Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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

REPLY COMMENTS OF UNITED STATES CELLULAR CORPORATION

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United States Cellular Corporation ("USCC") submits these reply comments in response to the Notice of Proposed Rulemaking ("NPRM") released July 13, 2018 in the above-captioned proceeding and the comments filed in response to the NPRM.[1] USCC continues to strongly urge the Commission to utilize an auction-based reallocation mechanism in order to maximize the amount of spectrum in the 3.7-4.2 GHz band repurposed for terrestrial mobile and fixed operations (the Mid-Band Flexible Use or "MBX" spectrum) and to ensure that it is reallocated in alignment with the public interest. To that end, USCC also again urges the Commission to adopt a band plan, licensing and operating rules, and auction procedures for the MBX spectrum that ensure service providers of all sizes have a reasonable opportunity to acquire flexible use licenses for this crucially important mid-band spectrum.

I. INTRODUCTION & SUMMARY

As Ericsson explained in its comments, a "successful strategy for 5G requires access to mid-band spectrum, which offers a balance of low-band capabilities (favorable signal range and

[1] *See Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Notice of Proposed Rulemaking, GN Docket No. 18-122, FCC 18-91 (rel. July 13, 2018) ("NPRM"). Unless otherwise noted, all comments cited herein were filed in GN Docket No. 18-122 on October 29, 2018 in response to the NPRM.

indoor penetration) and higher-band benefits (increased capacity for faster speeds and lower latency)."[2] Given that "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,"[3] USCC agrees with CTIA that the "3.7-4.2 GHz band is a unique and critical opportunity to make much-needed mid-band spectrum available for 5G."[4] In addition to offering "up to 500 megahertz of contiguous spectrum, sufficient to provide wider channels for faster speeds and lower latency that make 5G a break-through enabler of innovation,"[5] as Nokia observed, there is "strong momentum toward the 3.7-4.2 GHz range being part of a globally harmonized 5G spectrum range,"[6] which Ericsson explained would result in "economies of scale, lower costs for deployment, more rapid roll-out of new services, and enhanced competition among suppliers to the United States and global markets."[7]

For these reasons, it is critical that the Commission ensure that its actions maximize the amount of 3.7-4.2 GHz band spectrum repurposed for terrestrial flexible use operations, which USCC continues to believe will occur only through the use of an incentive auction-based reallocation mechanism. As T-Mobile stressed, "[a]uctioning the 3.7 GHz band will generate more broadband spectrum – and more public interest benefits for consumers and taxpayers – than

[2] Comments of Ericsson, pp. 2-3 ("Ericsson Comments"); *see* Comments of AT&T Services, Inc. p. 1 ("AT&T Comments") ("[M]id-band spectrum will be a critical component of terrestrial 5G networks…").

[3] Ericsson Comments at 3.

[4] Comments of CTIA, p. 2 ("CTIA Comments"); *see* Comments of Competitive Carriers Association, p. 2 ("CCA Comments") ("The proceeding [ ] represents one of the only remaining opportunities to free-up a significant swath of mid-band spectrum that is ready and available for next-generation deployments.").

[5] CTIA Comments at 7-8.

[6] Comments of Nokia, p. 4 ("Nokia Comments").

[7] Ericsson Comments at 9; *see* CTIA Comments at 7 ("Global harmonization drives robust equipment markets, enables global roaming, and reduces costs for consumers.").

the satellite operators' proposal."[8] USCC also agrees with the Public Interest Spectrum Coalition ("PISC") that the "stakes are too high for a hands-off approach that privatizes the Commission's responsibilities…"[9]

The potential public interest benefits of repurposing a large amount of spectrum in the 3.7-4.2 GHz band, however, will be significantly curtailed if the Commission fails to also ensure that all interested parties have an opportunity to compete for, and acquire, new flexible use licenses for this spectrum. The open eligibility and familiar process of an auction-based reallocation mechanism of course will help to achieve this goal, but as demonstrated in many past proceedings, the Commission also must ensure that the band plan and licensing and service rules for the repurposed spectrum ensure small and regional carriers have a reasonable opportunity to acquire these licenses and to use this spectrum to provide next generation wireless services to the rural areas these carriers typically serve. With this in mind, for the reasons detailed herein, USCC strongly urges the Commission to require device operability across the entirety of the 3.7-4.2 GHz band, to adopt an MBX band plan consisting of 20 megahertz blocks, to license the MBX spectrum on the basis of Cellular Market Areas, to adopt a 15-year license term with a renewal expectancy to account for the time that will be required to clear the MBX spectrum and to allow licensees to invest in this spectrum with confidence, and to impose performance requirements tailored to the particular propagation characteristics of this spectrum.

[8] Comments of T-Mobile USA, Inc., p. 2 ("T-Mobile Comments").

[9] Comments of the Public Interest Spectrum Coalition, p. 32 ("PISC Comments").

II. AN AUCTION-BASED MECHANISM WOULD BEST ADVANCE THE PUBLIC INTEREST BY MAXIMIZING THE AMOUNT OF REPURPOSED SPECTRUM AND ENSURING EVERY INTERESTED SERVICE PROVIDER HAS A REASONABLE OPPORTUNITY TO ACQUIRE FLEXIBLE USE LICENSES

Given the critical importance of mid-band spectrum generally, and of the 3.7-4.2 GHz band specifically, to the deployment of 5G services, USCC again strongly urges the Commission to ensure that its actions in this proceeding facilitate reallocating the greatest amount of spectrum possible in this band while still protecting, otherwise accommodating, or adequately compensating incumbent users of this spectrum. Other commenters likewise stressed the need to maximize the amount of 3.7-4.2 GHz band spectrum made available for terrestrial operations given that, as Google emphasized, "[m]aking substantial spectrum resources available is key to maximizing public interest benefits from the C-band…"[10] For instance, CCA stressed how "it is imperative that the FCC identify a substantial amount of spectrum for flexible use of the band;"[11] Ericsson "urge[d] the FCC to ensure access to as substantial an amount of mid-band spectrum as is possible;"[12] AT&T emphasized that any "spectrum sale should encompass as much spectrum as is feasible given other constraints;"[13] and Qualcomm emphasized that the Commission "should continue to examine means of opening up the entire 500 MHz band for flexible use because there is no other sizable block of mid-band spectrum available."[14]

As USCC explained in its comments, of the approaches discussed in the NPRM, only an incentive auction-based reallocation mechanism would ensure that a socially efficient amount of spectrum in the 3.7-4.2 GHz band is repurposed for terrestrial broadband services and assigned

[10] Comments of Google LLC, p. 11 ("Google Comments").

[11] CCA Comments at 6.

[12] Ericsson Comments at 8.

[13] AT&T Comments at 16.

[14] Comments of Qualcomm Incorporated, p. 2 ("Qualcomm Comments").

under a fair and transparent process that supports the public interest.[15] T-Mobile likewise stressed that an "auction is the best way to ensure that adequate spectrum is made available…"[16] Numerous other commenters similarly touted the benefits of an auction-based reallocation mechanism. For instance, the Dynamic Spectrum Alliance explained how "spectrum auctions are the best method of assigning spectrum rights when spectrum sharing is not possible,"[17] and Google underscored how "a Commission-administered auction mechanism … stands out for its history of success."[18] As the Commission recently explained, it "assigns licenses for commercial and private internal use through competitive bidding in order to place the licenses in the hands of the parties that value them most highly and that are able to use them most effectively."[19]

Although a standard incentive auction like that used for the 600 MHz band may not be feasible here given satellite licensees' equal, nonexclusive rights to the entire 3.7-4.2 GHz band, USCC continues to believe strongly that a modified incentive auction framework could address the shortcomings of a standard incentive auction format with respect to the 3.7-4.2 GHz band while retaining the primary advantages of an incentive auction-based reallocation mechanism. For instance, if properly structured, an approach based on T-Mobile's proposed "hybrid" auction framework – where a consortium made up of the incumbent satellite licensees in the band would be the seller and terrestrial service providers would be the buyers[20] – could ensure that a socially

[15] *See* Comments of Dynamic Spectrum Alliance, p. at 4 ("DSA Comments") ("[T]he Commission should not delegate assignment of new flexible-use licenses to a private administrator that would oversee a set of opaque individual transactions.").

