

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)
)
Expanding Flexible Use of the 3.7 to 4.2 GHz) GN Docket No. 18-122
Band)

REPLY COMMENTS OF VERIZON

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Just last month, Verizon completed the first 5G data transmission with a smartphone on a commercial 3GPP 5G New Radio (NR) network using spectrum the Commission only allocated for flexible use in 2016.¹ And we intend to be the first wireless provider to offer a 5G upgradeable smartphone on our mobile network in 2019.² These announcements follow our launch in October of the world’s first commercial 5G offering – a fixed wireless broadband service with peak speeds approaching 1 Gbps in Houston, Indianapolis, Los Angeles, and Sacramento.³ Verizon also announced recently that we will bring this 5G offering to Panama City, Florida in 2019 as it works to recover from the devastation wrought by Hurricane Michael.⁴

¹ Press Release, Verizon, *Verizon completes first 5G data transmission on a smartphone* (Nov. 13, 2018), <https://www.verizon.com/about/news/verizon-completes-first-5g-data-transmission-smartphone>.

² *Id.* Verizon and Samsung will bring one of the first commercial 5G smartphones to market in the first half of 2019. Press Release, Verizon, *Verizon and Samsung to release 5G smartphone in the U.S. in first half of 2019* (Dec. 3, 2018), <https://www.verizon.com/about/news/verizon-and-samsung-release-5g-smartphone-us-first-half-2019>.

³ Press Release, Verizon, *Verizon turns on world’s first 5G network* (Oct. 1, 2018), <https://www.verizon.com/about/news/verizon-turns-worlds-first-5g-network>; Press Release, Verizon, *5G is here* (Sept. 11, 2018), <https://www.verizon.com/about/news/5g-here>.

⁴ Press Release, Verizon, *Verizon's new network, including 5G technology, will help drive the Florida Panhandle’s future, includes \$25 Million investment* (Oct. 24, 2018),

In the past two years, using high band spectrum, Verizon has consistently led the world in development and more recently deployment of 5G. Now, as the initial comments demonstrate, the Commission should act quickly to provide access to a substantial amount of mid-band spectrum, which will help the United States quickly realize the full promise of 5G and spread its reach to more Americans.

I. INTRODUCTION AND SUMMARY.

The record in this proceeding shows that the public interest is best served by a rapid process that clears hundreds of megahertz of 3.7-4.2 GHz spectrum and assigns it to stakeholders eager to deploy 5G across the country. A market-based mechanism, with Commission oversight, is the most reasonable path to do so. Swift action here will advance U.S. interests in the global race to 5G.

Two key issues emerge from the record:

- Rapid action on repurposing 3.7-4.2 GHz spectrum is critical to U.S. interests in the race to 5G; and
- Both C-band interests and wireless interests recognize that repurposing 3.7-4.2 GHz spectrum must protect incumbent C-band uses.

The record also confirms that the market-based mechanism offers the best path forward to realize these two goals. The market-based mechanism is more likely to clear the band and assign spectrum faster because it does not require extensive Commission rulemaking. Further, as many C-band users recognize, satellite operators are well aware of their customers' individual needs, and are much better positioned to accommodate those needs than a Commission-run clearing and repacking process. Reasonable Commission oversight of the market-based

[https://www.verizon.com/about/news/verizons-new-network-including-5g-technology-will-help-drive-florida-panhandles-future.](https://www.verizon.com/about/news/verizons-new-network-including-5g-technology-will-help-drive-florida-panhandles-future)

mechanism by setting a minimum amount of spectrum that must be repurposed, protecting existing users, and imposing timelines, will ensure the process achieves the goals of this proceeding. In contrast, mechanisms that rely in whole or part on auctions will take far longer to put in place, and cannot provide the flexibility in clearing and reassigning spectrum that the market-based mechanism offers.

The record also reflects widespread opposition to creating a new, dedicated point-to-multipoint service in the band. Granting a preference to one type of service over others would conflict with the flexible-use spectrum policies that have successfully driven intense use of other bands to the benefit of the public. Instead, companies that wish to deploy point-to-multipoint service can compete for licenses like everyone else under the same flexible-use rules. And under no circumstances should the Commission allow “opportunistic” use in the repurposed portion of the band.

