not).

IV. THE COMMISSION SHOULD ADOPT MEASURES THAT GIVE TRIBES ACCESS TO THE 12.2 AND 12.7 GHZ BANDS

Native American reservations[30] occupy a unique position with regard to spectrum policy. The FCC shares a "Federal Trust responsibility" with other federal agencies to recognize the "inherent sovereign powers" that Tribes have over their people and lands.[31] This includes an obligation to manage spectrum so that it benefits Tribes and Tribal people. In 2022, the FCC, NTIA, and DOI entered into a joint MOU in order "to promote the deployment, coordination, and development of broadband and other wireless communications services on, and expand access to spectrum over, Tribal lands and Hawaiian home lands."[32]

Despite these agreements and recent efforts, Tribal reservations (especially in rural areas) remain among the least served areas in the United States for wireless services (and

[30] The term "Native American reservations" in this report includes federally recognized Alaskan Native Villages and Hawaiian Homelands.
[31] *See* F.C.C., Notice of Proposed Rulemaking, In the Matter of Improving Communications Services for Native Nations by Promoting Greater Utilization of Spectrum Over Tribal Lands, 26 FCCRcd 2623 (2011) (hereinafter "Tribal Spectrum NPRM").
[32] Memorandum of Understanding Among the U.S. Dep't of Interior and the Fed. Commc'ns Comm'n and the U.S. Dep't of Com. Nat'l Telecom. & Info. Admin (Nov. 11, 2022).

communications services generally).[33] A chief cause of this lack of service is the unwillingness of licensees to serve rural tribal lands. Rural tribal lands are often home to relatively small and lower-income populations. This means that carriers have higher costs to build out and less of a profit opportunity compared to the more affluent or populous areas covered by their license. Since carrier buildout requirements only require service to a certain percentage of the population within their license area, carriers often decline to serve these undesirable locations.

To mitigate this digital divide, some tribes have attempted to use unlicensed spectrum to build their own wireless ISPs to serve Tribal lands. For these Tribes, the limitations of unlicensed access, such as significantly lower power levels than licensed spectrum, have limited the utility of this approach, particularly in rural and remote areas. Moreover, when the FCC repurposes spectrum use (such as opening TV white spaces to unlicensed use), the FCC must negotiate coordination with Mexico and Canada. As a consequence, until the FCC concludes these international negotiations, Tribes with land along the U.S. border cannot use the newly repurposed spectrum.

Although tribal self-provision may provide a viable coverage alternative, the cost of participating in—let alone winning—a spectrum auction for licensed spectrum with readily available equipment and compatible consumer devices acts as a significant barrier for most tribes. Additionally, the geographic area of most licenses extends well beyond tribal lands. To meet the performance metrics associated with these licenses, Tribes would need to deploy and operate a wireless network well outside their tribal lands.

---

[33] Alexandra Walsh, Mary Moynihan, and Elizabeth Yin, Hacking Broadband Access in Tribal Lands, The Regulatory Review (Sept. 17, 2022), https://www.theregreview.org/2022/09/17/saturday-seminarhacking-broadband-access-in-tribal-lands/.

Fortunately, there are ways to allow Tribes access to the spectrum on their lands without having to resort to traditional auctioned licenses that would work well for these bands. The PIOs urge the Commission to adopt a Tribal set-aside in 12.2 GHz and a Tribal Priority Window before an auction of the 12.7 GHz band. The Commission should also move with haste to adopt these tribal provisions so that tribes can take advantage of the BEAD funding that could subsidize tribal deployment in the 12.2 and 12.7 GHz Bands.[34]

The success of the Tribal Priority Window prior to the 2.5 GHz spectrum auction provides the Commission with both the precedent and insight into the value of giving Tribes direct access to spectrum. During the 2.5 GHz Tribal Priority window, the Commission received 418 applications and amendments from 266 Tribes despite the numerous challenges Tribes faced in completing their applications during the COVID-19 pandemic.[35] This not only demonstrates that the demand for spectrum access amongst Tribes is high, but also that the FCC has an effective mechanism for awarding licenses to Tribes outside the auction system.[36] Additionally, the FCC's authority to create the Tribal Priority Window is not limited to the EBS band. To the contrary, it applies to any spectrum auctioned under the FCC's general authority—meaning that