[16] T-Mobile Comments at 36.

[17] DSA Comments at 15.

[18] Google Comments at 10.

[19] *Transforming the 2.5 GHz Band*, Notice of Proposed Rulemaking, 33 FCC Rcd 4687, 4700-01 (2018) ("*2.5 GHz NPRM*").

[20] *See* T-Mobile Comments at 5.

efficient quantity of spectrum is reallocated for terrestrial mobile use and made available in a way that fosters competition in the acquisition of these spectrum rights and in the wireless marketplace broadly.

An incentive auction-based mechanism would best facilitate the repurposing of a socially efficient amount of 3.7-4.2 GHz band spectrum as a result of several features inherent in every incentive auction. For instance, rather than specify a fixed – and potentially socially inefficient – amount of spectrum to be repurposed, the initial stage of an incentive auction includes the maximum amount of spectrum that the Commission, based on public input, determines may feasibly be cleared in a given band. T-Mobile's hybrid incentive auction proposal, for example, would include all 500 megahertz in the 3.7-4.2 GHz band in the auction's initial stage. By starting with high spectrum clearing targets and, if necessary, incrementally reducing the amount of spectrum offered in each subsequent stage, incentive auctions permit market forces to determine the optimal (*i.e.*, maximum) amount of spectrum in a band that ultimately will be repurposed. As Professor Daniel Vincent noted with respect to T-Mobile's hybrid proposal in a paper commissioned by Verizon, the "reverse timing feature of this mechanism makes it possible for large amounts of spectrum to be cleared…"[21]

In contrast, under its proposed private sale approach, the C-Band Alliance has committed to clearing incumbent FSS operations from *no more than* 200 megahertz of the 3.7-4.2 GHz band, 20 megahertz of which would be reserved for a guard band, meaning a maximum of only 180 megahertz could be made available for terrestrial services under this approach.[22] As T-Mobile stressed, 180 megahertz "falls significantly short of what terrestrial operators need to

[21] Daniel R. Vincent, *Assessment of Proposed C-Band Mechanisms*, p. 5 (Oct. 22, 2018) (attached to Comments of Verizon) ("Vincent Paper").

[22] *See* Comments of the C-Band Alliance, pp. 10-11 ("C-Band Alliance Comments").

deploy 5G broadband operations in the spectrum."[23] Moreover, the C-Band Alliance has reserved the right to repurpose even less spectrum "depend[ing] on demand from terrestrial mobile service providers, which will be determined pursuant to a market-based process *to be run by the C-Band Alliance*."[24] In other words, the C-Band Alliance has made no "commitment" whatsoever to repurpose a portion of the 3.7-4.2 GHz band, and its members appear ready to collectively withhold their consent to clearing even 200 megahertz absent substantial payments for spectrum rights they were granted at no cost, with no consideration of the public interest benefits of reallocating a significant portion of the 3.7-4.2 GHz band for terrestrial broadband services.

Notably, as Nokia points out, although the C-Band Alliance currently insists that it will not consider clearing more than 200 megahertz, it "has not justified why even ongoing FSS operations required to support all existing customers needs to occupy a full 300 MHz of this spectrum range."[25] Despite claims to the contrary, this hard, and apparently arbitrary, cap on the amount of 3.7-4.2 GHz band spectrum the C-Band Alliance potentially will allow to be repurposed for terrestrial broadband clearly demonstrates that, unlike an incentive auction-based mechanism, the proposed private sale approach will *not* "let the market … determine the optimal amount of C-Band Downlink spectrum made available for terrestrial services…"[26] On the other hand, as PISC explained, the "incentive auction authority under Section 309(j) that Congress bestowed on the Commission … is the legitimate 'market-based approach,'" and thus, an

[23] T-Mobile Comments at 11.

[24] C-Band Alliance Comments at 25 (emphasis added).

[25] Nokia Comments at 2.

[26] Joint Comments of Intel Corporation, Intelsat License LLC, and SES Americom, Inc., p. 3 ("Joint Satellite Parties Comments"); *see* DSA Comments at 17 ("[P]rivate transactions directed by a private administrator would not be as market-based as an auction."); T-Mobile Comments at 13 ("[T]he private sale … is not likely to generate true market-based results.").

incentive auction "can and should be designed to work for this band."[27] As noted by T-Mobile, under an incentive auction-based mechanism, the "minimum amount of spectrum sold would be determined by the Commission after a public interest assessment, not unilaterally determined by the satellite operators."[28]

Although proponents of a private sale mechanism have suggested that concerns regarding an initial reallocation of a suboptimal amount of 3.7-4.2 GHz band spectrum can be addressed via subsequent private sales, as USCC explained in its comments, the potential for future additional sales would not remedy an insufficient initial tranche of spectrum being made available for terrestrial broadband services. For instance, even if future sales were to take place, which certainly would not be guaranteed, terrestrial service providers who are unable to acquire any rights to the 3.7-4.2 GHz band in the initial round of private sales would be at a significant disadvantage because their ability to deploy 5G services would be significantly curtailed absent the ability to incorporate this crucial mid-band spectrum in their networks. These providers also likely would face higher acquisition costs because, with each subsequent sale, rights to the 3.7-4.2 GHz band would become increasingly scarce, and thus, would sell for increasingly higher prices.

AT&T likewise stressed that "the spectrum transition should not be piecemeal, with some spectrum rights transferred in the relatively near future and then more spectrum reallocated later."[29] As AT&T explained, for "equipment manufacturers to develop an ecosystem of devices

[27] PISC Comments at 26; *see Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12367 (2012) ("*Incentive Auction NPRM*") (explaining how incentive auctions allow it "to apply market forces to the assignment of spectrum licenses, helping to ensure that spectrum is put to its most productive use").

[28] T-Mobile Comments at 14.

[29] AT&T Comments at 16.

and network equipment with economies of scope and scale, the full dimensions of the reallocation must be identified quickly, and with finality."[30] Ericsson similarly urged the Commission "to repurpose the maximum amount of spectrum for flexible use service from day one, given the benefits in terms of economy of scale and availability of devices," as well as the fact that "clearing spectrum in multiple stages creates equipment complexities."[31] Moreover, given the current dearth of mid-band spectrum suitable for 5G deployments, maximizing the amount of repurposed 3.7-4.2 GHz band spectrum from the start will help to ensure that the United States does not fall behind the rest of the world in the availability of 5G services. As members of the C-Band Alliance emphasized, "the 'United States will not get a second chance to win the global 5G race.'"[32]

Another crucial benefit of utilizing an incentive auction-based reallocation mechanism is self-evident – it would provide a powerful *incentive* for incumbent operators in the 3.7-4.2 GHz band to clear a socially efficient amount of spectrum because the payments made to these incumbents would increase proportionally with the amount of spectrum made available in the auction.[33] The importance of this pecuniary enticement inherent in incentive auctions is particularly important here given the satellite licensees' equal, nonexclusive rights to the entire 3.7-4.2 GHz band. As noted by Professor Vincent, a "positive feature" of T-Mobile's proposed incentive auction-based mechanism is that "some of the sell-side advantage of the satellite operators is reduced" because, if the satellite operators "choose not to accept the prices on offer"

[30] *Id.*

[31] Ericsson Comments at 10-11.

[32] Joint Satellite Parties Comments at 4 (quoting *China Holds Narrow Lead in Global Race to 5G, Report Finds,* Press Release, CTIA.org (Apr. 16, 2018)).