II. TWO KEY ISSUES EMERGE FROM THE RECORD: SWIFT ACTION TO REPURPOSE 3.7-4.2 GHz SPECTRUM IS CRUCIAL TO U.S. 5G INTERESTS, AND THE TRANSITION MUST PROTECT INCUMBENT C-BAND USES.

The record reflects the widespread understanding that mid-band spectrum is of increasing importance in the global race to 5G, and the 3.7-4.2 GHz band is the only large-scale mid-band opportunity for 5G in the United States. At the same time, C-band satellite operators, earth station users and wireless interests all observe that the transition must adequately protect or accommodate C-band traffic to make repurposing work.

A. Rapid Action on Repurposing is Critical to U.S. Interests in the Race to 5G.

As the record makes clear, the United States is in a tight race to lead in 5G and winning that race matters. Mid-band spectrum is particularly valuable for 5G, not only because of its propagation characteristics, but also because of its potential to be internationally harmonized. But compared to countries like China, South Korea, Japan, Spain, Italy, Finland, and the United

Kingdom that are committing hundreds of megahertz of mid-band spectrum to 5G, the United States currently faces a significant mid-band spectrum deficit.⁵ This is why repurposing the 3.7-4.2 GHz band is so important. As Ericsson states, “the 3.7-4.2 GHz band is the only mid-band spectrum opportunity that has been identified as potentially suitable for an exclusive-use, flexible-rights, licensed service, with a sufficient amount of spectrum for macro 5G operations.”⁶ Repurposing as much 3.7-4.2 GHz spectrum as possible as quickly as possible will help reduce that deficit.⁷

To close this gap, Verizon and many other commenters advocate repurposing hundreds of megahertz of 3.7-4.2 GHz spectrum.⁸ Mid-band spectrum – and in particular, the 3.7-4.2 GHz band – is of particular importance because of its favorable propagation characteristics (compared to millimeter wave spectrum) and the availability of wider channel bandwidths (compared to

⁵ See Starry, Inc. Comments at 2; Nokia Comments at 5; CTIA Comments at 5-6; *see also* Verizon Comments at 2-3.

⁶ Ericsson Comments at 6-7; *see also* AT&T Comments at 1-2 (stating “reallocating a significant portion of the C-band for terrestrial flexible use is perhaps the most promising opportunity to address this deficit”); Starry, Inc. Comments at 2 (also referring to the 3.7-4.2 GHz band as the “spectral sweet spot”).

⁷ Ericsson Comments at 3, 6-7; Qualcomm Comments at 1; Cisco Systems, Inc. Comments at 1-2.

⁸ *See, e.g.*, CTIA Comments at 3 (urges the FCC to make “hundreds of megahertz” available); Ericsson Comments at 3 (urges the FCC to “repurpose hundreds of megahertz”); Nokia Comments at 1 (encouraging the FCC to “leverage the favorable combination of potential wide-bandwidth channels and desirable propagation characteristics of this valuable spectrum range”) and 9 (states, “ideally, over time, the entire 500 megahertz would be reallocated for intensive 5G use”); Qualcomm Comments at 5 (encourages the FCC to explore “all options” to “fully clear the band”); R Street Institute Comments at 9 (encourages the FCC to target clearing 300 megahertz); T-Mobile USA, Inc. Comments at 2 (states incumbents should be required to make 200-300 megahertz available); Information Technology and Innovation Foundation Comments at 2 (“ITIF Comments”) (encourages the FCC to make an additional 200 or 300 megahertz available); Broadband Access Coalition Comments at 1, 3 (encouraging the FCC to make 300 megahertz available).

lower band spectrum). It thus provides better coverage than high band and delivers much higher peak data rates than low band.⁹ Hundreds of megahertz should be repurposed to accommodate multiple wireless providers, because an “individual carrier will need access to somewhere on the order of 100 megahertz of spectrum if it is to achieve gigabit-level speeds for mobile broadband service.”¹⁰ Qualcomm succinctly states that “the focused effort to open the 3.7 to 4.2 GHz band” is one of the “most significant steps the Commission can take” to win the race to 5G.¹¹

B. C-Band Earth Station Users and Wireless Interests Agree that Repurposing 3.7-4.2 GHz Spectrum Must Protect Incumbent C-Band Uses.