[34] The PIOs understand that authorizing these tribal provisions soon enough to allow Tribes to take advantage of BEAD funding may require the Commission to defer a decision on the unlicensed underlay and perhaps other issues in these proceedings. While not ideal, the PIOs urge the Commission to do what it needs to in order to ensure that Tribes do not miss out on this time-limited opportunity to access funds critical to self-provisioning services.

[35] Mark Colwell, Success of Rural Tribal Window Demonstrates Need for Rural Education Window, Voqal (Sept. 9, 2020), https://voqal.org/success-of-rural-tribal-window-demonstrates-need-for-rural-education-window/.

[36] *See* Public Notice, *Wireless Telecommunications Bureau Waives 2.5 GHz Rural Tribal Window Specific Interim Deadlines* (rel. July 8, 2022) (noting that FCC had at that time issued 335 licenses to over 350 Tribes in 30 states), https://www.fcc.gov/document/25-ghz-rural-tribal-window-extension- performance deadlines.

the FCC can, and should, adopt a policy of holding a Tribal Priority Window prior to every auction.[37]

As the Commission acknowledges in the *FNPRM*,[38] a Tribal priority to spectrum on their lands need not be limited to auctions and can be applied to the 12 GHz band as well. Currently there are no licenses conveying bidirectional and higher-power rights for fixed wireless services. If the Commission expands the rights of incumbent MVDDS licensees to include FWA, a condition of the license modification can be that all or at least a substantial portion of the channels on Tribal lands will be made freely available for broadband deployment at the request of Tribal authorities. Although a business relationship with the primary licensee should not be required, the PIOs expect that in many cases this option will encourage Tribes and the commercial FWA licensee to enter into partnership agreements that hasten the deployment of networks in Tribal areas and benefit Tribal communities.

The PIOs believe that any grant of priority access to Tribes able and willing to use spectrum in the 12.2 and 12.7 GHz bands should be accompanied by a formal recognition that Tribes have an interest in the electromagnetic spectrum on their Tribal lands, thereby restoring an additional measure of sovereignty to Native American Tribes. The Commission should respect tribal sovereignty by allowing Tribes to access the spectrum on their lands. Such policies align with the Federal Trust relationship the government and its agencies have with Tribes and will help address the service issues that disproportionately affect Tribal communities.

---

[37] The success of the Tribal Priority Window should not justify forcing Tribes to operate their own networks. Rather, Tribes that want to provide service to their communities should have an opportunity to do so.

[38] *FNPRM* at ¶ 102 and n. 333.

V. IN THE 12.7-13.25 GHZ BAND, SMALL AREA LICENSING AND USE-IT-OR-SHARE-IT OPPORTUNISTIC ACCESS SHOULD BE PART OF ANY EXCLUSIVE LICENSING FRAMEWORK

Because of the nature of the incumbents in the 12.7 GHz band and the Commission's ability to use its authority under the Emerging Technologies framework "to relocate or repack incumbent terrestrial licensees to introduce new services,"[39] our groups do not disagree that there is an opportunity here to repurpose "some or all of the 12.7 GHz band for mobile broadband and other expanded use."[40] Nonetheless, the PIOs urge the Commission not to apply the same old 'exclusive use' and preclusive licensing area rules that respond only to the siren song of the three Big Mobile carriers. This industrial policy worked well when the need and public interest goal was ubiquitous geographic coverage of mobile networks, a goal that has been accomplished with low- and lower-mid-band spectrum. However, at 12.7-13.25 GHz, the propagation characteristics strongly suggest that for mobile networks this spectrum will be used primarily to add capacity to existing cell sites in relatively high-traffic (or high ARPU) areas.