[33] *See* CCA Comments at 7 ("[A]n auction could likely incentivize existing operators to reallocate spectrum resources…").

for a particular clearing quantity, "they must accept the risk of waiting for a lower amount of spectrum to be cleared with, potentially, lower revenues."[34]

In this way, an incentive auction-based reallocation mechanism also would help to address the "holdout" problem (*i.e.*, the "incentive for an FSS licensee to overstate the value it assigns to the spectrum in order to increase the share of auction revenue it may receive")[35] that exists as a result of the nonexclusive licensing framework in the 3.7-4.2 GHz band. Although the C-Band Alliance claims that its proposed private sale approach also would overcome the holdout problem, unlike an incentive auction-based mechanism, a private sale approach would not rely on market forces to do so. Specifically, the C-Band Alliance contends that, because its proposal "calls for the FCC to, by rule, remove primary status protection from any satellite services in the cleared frequencies," "neither satellite operators that are eligible to join the C-Band Alliance but elect not to nor those ineligible to join because they do not operate satellites capable of serving CONUS can act as holdouts."[36] In other words, rather than relying on market forces to overcome the holdout problem, the C-Band Alliance is asking the Commission to grant it quasi-governmental authority over any holdout licensees. The C-Band Alliance's proposal, therefore, "ignores the fact that Congress has entrusted spectrum allocations to the Commission."[37] Only the Commission, consistent with its public interest obligations and based on a thoroughly-developed public record, should make this sort of decision or wield this level of power over operations it has authorized in accordance with law and regulation.

[34] Vincent Paper at 4.

[35] NPRM at ¶ 59.

[36] C-Band Alliance Comments at 28.

[37] Comments of Comcast Corporation and NBCUniversal Media, LLC, p. 29 ("Comcast Comments").

The fact that an incentive auction-based mechanism would reduce the "sell-side advantage of the satellite operators" also would inhibit satellite operators' ability to engage in monopolistic pricing. In contrast, as T-Mobile explained, because "the satellite licensees together would have a monopoly and would be negotiating as a single entity" under the private sale approach, "they would likely demand higher prices than a truly competitive market would support, which would make less than the socially optimal amount of spectrum available for terrestrial use."[38] Although the C-Band Alliance contends that the "availability of other spectrum suitable for terrestrial use … will exert downward pricing pressure and prevent [it] from exercising monopoly pricing power," the mid-band spectrum resources listed by the Alliance are in no way "substitutable" for the 3.7-4.2 GHz band, and thus, would not prevent it from engaging in monopolistic pricing.[39]

For instance, Ericsson notes that, despite the Commission's recent revisions, the Citizens Broadband Radio Service rules "continue to limit the 3.5 GHz band's utility for macro 5G deployments" as a result of the band's "sharing arrangement, lower transmit power, and narrower channelization."[40] In addition, "a maximum of 70 megahertz will be available for the licensed PAL service…"[41] The C-Band Alliance also refers to the 2.5 GHz band (2496-2690 MHz),[42] but the channelization of this band (*i.e.*, channel groups comprised of three 5.5 megahertz channels in the lower or upper band segment and one noncontiguous 6 megahertz channel in the mid-band segment) is inconsistent with the channelization in the 3GPP

[38] T-Mobile Comments at 13.

[39] C-Band Alliance Comments at 35.

[40] Ericsson Comments at 9; *see* CTIA Comments at 8 ("[T]he CBRS rules [ ] retain challenges for large-scale deployments…").

[41] Ericsson Comments at 9.

[42] *See* C-Band Alliance Comments at 36.

specifications for 5G. Further, incumbent licensees already possess rights to the 2.5 GHz band covering a significant portion of the country, especially in urban areas, where the limited amount of unassigned spectrum "generally is only available in small, irregularly shaped areas,"[43] meaning only a patchwork of spectrum in the 2.5 GHz band potentially will be made available for commercial use. Moreover, under the Commission's current proposals, commercial service providers will have an opportunity to acquire 2.5 GHz band licenses only after the Commission opens up to three different local priority filing windows for incumbent licensees, Tribal Nations, and educational entities.[44]

The C-Band Alliance also notes that NTIA is studying the feasibility of allowing commercial use of the 3100-3550 MHz band,[45] but NTIA already has found that the "3100-3505 MHz portion of the band is used heavily on a frequency and geographic basis, limiting the opportunities for sharing with wireless broadband."[46] Moreover, although NTIA earlier this year identified the 3450-3550 MHz portion of this band for potential commercial use, in June, NTIA Administrator David Redl testified before the Senate Commerce Committee that they "are at a *very preliminary stage* with this band…"[47] Finally, the C-Band Alliance references the 4.9 GHz band,[48] but that band consists of a mere 50 megahertz of spectrum (4940-4990 MHz) and the band plan, to which the Commission proposes only a minor revision, consists of very narrow 1

[43] *2.5 GHz NPRM*, 33 FCC Rcd at 4689.

[44] *See id.* at 4695.

[45] *See* C-Band Alliance Comments at 36.

[46] U.S. Dep't of Commerce, *Quantitative Assessments of Spectrum Usage*, p. 9 (Nov. 2016), *available at* www.ntia.doc.gov/files/ntia/publications/ntia_quant_assessment_report-no_appendices.pdf.

[47] Testimony of Assistant Secretary Redl Before the Senate Commerce, Science, and Transportation Committee (June 13, 2018) (emphasis added), *available at* www.ntia.doc.gov/speechtestimony/2018/testimony-assistant-secretary-redl-senate-commerce-science-and-transportation.

[48] *See* C-Band Alliance Comments at 37.

megahertz and 5 megahertz channels.[49] Moreover, only entities providing public safety services currently are eligible for licenses in the 4.9 GHz band, and re-designating some or all of this band to commercial use is only one of several actions upon which the Commission sought comment earlier this year.[50]

USCC again emphasizes the competitive benefits that will arise from the use of an incentive auction-based reallocation mechanism. These benefits will arise in part because, as discussed above, an incentive auction-based mechanism would repurpose more spectrum than the C-Band Alliance's proposed private sale approach. As Nokia explained, the "amount of spectrum is critical as to whether the band will support multiple licensees providing the types of robust 5G services that should be enabled in the 3.7 GHz band."[51] Similarly, CCA explained how repurposing a substantial amount of 3.7-4.2 GHz band spectrum for terrestrial operations "will promote greater competition by increasing the likelihood of a number of licenses in the band."[52]

In addition, PISC explained how a "private sale is [ ] likely to distort competition in the mobile market" because the spectrum "will be made available to potential bidders based only on maximizing the incumbent licensees' profit rather than the broader public interest."[53] Similarly, the Dynamic Spectrum Alliance cautioned that "[e]ntrusting clearing to a transition facilitator risks effectively limiting access to the band to a handful of companies conducting private

[49] *See Amendment of Part 90 of the Commission's Rules,* Sixth Further Notice of Proposed Rulemaking, WT Docket No. 07-100, FCC 18-33 ¶¶ 8-9 (rel. Mar. 23, 2018).

[50] *See id.* at ¶¶ 64-85.

[51] Nokia Comments at 8.

[52] CCA Comments at 6.

[53] PISC Comments at 22.

negotiations."[54] In contrast, "Commission auctions are designed to ensure that as wide a set of potential bidders can participate as possible…"[55] In other words, while a private sale approach "would benefit the largest and most well-funded purchasers," a "wider array of businesses and entities [ ] would have equal chance to win spectrum in an auction."[56] Despite these clear risks, the C-Band Alliance is resisting even a modicum of Commission oversight, arguing that it is "unnecessary and likely to delay deployment of 5G services in the C-Band Downlink."[57] Rather than be subject to any requirements intended to advance the public interest, the C-Band Alliance clearly desires unbounded discretion to maximize its members' profits from the sale of a public resource over which they received certain limited rights at no cost.

The public also would benefit from the use of an incentive auction-based reallocation mechanism because the "[r]evenues from the auction would be divided between the U.S. Treasury and satellite operators, who would use some of the proceeds to pay for relocation of their customers."[58] In contrast, as Google explained, "revenues generated from private industry negotiations will not return funds to the U.S. Treasury."[59] Rather, under the proposed private sale approach, satellite operators, who "acquired their C-band rights from the Commission at no cost, would reap a financial windfall,"[60] which PISC stressed would amount to "a massive and

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[54] DSA Comments at 17-18.

[55] *Id.* at 18.

[56] *Id.*; *see* CCA Comments at 8 ("noting that, "while the Commission has an admirable track record" with respect to "ensur[ing] fair and equitable participation from all interested parties" in its auctions, "private entities do not have the same experience").