While some incumbent C-band users express reservations about any change to the status quo in the band, others envision a path forward for 5G in the band, provided the transition appropriately accounts for incumbent users’ needs. Wireless stakeholders share this view.

Charter, for example, with over 700 receive-only C-band earth stations, “supports the Commission’s efforts to explore the feasibility of allowing terrestrial wireless broadband services in all or part of the 3.7-4.2 GHz spectrum band,” but the initiative “must take appropriate steps to protect incumbent licensees and registrants prior to allowing terrestrial use in the band.”¹² Similarly, the American Cable Association “salutes this initiative,” provided satellite-delivered backhaul is given adequate protection and adequate spectrum is reserved for

⁹ Ericsson Comments at 6 (“In terms of capacity, some 5G use cases will demand significantly higher peak data rates for faster connections and low latency, and this will require wider channels than what is available in the lower bands.”).

¹⁰ Ericsson Comments at 3.

¹¹ Qualcomm Comments at 3.

¹² Charter Comments at 1, 3.

it.¹³ As the National Association of Broadcasters asserts, “the Commission can move both expeditiously and judiciously to balance public interest considerations in the C-Band.”¹⁴

We recognize that the Commission must ensure that broadcasters, cable companies, and other organizations that rely on C-band earth stations are able to continue receiving their programming without disruption. Any path forward must ensure that C-band earth station users, like Verizon, “continue to have access to the content they currently receive today.”¹⁵ CTIA agrees that “[a]ny repurposing of 3.7-4.2 GHz spectrum must consider and account for incumbent earth station uses.”¹⁶

With so many competing interests acknowledging the perspectives and aims of other stakeholders in the band, a reasoned and reasonable solution is within reach to deliver the benefits of 5G and protect incumbent users’ interests.

III. COMMENTERS RECOGNIZE THE MARKET-BASED MECHANISM AS THE MOST REASONABLE APPROACH TO PROMPTLY REPURPOSE 3.7-4.2 GHz SPECTRUM AND PROTECT INCUMBENT USES.

The record contains broad support for the market-based mechanism because of its many advantages over alternative auction-based mechanisms that would require extensive Commission involvement and the potential for undue delay.

Professor Daniel Vincent noted in a paper attached to Verizon’s comments that the market-based mechanism is likely to clear the band and assign spectrum faster than other

¹³ ACA Comments at 2; *see also* Altice USA Comments at 1-2 (“applaud[ing] Commission initiatives designed to promote efficient deployment of spectrum ... to benefit wireless consumers” and encouraging the FCC to “proceed cautiously” by ensuring there is no disruption to cable operators or customers).

¹⁴ NAB Comments at 14.

¹⁵ Verizon Comments at 4, 10-11.

¹⁶ CTIA Comments at 10; *see also* U.S. Cellular Comments at 4.

alternatives because it does not require an extensive Commission rulemaking.¹⁷ The negotiations that are central to the market-based mechanism also enable satellite operators and prospective flexible use licensees to reach mutually-beneficial arrangements (i.e., speed of clearing, market area), a process that will produce more efficient outcomes than the more rigid framework inherent in the auction process. Further, satellite operators are well aware of their customers' individual needs, and are much better positioned to address those needs than can a Commission-led clearing and repacking process.¹⁸ And importantly, the market-based approach premised on a satellite consortium is most likely to address the holdout risks inherent in any auction.¹⁹

A. Nearly All Commenters that Address How Best to Repurpose 3.7-4.2 GHz Spectrum Strongly Prefer the Market-Based Mechanism.

Like Verizon, many commenters agree that the market-based mechanism is the most reasonable path toward swift, efficient, and successful repurposing in the 3.7-4.2 GHz band. The Information Technology and Innovation Foundation explains that the market-based mechanism “is best suited to quickly bring this spectrum to market, transition it to more valuable use, and accelerate U.S. leadership in 5G services, all while preserving the important incumbent uses of the band.”²⁰ Cisco addresses the key operational benefits of the market-based approach: permitting C-band satellite operators “to plan how their downlink operations can be adjusted to

¹⁷ Verizon Comments, Att. A, Prof. Daniel R. Vincent, *Assessment of Proposed C-Band Mechanism*, at 2 (Oct. 22, 2018) (“Vincent”).