While we don't dispute the utility of higher-capacity mobile broadband networks where needed, the history of exclusive use auctions of higher frequency spectrum – and premised strictly on the Big Mobile carrier business model – gives us pause. In 2019 and 2020, in auctions 101, 102 and 103, the Commission assigned 4,950 megahertz of spectrum for exclusive use, calling it "flexible use," but then packaging most of it as Partial Economic Area ("PEA) licenses that would not be relevant or affordable to more than a few national or regional mobile carriers. As a result, the lion's share of those 4,950 megahertz sits fallow in mobile carrier warehouses, without even an option for others to use that wasting bandwidth on an opportunistic basis.

[39] *FNPRM* at ¶ 68.
[40] *Id*. at ¶ 62.

In short, we fear that "exclusive" licenses without a use-it-or-share-it condition, particularly if auctioned on a PEA basis, is a recipe for warehousing 12.7 GHz spectrum outside of urban and other high ARPU areas. The more limited range of the upper 12 GHz and 13 GHz bands mean that cell sites must be deployed far more densely – something mobile carriers have steadfastly refused to do outside very high ARPU areas. Such an outcome would also forfeit an opportunity to create a contiguous (or nearly contiguous) 1,100 megahertz of opportunistic access for WISPs and other users in rural, tribal and other underserved areas where that extra capacity could give a huge boost to the quality and competitiveness of fixed wireless networks.

Accordingly, our groups propose one addition and one change to the framework outlined in the FNPRM:

First, the PIOs urge the Commission to include a use-it-or-share-it condition as part of any exclusive licensing framework. We believe this is both exceptionally relevant and workable in this band, particularly if the Commission authorizes an automated frequency coordination system and opportunistic use in the adjacent 12.2 GHz band, as we propose above. The coordination of opportunistic GAA can be managed at low marginal cost by the same AFC system(s) certified to coordinate the lower half of the overall 12.2-13.25 GHz band. This would create the potential for as much as 1,050 megahertz to be available to any operator on at least a temporary basis. While we agree that a WISP or other operator should not rely solely on contingent access to this unused spectrum, having even opportunistic access to such a large swath of upper-mid-band spectrum would greatly improve the odds that a large portion of the combined band would be available and put to use – particularly in rural areas – for many years to come.

As in the CBRS band, an automated spectrum management system in the adjacent 12.2-12.7 GHz band would allow GAA use of locally-unused spectrum with no risk or downside to the primary licensee. Thus far, to our knowledge, GAA users have been making productive, opportunistic use of PAL channels that are not yet in use with no harm to the licensee who purchased priority (but not "exclusive") rights at auction. As in CBRS, we propose that when the primary licensee is ready to commence service, that the licensee's only "burden" would be to report the location and operating parameters of the base stations (which can remain non-public information). Since the GAA user would be required to regularly renew its authorization to transmit (e.g., every 24 hours), the AFC would simply decline to renew the authorization to transmit at the frequency and location that corresponds to the primary licensee's operations.

As we've seen in CBRS, there is absolutely no downside for the primary licensee so long as the AFC enforces the prime directive: thou shalt discontinue use of the channel(s) and cause no interference to the primary licensee. There is no plausible argument that a use-or-share opportunistic access condition "devalues" the license if this condition is included in the initial rules (pre-auction) since, of course, any diminution in perceived monetary value to a winning bidder would be reflected in the price bid at auction. That said, there is no evidence at all that PAL bidders paid less for their CBRS licenses because schools, WISPs, private enterprise networks or others can use that vacant capacity until they commence service in that locality.