[57] C-Band Alliance Comments at 22.

[58] T-Mobile Comments at 3.

[59] Google Comments at 11; *see* T-Mobile Comments at 12 ("The satellite operators' proposal also cuts taxpayers out of the equation."); DSA Comments at 4 ("Delegation to a private administrator would lead to a loss of revenue for the U.S. Treasury").

[60] Google Comments at 11; *see* T-Mobile Comments at 12 ("While satellite operators secured their spectrum at no cost, they will likely realize enormous returns from the sale of their spectrum.").

needless giveaway of public assets,"[61] and which T-Mobile explained would be "directly contrary to the Communications Act's structure for making the public's spectrum available."[62] In addition, like USCC, T-Mobile explained how "a transparent auction process [ ] will better allow satellite operators to assess the value of their spectrum," and thus, "to make better, more informed choices about their future use of the 3.7-4.2 GHz band."[63]

Acquiescence to the C-Band Alliance's demands to use a private sale approach, on the other hand, would violate the Commission's statutory duties under Section 309 of the Communications Act. For instance, while Section 309(a) requires the Commission to determine whether the grant of an application will serve the public interest,[64] as the Dynamic Spectrum Alliance noted, a "transition facilitator supported by a subset of global C-band operators would seek to serve the narrow interests of those operators."[65] For instance, Google explained how a "Transition Facilitator representing international satellite businesses would have little if any concern for the long-term development of 5G services in the United States and maintaining this country's global leadership in wireless, which should be of paramount concern to the Commission."[66] As NCTA emphasized, considerations like these are why "Congress [ ] delegated to the Commission the authority and responsibility to regulate spectrum allocations in the public interest, a role that the Commission cannot merely cede to the market."[67] On the other

[61] PISC Comments at 22.

[62] T-Mobile Comments at 3 (citing 47 U.S.C. §309(j)).

[63] *Id.* at 14-15; *see* AT&T Comments at 17 ("The FCC has years of experience developing auction processes and procedures that efficiently price spectrum, mechanisms that are generally well-known and understood…")

[64] *See* 47 U.S.C. §309(a).

[65] DSA Comments at 17.

[66] Google Comments at 12; *see* Comcast Comments at 24 ("[I]t would run counter to the public interest for the Commission to abdicate its traditional role in repurposing spectrum.").

[67] Comments of NCTA – The Internet & Television Association, p. 6 ("NCTA Comments") (internal citation omitted).

hand, Google noted how "Commission action to design an auction framework could take the needs of all stakeholders in account."[68]

Use of the proposed private sale approach also would violate the requirement in Section 309(j)(1) that, subject to Section 309(j)(6)(E), if mutually exclusive applications are accepted, "the Commission shall grant the license or permit to a qualified applicant *through a system of competitive bidding*…"[69] While the C-Band Alliance claims that this competitive bidding requirement will not be triggered because its proposal will not result in mutually exclusive applications, any reallocation of spectrum in the 3.7-4.2 GHz band for terrestrial flexible use operations undoubtedly would draw mutually exclusive applications *but for* the C-Band Alliance's plan to have only those terrestrial service providers that it decides – pursuant to an undisclosed set of terms and conditions the Alliance apparently hopes to keep even from the Commission[70] – are eligible to file license applications with the Commission.[71] As PISC explained, "there could easily be potential bidders who are shut out of the private auction and who would be filing mutually exclusive applications but for the fact the Commission outsources the auction to private parties."[72]

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[68] Google Comments at 12; *see* DSA Comments at 17 ("[A]n auction would better serve the Commission's wider responsibilities.").

[69] 47 U.S.C. §309(j)(1) (emphasis added); *see* PISC Comments at 3 ("A 'market-based' approach that is tantamount to a private auction or sale would be an end-run around Section 309(j) of the Communications Act in clear contravention of Congressional intent and precedent.").

[70] *See* C-Band Alliance Comments at 23 (urging the Commission not to require the submission of a "Transition Facilitation Plan").

[71] *See id.* at 30 ("[T]he C-Band Alliance will negotiate SMAs with prospective terrestrial mobile service providers… [B]ecause this agreement will be a prerequisite to applying for a license for the provision of terrestrial mobile service, the Market-Based Approach will not result in mutually exclusive applications.").

[72] PISC Comments at 25.

The C-Band Alliance appears to be relying heavily on the reference in Section 309(j)(1) to mutually exclusive applications that are "accepted,"[73] but the Alliance cannot reasonably claim that the "acceptance" of mutually exclusive applications by the Commission is a condition precedent to awarding the flexible use licenses via a system of competitive bidding when the private sale approach would prohibit the independent filing, and thus acceptance, of applications for these licenses. As the U.S. Court of Appeals for the D.C. Circuit (the "D.C. Circuit") has held, a "bidder in a government auction has a 'right to a legally valid procurement process;' a party allegedly deprived of this right asserts a cognizable injury."[74] Here, the C-Band Alliance's private sale approach would fall well short of a "legally valid procurement process" given that its members "effectively are proposing a mechanism in which they would play a central role in allocating terrestrial rights that they do not currently possess,"[75] no enforceable public interest obligations would govern the negotiation process, and the Commission would have little to no active oversight.[76]

This conclusion finds strong support in the decision by the D.C. Circuit in *Aeronautical Radio, Inc. v. FCC*.[77] That case, which was decided before Congress granted the Commission auction authority, posed the question of whether the Commission's decision to forgo comparative hearings violated its "statutory duty to hold comparative hearings when presented

[73] *See* C-Band Alliance Comments at 30, n. 64 (emphasizing "accepted" in a quote of Section 309(j)(1)).

[74] *U.S. Airwaves, Inc. v. FCC*, 232 F.3d 227, 232 (D.C. Cir. 2000) (quoting *DIRECTV, Inc. v. FCC*, 110 F.3d 816, 829 (D.C. Cir. 1997)).

[75] CCA Comments at 7-8.

[76] *See Alvin Lou Media, Inc. v. FCC*, 571 F.3d 1, 7 (D.C. Cir. 2009) (finding that "the Commission's pre-auction procedures deprived ALM of the right to a valid procurement process" where, "[b]y allowing a technically deficient application to be designated mutually exclusive and to compete against ALM's application, the Commission's rules deferring technical review until after the auction was conducted put ALM at a competitive disadvantage").

[77] 928 F.2d 428 (D.C. Cir. 1991).

with bona fide and mutually exclusive license applications."[78] Nevertheless, the court's reasoning is equally applicable to a situation where the Commission forgoes an auction given that competitive bidding has replaced comparative hearings as the preferred method of awarding licenses when mutually exclusive applications have been filed.

Aeronautical Radio involved the Commission's decision to allocate spectrum to the Mobile Satellite Service ("MSS") that had been allocated exclusively for the Aeronautical Mobile Satellite Service and, rather than select a single MSS licensee, to award the MSS license to "a consortium of all applicants, formed through mutual agreement."[79] The petitioners argued that the Commission's decision "effectively denied without [a comparative] hearing the mutually exclusive applications of those applicants who would have preferred implementation of their individual proposals," and thus, constituted "an abdication of the Commission's duty to select, after full evidentiary hearing, the application which would best serve the public interest."[80] In response, the Commission argued that "there was no mutual exclusivity … because all applicants were allowed to offer their proposed services through the consortium."[81] The court, however, found the Commission's claim to be "disingenuous," emphasizing that it was "beyond dispute that the Commission's adoption of a consortium approach served to foreclose all individual license applications."[82] The court explained further that, "[t]o the extent the consortium's MSS system differed from that which some applicants had envisioned, the individual proposals of those applicants were effectively denied."[83]

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[78] *Id.* at 450.

[79] *Id.* at 451.

[80] *Id.* at 450.

[81] *Id.* at 451.

[82] *Id.*

[83] *Id.* at 451-52.