¹⁸ *Id.* at 5-6.

¹⁹ *Id.* at 7.

²⁰ ITIF Comments at 1-2; accord, Telecommunications Industry Ass’n Comments at 4-7 (“TIA Comments”) (market-based approach is more likely to ensure that spectrum is put to most efficient and productive use).

accommodate terrestrial spectrum use in part of the band” and allowing C-band satellite operators “to manage their customer relationships as downlink facilities are changed.”²¹

Motorola Solutions highlights that the market-based approach is the best means “to most quickly clear a portion of the band,”²² and the Telecommunications Industry Association (“TIA”) concludes that a market-based approach will repurpose spectrum much faster than “alternative, more top-down regulatory methods.”²³

A number of C-band users – both content distributors and earth station users – likewise support the market-based mechanism as the best path to protect their interests.²⁴ The comments of a company that distributes religious programming illustrate the wide support among content distributors for the market-based mechanism:

[W]e believe that a market-based approach, led by satellite operators, is the only practical solution for introducing terrestrial mobile operations in the C-band. Cable systems, broadcasters and content delivery companies have been working with satellite operators for decades. We are their customers, and they understand our needs and have direct knowledge of our operations. Consequently, satellite operators are best positioned to protect our company, the radio ministries we serve and other incumbent users while also undertaking the arduous and costly task of clearing spectrum for terrestrial mobile use.²⁵

²¹ Cisco Comments at 3.

²² Motorola Solutions Comments at 2.

²³ TIA Comments at 5.

²⁴ *E.g.*, Aviation Spectrum Management Resources, Inc. Comments at 7 (the C-Band Alliance concept would allow a more controlled yet quicker introduction of 5G and have other benefits to satellite communications firms); CB2.0 Communications Inc. Comments at 1 (a marketplace developed approach would provide more certainty and lower long-term costs for users); Cumulus Media and Westwood One Comments at 14-15 (market-based approach presents “the most practical solution” for introducing 5G services into the band); Digital Networks LLC Comments at 3-4 (“Digital Comments”) (market based approach “is the only practical solution”); Global Eagle Entertainment Inc. Comments at 4 (market-based approach is best suited to achieve faster 5G deployment); Luken Communications, LLC Comments at 2 (same); Olympus, Inc. Comments at 3 (same); PSSI Global Comments at 11 (same).

²⁵ Linkup Communications Comments at 5. *Accord* Cumulus Media and Westwood One Comments at 15 (“Through the lengthy, established business relationship between the parties,

QVC/HSN agree and note that “other Commission-based approaches would not mitigate disruptions to the operations of impacted C-band users and likely would impose high transactional costs directly on C-band users.”²⁶

By relying on negotiations among all stakeholder interests that will drive toward mutually beneficial outcomes, the market-based approach is most likely to repurpose the maximum amount of spectrum, in the minimum amount of time, while ensuring that current programming services are not disrupted.

B. Commenters Recognize that Reasonable Commission Oversight Will Serve the Public Interest.

A number of commenters including Verizon ask the Commission to adopt “guardrails” to ensure that the market-based mechanism is effectuated in the public interest.²⁷ The public interest here is two-fold: maximize the amount of 3.7-4.2 GHz spectrum for flexible use *and* continue delivery of programming that is currently provided via the C-band. To that end, Verizon’s initial comments call on the Commission to: (1) identify a minimum amount of spectrum to repurpose, (2) ensure that C-band traffic delivered by qualifying earth stations will

satellite operators understand the needs of those parties who utilize the C-band, they have direct knowledge of our operations, and are uniquely positioned to protect not only the interests of Cumulus and Westwood One, but the interests of the other incumbent users of the C band as well as those of other entities currently operating in the band which may not have registered their earth stations.”).

²⁶ QVC, Inc. and HSN Inc. Comments at 5-6 (“QVC Comments”).