Indeed, as noted in section I above, we believe that a use-or-share condition is far more likely to enhance not only the public interest return on the spectrum, but it's long-term monetary value to the licensee – and, ironically, more so for a mobile carrier who only deploys in the more populated and high ARPU portions of the licensing area. The reason is that opportunistic access is likely to stimulate far more secondary market agreements – for leasing, disaggregation and

partitioning – than it discourages. While mobile carriers today engage in precious few leasing arrangements with WISPs or other local providers, those smaller ISPs would be making their interest transparent by coordinating opportunistic use. In many cases they would prefer to pay for a guaranteed term of exclusive use in a portion of the licensing area. And seeing them make free use of fallow spectrum could be the nudge (and incentive) the primary licensee needs to negotiate a leasing arrangement or other secondary market transaction.

Second, the PIOs urge the Commission to auction the 12.7 GHz band in licensing areas no larger than counties. Licenses the size of PEAs was a defensible policy in bands with far better propagation for the public interest purpose of facilitating ubiquitous mobile network coverage. But that mission is already accomplished with low- and lower-mid-band spectrum that propagates longer distances and through clutter. There is little need nor possibility that the 12.7 GHz band will be used as a ubiquitous coverage band over entire counties, let alone over PEAs that often combine metropolitan, rural and remote communities. The propagation at 12.7-13.25 GHz seems best suited for adding capacity on a targeted basis. Indeed, if the belief is that mobile carriers will widely deploy 12.7 GHz spectrum across an entire PEA, then we urge the Commission to take them at their word and include buildout requirements that would extend service to at least 80 percent of the geographic area and at least 80 percent of the population in the PEA, within six, eight or at most ten years.

Adopting PEAs would be a decision to foreclose competition and to leave the spectrum fallow for many, many years in rural, tribal and other underserved areas. The alternative path is to license areas no larger than counties. As we saw in CBRS, where Verizon was the largest winning bidder, counties would not stop deep-pocketed mobile carriers from acquiring any license important to their deployment plans. What it would do is offer licenses that could be

affordable and a good fit for non-national mobile carriers, for WISPs, and for other emerging mobile market competitors.

Indeed, it seems to us that a primary reason that Big Mobile carriers want spectrum with these propagation characteristics to be auctioned on a PEA basis is precisely to disadvantage their most potent rising competitors: the three large cable broadband providers that are steadily capturing market share by bundling their Wi-Fi first MVNO service. Xfinity (Comcast) and Spectrum (Charter) each have more than 6 million wireless subscribers. Their "Wi-Fi first" MVNOs are leveraging the fact that cable internet subscribers offload more than 85% of mobile device traffic.[41] Those two cable companies were just behind Verizon in acquiring county-sized PALs in the CBRS auction. Counties are far better fit for cable's wireline footprint. And now Cox has also launched a MVNO mobile service that relies heavily on Wi-Fi offload. If the Commission wants competition in the mobile market, the 12.7 GHz band is an appropriate band to make useful to a wide range of potential broadband ISPs.

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

VI. CONCLUSION

The Public Interest Organizations believe that expanding access to spectrum for terrestrial broadband use in the currently underutilized 1,050 megahertz between 12.2-13.25 GHz can facilitate the deployment of 5G services, promote competition, enhance the benefits of next generation Wi-Fi, spur innovation, and help to address the digital divide in underserved communities. At the same time, we urge the Commission to consider our proposals, which are aimed at optimizing these public interest benefits and ensuring widespread benefits for all of America's communities.

Respectfully Submitted,

PUBLIC KNOWLEDGE
NEW AMERICA'S OPEN TECHNOLOGY INSTITUTE
BENTON INSTITUTE FOR BROADBAND AND SOCIETY
CENTER FOR RURAL STRATEGIES
NEXT CENTURY CITIES
ACCESS HUMBOLDT
X-LAB

/s/ Michael Calabrese
Director, Wireless Future Project
Open Technology Institute at
New America
740 15th Street, N.W., Ste 900
Washington, DC 20005

/s/ Kathleen Burke
Policy Counsel
Admitted to the Bar under D.C. App. R. 46-A (Emergency Examination Waiver)
Public Knowledge
1818 N Street NW, Suite 410
Washington, DC 20036

August 9, 2023