Similar to if the Commission were to adopt the C-band Alliance's private sale proposal, the Court found that, "[e]ven giving the Commission the full benefit of the doubt, it would appear that the agency is acting only at the periphery of its authority in adopting a rule which eliminates mutual exclusivity through the simple expedient of prohibiting license applicants from pursuing their individual applications and requiring them to form a joint agreement."[84] Although the court acknowledged "that delay, expense and arduous choices are among the burdens associated with comparative hearings," it concluded that "they are burdens that Congress found to be outweighed by the benefits of a reasoned assessment of the public interest by the agency entrusted with furthering that interest."[85] Consequently, "these burdens [did] not justify the Commission's avoidance of a comparative procedure."[86]

The C-Band Alliance also attaches too much weight to Section 309(j)(6)(E), which states that the Commission's auction authority does not "relieve the Commission of the obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity…"[87] As the Commission previously explained, it "has consistently interpreted this provision to mean that it has an obligation to attempt to avoid mutual exclusivity by the methods prescribed therein *only when doing so* would further the public interest goals of Section 309(j)(3)."[88] The Commission

[84] *Id.* at 452.

[85] *Id.*

[86] *Id.* Although the court declined to determine whether the Commission would ever be justified in imposing a consortium requirement in a licensing proceeding, it stressed that, "[a]t a minimum, … any such departure from the statutorily prescribed and judicially recognized practice of resolving mutually exclusive applications through comparative hearings must be premised on some *truly compelling grounds* that are special to the particular proceeding…" *Id.* (emphasis added).

[87] 47 U.S.C. §309(j)(6)(E).

[88] *Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended*, Report and Order and Further Notice of Proposed Rulemaking, 15 FCC Rcd 22709, 22719 (2000) (emphasis added).

further explained that the language of Section 309(j)(3) "makes clear that the public interest objectives of Section 309(j)(3) *apply broadly* to the threshold issue of which licenses should be subject to auction, which necessarily requires consideration in each case of whether to adopt a licensing mechanism based on mutual exclusivity."[89] Similarly, the D.C. Circuit has held that "the Commission *had to consider* the public interest in deciding whether to forgo an auction."[90] For the reasons discussed above, the public interest objectives of Section 309(j)(3) weigh strongly in favor of an auction-based reallocation mechanism, including: ensuring the provision of services to "those residing in rural areas;" "avoiding excessive concentration of licenses;" "disseminating licenses among a wide variety of applicants, including small businesses;" "recovering for the public a portion of the value of the public spectrum resource made available;" "avoid[ing] unjust enrichment;" and ensuring "efficient and intensive use of the electromagnetic spectrum."[91]

In particular, the C-Band Alliance focuses on its proposed private negotiations with terrestrial service providers as the appropriate means to avoid the filing of mutually exclusive applications for flexible use licenses in the MBX spectrum. The C-Band Alliance essentially is asking the Commission to require terrestrial service providers to enter into these private negotiations in order to have any opportunity to acquire flexible use licenses. However, the "Commission itself has acknowledged that it 'cannot, of course, direct mutually exclusive applicants to enter into agreements to avoid the comparative evaluation to which they are

[89] *Id.* at 22720 (emphasis added).

[90] *M2Z Networks, Inc. v. FCC*, 558 F.3d 554, 563 (D.C. Cir. 2009) (emphasis added); *see Benkelman Tel. Co. v. FCC*, 220 F.3d 601, 606 (D.C. Cir. 2000) (stressing that Section 309(j)(6)(E) "imposes an obligation only to minimize mutual exclusivity 'in the public interest'") (quoting 47 U.S.C. §309(j)(6)(e)).

[91] 47 U.S.C. §309(j)(3)(A)-(D).

entitled…'"[92] This finding applies equally with respect to forcing mutually exclusive applicants to enter into agreements to avoid competitive bidding. In addition, despite the C-Band Alliance's focus on negotiations, the D.C. Circuit has consistently held that Section 309(j)(6)(E) "cannot be read to direct the FCC to adopt all other means available."[93]

Although the C-Band Alliance contends that "Commission precedent supports the agency's authority to use various means to avoid mutual exclusivity," the proceedings to which it refers are easily distinguishable from the situation here. For instance, with respect to the 2000-2020 MHz and 2180-2200 MHz bands, the Commission concluded that competitive bidding was not required when it granted DISH, the existing MSS licensee in these bands, the authority for "full-flexible use under the Part 27 AWS rules…"[94] As the Commission explained, given that "the terms of DISH's 2 GHz licenses allowed it to provide terrestrial service in the 2000-2020 MHz and 2180-2200 MHz bands" even prior to the grant of this authority, the Commission was not issuing "initial licenses," but rather was "modif[ying] the ATC authority under the existing MSS licenses so as to be governed by the new AWS-4 band rules."[95] In contrast, the grant of flexible use licenses in the MBX spectrum will be "initial licenses," and thus subject to requirements of Section 309(j), because they will authorize operations for the first time "under a new licensing scheme, that is, one involving a different set of rights and obligations for the licensee."[96]

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[92] *Aeronautical Radio, Inc. v. FCC*, 928 F.2d 428, 450 (D.C. Cir. 1991) (quoting *Advanced Mobile Phone Service, Inc.*, 93 FCC 2d 683, 691 (1983)).

[93] *Orion Communications Ltd. v. FCC*, 213 F.3d 761, 763 (D.C. Cir. 2000); *see Bachow Communications, Inc. v. FCC*, 237 F.3d 683, 691 (D.C. Cir. 2001) (stressing that Section 309(j)(6)(E) "does not … forbid resort to competitive bidding unless no other means to resolve mutual exclusivity are available").

[94] *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Order on Reconsideration, WT Docket No. 12-70, FCC 18-121, ¶ 16 (rel. Aug. 16, 2018).

[95] *Id.*

[96] *Fresno Mobile Radio, Inc. v. FCC*, 165 F.3d 965, 970 (D.C. Cir. 1999).

The C-Band Alliance also discusses the *Nextel Swap Order*,[97] in which the Commission decided to reconfigure the 800 MHz band to remedy the ongoing interference to public safety operations in that spectrum, a process that required Nextel to relinquish its spectrum rights in the 800 MHz band in exchange for rights to 10 megahertz of spectrum in the 1.9 GHz band.[98] As part of the spectrum exchange, Nextel also was responsible for the costs related to reconfiguring the 800 MHz band and clearing the 1.9 GHz band.[99] In that proceeding as well, the Commission concluded that the 1.9 GHz band license granted Nextel in the spectrum exchange could not be "considered an 'initial license' subject to auction under Section 309(j)" because the spectrum rights Nextel would gain in the 1.9 GHz band would not "differ significantly enough – in terms of rights and responsibilities – from Nextel's existing authorizations so as to warrant treatment as the issuance of an initial license rather than as a modification of license."[100] Alternatively, the Commission explained that it "could have exercised [its] authority to grant rights to the ten megahertz of spectrum to Nextel as an initial license without subjecting the spectrum to competitive bidding procedures because, "[a]s with a license modification approach, … eligibility for the 1.9 GHz spectrum would have to be limited to Nextel for the restructuring plan to address satisfactorily the public interest imperatives" identified by the Commission.[101] In contrast, here we are dealing with initial licenses that will be awarded to new users of the 3.7-4.2 GHz band, not to the incumbent licensees of that band.

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[97] *See* C-Band Alliance Comments at 31.

[98] *Improving Public Safety Communications in the 800 MHz Band*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969, 14973-75 (2004).

[99] *See id.* at 14975.

[100] *Id.* at 15015, n. 236.

[101] *Id.* at 15016.

USCC also notes that, despite Nextel both relinquishing its 800 MHz licenses and assuming responsibility for the reconfiguration and clearing costs, the Commission nonetheless required that Nextel agree to make a payment to the Treasury equal to the amount, if any, that the value of the spectrum rights it received for the 1.9 GHz band exceeded the value of the spectrum rights it relinquished in the 800 MHz band and the costs Nextel incurred to reconfigure the 800 MHz band, clear the 1.9 GHz, and transition its operations to the 1.9 GHz band.[102] The Commission concluded that implementing the spectrum exchange on this "value for value basis" was necessary to ensure that "Nextel, other licensees and the public [were] treated equitably, and that Nextel [did] *not realize any windfall gain*…"[103] In contrast, the C-Band Alliance's members seek to profit substantially from the sale of rights that they do not possess for spectrum that they received access to at no cost.