²⁷ *See, e.g.*, Charter Comments at 4 (FCC oversight over market-based approach needed to ensure protection of incumbents and avoidance of consumer harm); Comcast Comments at 28 (if FCC adopts market solution, structural guardrails should be adopted so that users are not entirely at the mercy of satellite providers); QVC Comments at 5-9 (market-based mechanism is preferable and more practical provided FCC ensures that commitments to customers are satisfied); Verizon Comments at 9-17.

be adequately protected or accommodated in the transition, and (3) adopt strict timelines to accomplish the transition to flexible use spectrum.²⁸

The record supports this Commission framework. The R Street Institute, for example, asserts that the satellite consortium should be required to clear at least a minimum amount of spectrum.²⁹ CTIA urges the Commission to require a benchmark that is “aggressive” – “in the hundreds of megahertz.”³⁰ Ericsson suggests that the minimum nationwide spectrum benchmark should be “hundreds of megahertz so that multiple competitors may acquire mid-band spectrum for macro 5G.”³¹ The Commission should set an initial minimum spectrum benchmark greater than the C-Band Alliance’s recent proposal of 200 megahertz.³²

Commission oversight should also provide for adequate protection and accommodation of existing users of C-band spectrum. To that end, Verizon emphasized that the Commission need not adopt overly rigorous requirements but can assist the transition by providing for reasonable interference protection rules³³ and identifying appropriate repurposing options for

²⁸ Verizon Comments at 9-17.

²⁹ R Street Institute Comments at 9-12.

³⁰ CTIA Comments at 10.

³¹ Ericsson Comments at 10.

³² Verizon urged the Commission to maximize the amount of spectrum available for flexible use by minimizing any necessary guard band between these new licenses and fixed satellite service. Verizon Comments at 24-25. We also support AT&T’s view that at the band edge adjacent to Citizens Broadband Radio Service (“CBRS”) operations below 3.7 GHz, any out of band emission (“OOBE”) limits should “effectively prioritize C-band terrestrial licensees over 3.5 GHz shared licensees” and any guard band should not impact C-band licensees. Further, we agree that “the repurposed C-band blocks should be completely fungible from a technical operations perspective.” AT&T Comments at 20.

³³ We note that Verizon is reviewing the technical annex filed with the C-Band Alliance reply comments on December 7, C-Band Alliance Reply Comments (filed Dec. 7, 2018), as well as the Nokia *ex parte* filed December 3, Letter from Nokia to FCC (filed Dec. 3, 2018). Verizon will file any response in a subsequent *ex parte* submission.

consideration.³⁴ For example, Ericsson supports the Commission identifying “a variety of options for transitioning current C-Band earth station traffic to alternative means of delivery, including another transmission medium (fiber or wireless broadband, e.g., 5G) or other spectrum (e.g., Ku-band).”³⁵

The record also supports establishing firm deadlines to accomplish the transition. PSSI Global agrees, asserting that “strong deadlines” are a must.³⁶ Given the status of mid-band in other countries, Verizon agrees that there is no time to waste and supports tight timeframes for action under the market-based mechanism – 3-8 months for negotiation and a maximum of 12-20 months for clearing the band. The C-Band Alliance has expressly committed to protect the quality and reliability of incumbent FSS operations and tentatively committed to a transition timeline.³⁷ It should be amenable to a reasonable, Commission-adopted framework aimed at ensuring that the market-based mechanism will be executed in a manner consistent with Commission’s policy directives. And, as Verizon recommended in its comments, the framework should include a backstop of a more traditional “clear and auction” approach in the event that negotiations under the market-based mechanism approach get bogged down so that “all parties understand the consequences of not following the timeline for implementing a market-based mechanism.”³⁸

³⁴ *See, e.g.*, TIA Comments at 6-7; CTIA Comments at 16-20; Ericsson Comments at 15.

³⁵ Ericsson Comments at 15.

³⁶ PSSI Global Comments at 18.

³⁷ *See, e.g.*, C-Band Alliance Comments at 7.

³⁸ Verizon Comments at 16.

Imposing heavy-handed regulation of the market-based mechanism and the award of licenses, however, will undercut the mechanism's advantages of flexibility and speed. While some level of accountability is important, the Commission should not micromanage, or unnecessarily delay, the process by, for example, dictating precisely how negotiations should be conducted, or, as one commenter advocates, requiring notice and comment proceedings for each round of negotiation and clearing.³⁹

The Commission also should reject another commenter's calls for a band-specific cap that would prohibit entities from acquiring more than one-third of flexible use licenses and the inclusion of this band in the one-third spectrum screen that applies in reviewing transactions involving commercial mobile radio spectrum (CMRS) spectrum.⁴⁰ The Commission has previously (and correctly) rejected *ex ante* spectrum caps, most recently for the upper microwave flexible use service bands, finding that caps can unjustifiably restrict parties from acquiring the capacity they need to develop their business plans.⁴¹ There is no reason why the Commission should reverse course here. As Verizon explained in its initial comments, it would be inappropriate to import the CMRS screen into this band, because there is no basis to assume that the spectrum would be used for CMRS or mobile telephony.⁴² Rather, the Commission should

³⁹ NCTA Comments at 28-31.

⁴⁰ U.S. Cellular Comments at 19-20.

⁴¹ *See, e.g., Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auctions 101 (28 GHz) and 102 (24 GHz)*, Public Notice, AU Docket No. 18-85, FCC 18-109, ¶ 132 (rel. Aug. 3, 2018) (“the Commission has eliminated the preauction limit of 1250 megahertz that had been adopted for the 28 GHz, 37 GHz, and 39 GHz bands, consistent with the Commission’s conclusion not to adopt a pre-auction limit for the 24 GHz and 47 GHz bands”).

⁴² Verizon Comments at 21.

conduct a case-by-case review of particular acquisitions that raise competitive concerns. That review enables it to fully evaluate and address any such concerns, without micromanaging spectrum acquisitions through prescriptive rules and policies.

Finally, the Commission should reject calls to engage in lengthy studies that only will cause delay. For example, the Commission should reject requests to seek further information on “all potential methods to reduce interference”⁴³ or study the impact of repurposing spectrum on fixed satellite service operations in border areas.⁴⁴ Stakeholders are already fully incented to provide the Commission with analyses and data to support particular actions, and the Commission’s decision will be informed by that record. It does not need to commence additional studies itself. And claims that the Commission should seek Congressional approval before it proceeds with transitioning the 3.7-4.2 GHz band are similarly unnecessary and unhelpful.⁴⁵ Repurposing spectrum to best serve the public interest is a core responsibility of the Commission, is well within its statutory authority, and is consistent with the MOBILE NOW Act.

C. The Record Shows that the Alternative Mechanisms Suffer from Disadvantages and Are Unlikely to Quickly Repurpose a Significant Amount of Spectrum.

Alternatives to the market-based mechanism drew little support among commenters, and for good reason: No proposed alternative solves the C-band holdout problem or overcomes the informational deficit inherent in an FCC-led transition. First, as TIA notes, C-band satellite

⁴³ CCA Comments at 3.

⁴⁴ Lockheed Martin Corp. Comments at 11 (faulting Commission for performing “no analysis” of the full-band, full-arc policy).

⁴⁵ Comcast Corp. and NBCUniversal Media, LLC Comments at 24; Dynamic Spectrum Alliance Comments at 19.

operators' non-exclusive, overlapping rights across the 3.7-4.2 GHz band create a holdout problem that "makes a traditional FCC auction approach very challenging."⁴⁶ Professor Vincent also states that these non-exclusive rights "rule[] out the use of standard reverse auctions" in any alternative grounded in an incentive auction approach.⁴⁷ And second, an FCC-led auction and repacking process would have access to only limited operational information regarding existing C-band uses and solutions. Each of the alternative mechanisms identified in the *Notice* – T-Mobile's hybrid mechanism, an incentive auction, an overlay auction, or a capacity auction – will lead to extensive delays in 5G deployment, as they will be exceedingly time-consuming, will not clear spectrum as quickly, and are unlikely to yield economically optimal results.⁴⁸

With respect to discussion in the record regarding these alternative mechanisms, commenters who express support for an FCC-led auction (either an incentive auction or overlay auction) offer only tepid endorsement or conclusory statements and fail to advance those approaches any further than the very limited attention provided in the *Notice*.⁴⁹ There is no record basis for the Commission to consider these auction alternatives.