To better ensure that a socially efficient amount of 3.7-4.2 GHz band spectrum is repurposed, and thereby to ensure its actions in this proceeding promote rather than stymie competition in the wireless industry, USCC joins numerous commenters in urging the Commission to adopt a minimum nationwide spectrum clearing benchmark of at least 300 megahertz. As Nokia emphasized, the "public interest demands that the Commission require a plan and path forward for clearing additional spectrum in the band over and above the [C-Band Alliance's] recently proposed 200 MHz."[104] For instance, CTIA explained how "the Commission should set an aggressive benchmark in the hundreds of megahertz so multiple

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[102] *Id.*

[103] *Id.* (emphasis added).

[104] Nokia Comments at 7; *see* Comments of Verizon, pp. 9-10 ("Verizon Comments") ("[T]he Commission should require an Initial Minimum Spectrum Benchmark greater than the C-Band Alliance's recent proposal of 200 megahertz.").

licensees will have an opportunity to deliver on the full promise of 5G in the mid-band range."[105] Unsurprisingly, the C-Band Alliance opposes a minimum clearing benchmark, claiming it "would interfere with the market forces necessary to fairly negotiate the terms and conditions for spectrum clearing…"[106] In reality, this is yet another attempt by the C-Band Alliance to ensure it has unchecked leverage during negotiations with terrestrial service providers and complete control over how much spectrum will be cleared, the price for such clearing, which terrestrial service providers will have a meaningful opportunity to acquire rights to the MBX spectrum, and virtually every other aspect of the reallocation process.

USCC stresses that the amount of 3.7-4.2 GHz band spectrum repurposed for terrestrial broadband should be maximized on a nationwide basis, and thus, that the minimum spectrum benchmark should apply nationwide. USCC therefore opposes T-Mobile's proposal to relocate incumbent earth stations currently located in urban areas to rural areas, and as a result, to establish different minimum clearing benchmarks for urban and rural areas.[107] As T-Mobile notes, "protecting satellite receivers from harmful interference from terrestrial emissions will require large separation distances…"[108] Moving incumbent earth stations to rural areas therefore would cause far less spectrum to be repurposed in rural areas as compared to urban areas. Thus, like T-Mobile previously emphasized in opposing a private sale reallocation mechanism, its proposal would "produce no better than a patchwork quilt of spectrum," and thus, "would draw

[105] CTIA Comments at 10; *see* Ericsson Comments at 10 ("[T]he Commission should set a minimum nationwide spectrum benchmark in the hundreds of megahertz so that multiple competitors may acquire mid-band spectrum for macro 5G.").

[106] C-Band Alliance Comments at 24.

[107] *See* T-Mobile Comments at 2.

[108] *Id.* at 8.

no meaningful investment in the band for wireless mobile broadband use."[109] In other words, as NCTA explained, "T-Mobile's own analysis appears to indicate that applying its approach across the United States would create 'Swiss cheese 5G' – service in a very few urban centers, with holes covering much of the country…"[110]

Repurposing less spectrum in rural areas would be particularly ill-advised given the propagation characteristics of the 3.7-4.2 GHz band. As Ericsson explained, because the "propagation characteristics in the mid-band provide for wide-area outdoor coverage," networks deployed using mid-band spectrum "can use a smaller number of base stations aggregating traffic over larger areas…"[111] Consequently, mid-band spectrum will be crucial for ensuring 5G access for those residing in rural areas, where service providers' return on investment is lower than in more densely-populated areas, and where small and regional carriers with limited budgets typically focus their deployment efforts. Another advantage of repurposing a consistent amount of spectrum on nationwide basis noted by AT&T is that it would allow "equipment [to] be standardized and manufactured with economies of scope and scale."[112]

Although the C-Band Alliance contends that its proposed private sale mechanism "represents the fastest way to repurpose C-band Downlink spectrum for terrestrial mobile services,"[113] the Alliance so far has failed to provide any detailed, verifiable support either for its claim that a private sale would allow the 3.7-4.2 GHz band to be repurposed within 18 to 36 months of a final Commission order or for its claim that repurposing this spectrum pursuant to an

[109] Reply Comments of T-Mobile USA, Inc., GN Docket No. 17-183, p. 13 (Nov. 15, 2017).

[110] NCTA Comments at 12.

[111] Ericsson Comments at 6.

[112] AT&T Comments at 7.

[113] C-Band Alliance Comments at i.

auction-based mechanism would require a significantly longer period of time. In reality, the C-Band Alliance's claims regarding the time required to repurpose a portion of the 3.7-4.2 GHz band under its proposed approach are mere speculation, and are undermined by the Alliance's own description of what this process will entail. For example, the C-Band Alliance stresses that, prior to repurposing any of the 3.7-4.2 GHz band, it will need to "build and launch new satellites to maintain the same level of supply as currently planned absent clearing."[114] Regarding the time required to launch these new satellites, the C-Band Alliance simply asserts that its members "are confident that they will be able to design, provision, and launch these satellites quickly enough to meet the FCC's timeline for clearing spectrum."[115] The C-Band Alliance does not, however, explain the basis for its asserted confidence; for example, by discussing the time required for comparable processes in the past. Nor does the Alliance acknowledge that it will not even be able to finalize its plan to launch new satellites until after it completes negotiations with terrestrial operators to acquire rights to the repurposed spectrum because it will not be known until that time how much spectrum satellite operators will agree to clear, and thus, how many new satellites will be required to maintain the current level of supply.

Moreover, FSS earth station operators have indicated that they will require substantially more time to transition their current operations than claimed by the C-Band Alliance. For instance, QVC and HSN emphasized how "a 36-month timeline to transition its operations and distributors to a new transponder would be *woefully insufficient* to ensure that all cable MSOs and other distributors are transition-ready, and service is transitioned, uninterrupted."[116] In support of this position, QVC notes that it is "currently in the process of transitioning its

[114] *Id.* at 28.

[115] *Id.* at 18.

[116] Comments of QVC, Inc. and HSN, Inc., p. 7 (emphasis added).

distributors to a new satellite, and four years into the process, the transition is not yet complete."[117] QVC therefore "believes that the Commission should require, at a minimum, a 60-month transition period…"[118] Similarly, GCI stressed that "a *significant timeframe* to allow for a transition must be implemented…"[119]

It therefore appears that, even in a best-case scenario, the C-Band Alliance's claimed 18 to 36 month timeframe is, at best, overly optimistic. As Google warns, however, "a significant likelihood exists that unforeseen delays would slow the process of clearing C-band spectrum through a Transition Facilitator approach."[120] As a cautionary example, Google notes how the 800 MHz re-banding effort, which had a planned duration of 36 months, is still ongoing more than a dozen years after it commenced.[121] USCC agrees with Google that, in contrast to the C-Band Alliance's proposed private sale approach, the Commission's "extensive experience with spectrum auctions and reallocations would reduce the risk of an FCC-managed transition."[122] USCC also agrees with the Dynamic Spectrum Alliance that there are other reasons why "delegation to a private administrator does not assure faster deployment than assignment through an auction."[123] For example, a process – like that proposed by the C-Band Alliance – which "shuts out potential participants, reduces government revenue to zero, and creates incentives to

[117] *Id.*

[118] *Id.*

[119] Comments of GCI Communication Corp., p. 4 (emphasis added).

[120] Google Comments at 13.