Several commenters demonstrated the flaws of T-Mobile's hybrid mechanism. Economist Coleman Bazelon, in a paper appended to the Intel, Intelsat, and SES comments, observes that the hybrid mechanism fails to solve for the holdout problem or the information

⁴⁶ TIA Comments at 4.

⁴⁷ Vincent at 2.

⁴⁸ Intel, Intelsat, and SES Comments at 10; C-Band Alliance Comments at 56-58.

⁴⁹ See American Cable Association Comments at 15; Competitive Carriers Association Comments; Google Comments at 14.

deficit identified above.⁵⁰ The hybrid mechanism also will result in costly delays as the necessary rulemaking process will not produce the level of information the FCC needs to adopt an efficient solution to repurposing; and similarly, the sequential nature of the hybrid mechanism auction, with little incentive for satellite operators to clear all 500 megahertz, will itself be a lengthy and inefficient process that delays C-band repurposing.⁵¹ And as Professor Vincent explains, the hybrid mechanism's two-sided auction requires a rigidly uniform definition of licenses and clearing times, even though satellite operators and wireless bidders likely would prefer negotiations that permit, for example, the balancing of speed of clearing versus price on a market by market basis.⁵² Finally, the hybrid mechanism provides for a one-time process and does not allow for continuous transactions as satellite operators' demands decline over time.⁵³

Although T-Mobile argues that the hybrid mechanism is more transparent than private negotiations,⁵⁴ enhanced transparency in a flawed mechanism is not a compelling advantage. T-Mobile asserts that the hybrid mechanism will encourage greater participation of buyers than the market-based mechanism,⁵⁵ but it offers no factual support to explain why. The transition facilitator's interest is in negotiating with as many potential purchasers as possible, both to encourage greater revenues through competition and to find a wider variety of buyer preferences over differing clearing solutions. T-Mobile argues that its mechanism will encourage more

⁵⁰ Intel, Intelsat, and SES Comments, App. A, Coleman Bazelon, *The Brattle Group, Maximizing the Value of the CBand: Comments on the FCC's NPRM to Transition C-Band Spectrum to Terrestrial Uses*, at 34 (Oct. 29, 2018) ("Bazelon").

⁵¹ *Id.*

⁵² Vincent at 5.

⁵³ Bazelon at 15, 36.

⁵⁴ T-Mobile Comments at 14.

⁵⁵ *Id.* at 13.

flexibility in geographic outcomes,⁵⁶ but, again, it offers no support for this claim. To the contrary, as Professor Vincent explains, the market-based mechanism is preferable in terms not only of geographic flexibility, but also in terms of market-by-market clearing timing flexibility.⁵⁷

Finally, while T-Mobile observes that the hybrid mechanism might contribute funds to the U.S. Treasury,⁵⁸ Verizon is mindful that the public interest – and not the generation of auction revenue – should guide the Commission’s actions here. While Section 309(j) provides the Commission with auction authority, subsection (j)(7) “prohibits the Commission from basing the decision whether to auction spectrum on a desire for federal revenue.”⁵⁹ Indeed, “the Commission’s most basic spectrum-management power is to assign spectrum to achieve public interest benefits *other than* monetary recovery.”⁶⁰ The market-based mechanism is the best path to furthering the public interest and national imperative by quickly introducing a significant swath of spectrum for 5G while protecting existing C-band uses.

IV. THE RECORD REFLECTS WIDESPREAD OPPOSITION TO CREATING A NEW, DEDICATED POINT-TO-MULTIPOINT SERVICE IN THE BAND.

The Commission should reject the request to award favorable regulatory treatment to fixed point-to-multipoint (“P2MP”) terrestrial services either by adopting a new P2MP service in the band and issuing P2MP-specific licenses or allowing “opportunistic” use throughout the

⁵⁶ *Id.*

⁵⁷ Vincent at 2-4.

⁵⁸ T-Mobile Comments at 10-13. *See also* Google Comments at 10-12; PISC Comments at 22.

⁵⁹ *Improving Pub. Safety Communs. in the 800 MHz Band, Report and Order*, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969, 15019 ¶ 81 (2004) (citing 47 U.S.C. 309(j)(7)).

⁶⁰ *Id.*

band.⁶¹ Granting these or any other preferences to one type of service over others would conflict with the flexible-use spectrum policies that have successfully driven intense use of other bands to the benefit of the public. Instead, companies that wish to deploy P2MP service can compete for licenses like everyone else under the same flexible-use rules. Disparate rules would create winners and losers that distort competition, frustrate investment, and ultimately harm the overarching goal of driving spectrum to its highest valued use.

Commenters representing multiple interests – wireless providers, satellite companies, and earth station users – collectively oppose the request to advantage P2MP service. As CTIA observes, the P2MP proposal is contrary to the Commission’s goal to increase flexible access opportunities:

[U]nder the flexible-use licensing framework the Commission proposes, new entrants can choose to offer mobile or fixed service – including P2MP service. Alternatively, they can assign rights via the secondary market. Allowing immediate use of the 3.7-4.2 GHz band for fixed P2MP operations would allow one type of use – P2MP – over others, which as a practical matter will limit future opportunities in the band.⁶²

Further, P2MP co-frequency sharing will only complicate efforts to repurpose spectrum for flexible-use services while maintaining existing C-band services in a smaller, repacked portion of the band:

Introducing P2MP networks will create encumbrances in the band – and even if limited to the repacked portion of the band, the introduction of P2MP networks will make any further repurposing more difficult down the road. Any proposal to allow use of even some portion of the band for P2MP is at odds with the goal of

⁶¹ See, e.g., Broadband Access Coalition Comments at 7-8; Frontier Communications Corp. and Windstream Services, LLC Comments at 4-5 (seeking to assign at least 320 megahertz for P2MP use); Google LLC Comments at 8-9; Microsoft Corp. Comments at 9-10.

⁶² CTIA Comments at 26-27. See also Qualcomm Comments at 6 (opposing authorization of fixed P2MP services as premature; allowing P2MP would conflict with the FCC’s action freezing applications for new facilities).

clearing existing uses and maximizing the amount of spectrum to be repurposed for 5G.⁶³

Many earth station users also oppose proposals from P2MP advocates. The national broadcast networks, for example, oppose authorizing P2MP in any portions of the band that remain available for video delivery, noting that P2MP transmissions necessarily emit high-powered signals in many directions, which would severely complicate frequency coordination and increase the potential for harmful interference to reception of video downlinks.⁶⁴

The Commission should remain focused on repurposing spectrum for flexible terrestrial use, which can include mobile or fixed service. The market should drive whether and to what extent each type of service is deployed. A market-based solution does not block potential spectrum buyers from purchasing spectrum and deploying P2MP, if that is the highest and best use.⁶⁵ Or, P2MP proponents can acquire spectrum in other bands. TIA notes that “numerous other bands are available, or could be made available, for point to multipoint use,” including the adjacent Citizens Broadband Radio Service band.⁶⁶

The Commission should also reject calls to allow “opportunistic” P2MP operations in repurposed spectrum prior to launch of a flexible-use licensee’s service.⁶⁷ Sound policy strongly

⁶³ CTIA Comments at 25; *see also* Intel Comments at 8-9 (“a command-and-control decision to force P2MP in the C-Band Downlink will impair future 5G use of the band by greatly reducing the flexibility and incentive for FSS operators to clear spectrum. Simply put, the P2MP proposal is incompatible with expanded terrestrial mobile 5G use of the band.”).

⁶⁴ CBS, Inc., et al. Comments at 10-11; *see also* Cumulus Media and Westwood One Comments at 4-5 (requirement to work around new P2MP services would undermine C-Band service); National Public Radio Comments at 13-14 (opposing P2MP sharing).

⁶⁵ Intel Comments at 9.

⁶⁶ TIA Comments at 8.

⁶⁷ PISC Comments. Similarly, Google’s proposal for assigning the entire band now for P2MP use, while enabling mobile use of only a portion of the band later, asks the Commission to favor one technology over another. Google Comments at 8-9.