[121] *See id.*

[122] *Id.*

[123] DSA Comments at 18.

maximize profits for a subset of companies while minimizing payment to remaining FSS licensees, invites lengthy litigation."[124]

Perhaps most importantly, even if we were to accept as fact the C-Band Alliance's unsubstantiated claim that a private sale approach would repurpose spectrum in the 3.7-4.2 GHz band more quickly than an auction-based mechanism, USCC agrees with Nokia that "speed must be balanced against other public interest factors that could favor a public auction or other process," and that "[p]aramount among these factors is the amount of spectrum cleared for terrestrial 5G."[125] Similarly, Google stressed that the "fastest path to reallocating spectrum may not be the best path, if speed comes at a significant cost to spectrum availability, future competition, and the federal budget."[126]

Finally, USCC notes that, in addition to terrestrial broadband service providers, equipment manufacturers, public interest groups and technology companies, numerous earth station operators also expressed their opposition to the C-Band Alliance's proposed private sale reallocation mechanism. For instance, Comcast cautioned that, because "[e]ach dollar spent on protecting incumbent downstream users of the band is a dollar less received by the satellite operators in profit," the satellite operators' "incentives will be far from aligned with the interests of downstream earth station operators and the consumers they serve when it comes to compensation for transition costs incurred."[127] NCTA likewise highlighted the fact that the "incentives of the satellite licensees … may not be co-extensive with the interests of their

[124] *Id.*

[125] Nokia Comments at 8.

[126] Google Comments at 11.

[127] Comcast Comments at 26.

customers."[128] Comcast also cautioned that, while the C-Band Alliance's proposal "is a wholly novel, untested, and as-yet undeveloped approach to spectrum reallocation, [ ] the Commission has decades of experience crafting innovative mechanisms to make complicated undertakings work for the American public."[129]

III. THE COMMISSION SHOULD REQUIRE THAT TERRESTRIAL MOBILE DEVICES BE OPERABLE ACROSS THE ENTIRE 3.7-4.2 GHz BAND

In order to maximize the potential of the 3.7-4.2 GHz band spectrum to promote much-needed competition in the wireless industry and to spur the deployment of 5G networks in rural and other underserved areas, USCC strongly urges the Commission to require that terrestrial mobile and transportable devices be operable across the entirety of the band.[130] USCC specifically proposes the following requirement:

> Terrestrial mobile and transportable stations that operate on any portion of the 3.7-4.2 GHz band must be capable of operating on all frequencies within in the 3.7-4.2 GHz band.

USCC believes it would be prudent to adopt an operability requirement covering the entirety of the 3.7-4.2 GHz band given that it will not be known until some point in the future how much spectrum will be repurposed for terrestrial flexible use operations pursuant to the reallocation mechanism adopted by Commission in the current proceeding. Moreover, even if less than the entire 3.7-4.2 GHz band is repurposed initially, there may be subsequent opportunities to repurpose additional spectrum in the band. By adopting an operability

[128] NCTA Comments at 28.

[129] Comcast Comments at 29.

[130] *See Promoting Interoperability in the 700 MHz Commercial Spectrum*, Report and Order and Order of Proposed Modification, 28 FCC Rcd 15122, 15145 (2013) ("*Lower 700 MHz Interoperability Order*") (explaining that the interoperability rule adopted there would "promote the efficient use of spectrum, the availability of higher quality and lower priced offerings and enhanced choices for customers of all wireless broadband providers, overall timely deployment of nationwide wireless broadband coverage, and the delivery of such service to rural and underserved areas"); *Incentive Auction NPRM*, 27 FCC Rcd at 12415 ("Interoperability has often been important in ensuring rapid and widespread deployment of mobile devices in a new spectrum band.").

requirement covering the entire band at this time, there will be no need to revisit this requirement. Such a requirement also should facilitate the development of a robust device ecosystem that would require only minor modifications, perhaps via simple firmware updates that can be pushed to already-deployed devices, for existing devices to be capable of operating across the entire 3.7-4.2 GHz band.[131]

Significantly, as Nokia noted, a single tuning range can cover bandwidth even larger than the entire 3.7-4.2 GHz band,[132] meaning terrestrial mobile and transportable devices would not require additional hardware in order to comply with USCC's proposed operability requirement. To further lessen any potential burden on equipment manufacturers, USCC clarifies that its proposed operability requirement, like the operability requirements adopted by the Commission for the Upper Microwave Flexible Use Service, would *not* require that every device be compatible with all possible air interfaces that may be used for terrestrial operations in the 3.7-4.2 GHz band. Rather, the rule would simply require that, for each air interface used by a given device to operate in any portion of the 3.7-4.2 GHz band, the device must be capable of operating across the entire 3.7-4.2 GHz band.[133]

The reasons why the Commission "historically has sought to promote greater operability of equipment"[134] are manifold. For instance, the Commission has explained how operability

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[131] *See Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, 33 FCC Rcd 5576, 5606 (2018) ("*mmW Third R&O*") (noting the accelerated "availability of equipment in newly authorized bands that share a tuning range with early-deployed bands").

[132] *See* Nokia Comments at 11 (noting the potential to create a single tuning range in devices, covering the entire range from the 3.45-3.55 GHz range currently being studied by NTIA for commercial use up to 4.2 GHz").

[133] *See Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8127 (2016) ("*mmW R&O*").

[134] *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, and, 32 FCC Rcd 10988, 11022 (2017).

requirements "support competition by ensuring a robust device ecosystem throughout [a] band,"[135] as well as by "allow[ing] both smaller and larger service providers to benefit from economies of scale…"[136] These benefits of device operability are particularly important for small and regional carriers, which lack the considerable leverage *vis-à-vis* equipment manufacturers enjoyed by the nationwide carriers as a result of their volume purchases. Due to this leverage, if "boutique" band classes develop for the for the 3.7-4.2 GHz band, manufacturers would initially, and perhaps exclusively, focus on the needs of the largest carriers. As a result, at a minimum, smaller carriers would experience significant delays in gaining initial access to equipment for the 3.7-4.2 GHz band, and thereafter likely would continue to face higher equipment costs and delayed access to the latest devices.

Finally, USCC stresses the need for the Commission to adopt an operability requirement for the 3.7-4.2 GHz band at this time, rather than assume that the industry's standards-setting process will give rise to a fully operable device ecosystem. As the Commission noted in adopting an interoperability requirement for the 600 MHz band, the experience of both the industry and the Commission with regard to "deployment in the Lower 700 MHz Band highlights the need for clear *ex ante* interoperability rules to promote rapid deployment…, *particularly in rural areas*."[137] If small and regional carriers lack any assurance that they will be able to timely acquire the equipment necessary for 3.7-4.2 GHz band operations, it will be difficult for these carriers to justify expending the substantial sums needed to acquire licenses for

[135] *mmW Third R&O*, 33 FCC Rcd at 5581.

[136] *mmW R&O*, 31 FCC Rcd at 8125.

[137] *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, 6868-69 (2014) (emphasis added).

this band.[138] In addition to even greater concentration in the wireless industry, the reduced demand by small and regional carriers for these licenses would make it less likely that this spectrum will be used to provide innovative 5G services to rural and other underserved areas, where these carriers typically focus their deployment efforts. Thus, absent an operability requirement, ultimately it will be consumers in these areas who will suffer. In contrast, the Commission has explained how a fully operable device ecosystem "serve[s] the public interest by enabling consumers, *especially in rural areas*, to enjoy the benefits of greater competition and more choices, and by encouraging efficient use of spectrum, investment, job creation, and the development of innovative mobile broadband services and equipment."[139]

IV. A BAND PLAN CONSISTING OF 20 MHz BLOCKS WOULD PROVIDE NECESSARY FLEXIBILITY AND BEST PROMOTE COMPETITION

USCC again urges the Commission to license the MBX spectrum on the basis of 20 megahertz unpaired blocks to account for the uncertainty regarding the amount of spectrum in the 3.7-4.2 GHz band that will be repurposed for terrestrial flexible use operations, to promote competition in the wireless industry, and to provide flexibility to terrestrial flexible use licensees. In recognition of these advantages, the use of 20 megahertz blocks received strong record support.[140]

As USCC previously explained, regardless of the amount of spectrum ultimately repurposed, the MBX spectrum likely will be equally divisible by 20 megahertz blocks. The use

[138] *See Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, Report and Order, 29 FCC Rcd 4610, 4698-99 (2014) (finding that adopting an interoperability requirement "prior to licensing best serves the public interest" because "potential licensees, particularly smaller ones, will face less uncertainty over the development of a healthy device ecosystem").

[139] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15123 (emphasis added).

[140] *See, e.g.*, T-Mobile at Comments 23; Nokia Comments at 11; *see also* Comments of Motorola Solutions, Inc. p. 5 ("Motorola Comments") (supporting the use of either 10 or 20 megahertz blocks).

of larger blocks, on the other hand, could force the Commission to adopt an MBX band plan consisting of blocks of varying size or, alternatively, require the Commission to divide the "remainder spectrum" (*i.e.*, the spectrum left over after creating the maximum number of similarly-sized blocks possible given the amount of MBX spectrum) among the full-size blocks, creating nonstandard size blocks incompatible with any of the channel sizes in the 3GPP specifications. In contrast, as T-Mobile noted, 20 megahertz blocks would "be consistent with the work that 3GPP is performing in this and the other mid-band spectrum…"[141] For these reasons, USCC agrees with Motorola that "smaller blocks of spectrum may be easier to free up for flexible terrestrial uses."[142]

Equally important, 20 megahertz blocks would "create opportunities for multiple licensees."[143] Depending on the amount of spectrum repurposed for terrestrial operations, the use of larger blocks could result in only a few flexible use licenses being made available in each service area, with the largest carriers likely acquiring these few licenses to the exclusion of everyone else. However, even if all or a large portion of the band is repurposed for terrestrial operations, the Commission should license this spectrum on the basis of 20 megahertz blocks in order to provide small and regional carriers with a reasonable opportunity to acquire flexible use licenses. Given that spectrum licenses typically are valued on a per MHz-pop basis, licensing the MBX spectrum on the basis of blocks larger than 20 megahertz could price small and regional carriers out of the auction, preventing these carriers from acquiring the mid-band spectrum rights they require to serve as a competitive counterbalance to the dominant nationwide carriers and to deploy 5G networks in the rural and other under-served areas they typically serve.

[141] T-Mobile Comments at 24.

[142] Motorola Comments at 5.

[143] T-Mobile Comments at 23.

At the same time, as T-Mobile notes, 20 megahertz blocks "are sufficiently large to support a variety of wireless broadband technologies."[144] Moreover, as USCC previously explained, terrestrial service providers desiring additional bandwidth could aggregate multiple 20 megahertz blocks,[145] all of which would be guaranteed to be contiguous if the Commission utilizes an incentive auction-based mechanism consisting of an ascending clock auction followed by an assignment phase. Contiguous assignments would allow winners of multiple blocks to utilize larger channel bandwidths of up to 100 megahertz.

Notably, every commenter that addressed the issue urged the Commission to license the MBX blocks on an unpaired basis.[146] As T-Mobile explained, in addition to providing "maximum flexibility" to licensees with respect to their use of the spectrum, unpaired blocks would "provide the Commission with more flexibility if it permits continued use of some part of the band for FSS operations."[147] In addition, Ericsson explained how the use of unpaired blocks "would make the band suitable for the use of TDD technology consistent with industry plans across the world."[148]

V. CMA-BASED LICENSING WOULD INCREASE COMPETITION, PROMOTE RURAL DEPLOYMENT, AND BENEFIT ALL CARRIERS

An overwhelming majority of commenters addressing the issue joined USCC in urging the Commission to adopt its proposal to license the 3.7-4.2 GHz MBX spectrum on an exclusive,

[144] *Id.*

[145] *See id.* ("Blocks could be aggregated to support applications that require wider bandwidths.").

[146] *See, e.g.*, Ericsson Comments at 4; Qualcomm Comments at 8; Nokia Comments at 11; T-Mobile Comments at 24; CTIA Comments at 21; Motorola Comments at 5.

[147] T-Mobile Comments at 24.

[148] Ericsson Comments at 4.

geographic area basis.[149] As T-Mobile explains, because exclusively-licensed spectrum provides licensees with "the certainty of continued access to spectrum and the ability to maximize its efficient use," it has served as "the basis for today's robust mobile broadband ecosystem."[150] The Commission, therefore, should abide by its traditional approach for bands allocated for terrestrial flexible use operations and license the MBX spectrum on an exclusive, geographic area basis.

USCC also continues to urge the Commission to license the MBX spectrum on the basis of Cellular Market Areas ("CMAs") in order to provide small and regional carriers with a reasonable opportunity to acquire flexible use licenses for this spectrum. As USCC previously explained, the costs associated with acquiring licenses for and building out license areas larger than CMAs are prohibitive for many small and regional carriers. Larger license areas also invariably encompass one or more urban areas, while the service areas of many small and regional carriers consist primarily or even exclusively of rural areas. At the same time, carriers of all sizes would benefit from CMAs because these smaller license areas allow more targeted spectrum acquisitions. In addition, CMAs easily can be aggregated by large carriers seeking expansive service territories.

While some commenters supported the use of Partial Economic Areas ("PEAs"), as USCC previously explained, despite the recent use of PEAs to license several spectrum bands, the existing service areas of most small and regional carriers still align with the boundaries of CMAs, which do not "nest" within PEAs, and thus may include portions of more than one PEA. As a result, many small and regional carriers would be forced to acquire more PEA-based

[149] *See, e.g.*, CTIA Comments at 20; T-Mobile Comments at 25; Ericsson Comments at 16; Qualcomm Comments at 4; Verizon Comments at 19.

[150] T-Mobile Comments at 25.

licenses – each of which potentially could be prohibitively expensive given their larger size and the greater likelihood they will encompass one or more urban areas – than the number of CMAs within their existing service areas simply to provide additional capacity or offer new services to their current customers. In addition, several commenters proposed license areas significantly smaller than CMAs,[151] making CMA-based license areas, which are more manageable than county- or census tract-based license areas from both an auction and deployment standpoint, a reasonable compromise.

Notably, only Verizon expressed support exclusively for license areas as large as Economic Areas ("EAs").[152] Although Verizon contends that the Commission's reasoning for licensing the 700 MHz, AWS-1, and AWS-4 bands on the basis of EAs applies equally to the 3.7-4.2 GHz band, this argument ignores the fact that all of these bands have superior propagation characteristics, as well as the fact that segments of both the 700 MHz and AWS-1 bands were licensed on the basis of CMAs. Verizon further claims that licensing the MBX spectrum on the basis of EAs would offer "a balanced alternative to the county-sized license areas recently adopted in the adjacent 3.5 GHz CBRS band."[153] As discussed above, however, the 3.5 GHz band cannot reasonably be considered a potential substitute for, or otherwise comparable to, the 3.7-4.2 GHz band as a result of the amount of licensed spectrum and channel sizes that will be made available in the 3.5 GHz band, as well as the sharing framework and technical rules applicable to CBRS operations. Verizon, therefore, cannot claim that the county-

[151] *See* Motorola Comments at 5 ("License sizes should be no larger than county sized areas, with consideration for even smaller sized areas (*e.g.*, census tracts)."); Comments of Frontier Communications Corporation and Windstream Services, LLC, p. 5 ("Granular license areas, such as census tract license sizes, would foster broadband deployment in rural areas.").

[152] Verizon Comments at 19. While Qualcomm expressed some support for EAs, it expressed equal support for PEAs. *See* Qualcomm Comments at 5.

[153] Verizon Comments at 19.

based licenses in the 3.5 GHz band will sufficiently accommodate the needs of service providers that would be prevented from acquiring flexible use licenses for the 3.7-4.2 GHz band if the Commission were to license this spectrum on the basis of EAs.

VI. A FIFTEEN-YEAR LICENSE TERM WITH REASONABLE PERFORMANCE REQUIREMENTS IS APPROPRIATE FOR THE MBX SPECTRUM

USCC again urges the Commission to adopt a 15-year term with a renewal expectancy for terrestrial flexible use licenses in the 3.7-4.2 GHz band, a proposal which received overwhelming support by commenters.[154] As Verizon explained, a 15-year license term "will provide sufficient time to encourage investment, driving faster and more expansive deployment."[155] In addition, Qualcomm noted how the Commission typically has adopted license terms longer than 10 years "where, as here, time-consuming activities like band clearing, relocation, or repacking are needed to free up spectrum for mobile uses."[156] For instance, as USCC discussed in its comments, in recognition of "the relocation and band clearance issues associated with" the AWS-1 bands, the Commission found that a 15-year license was necessary to "provide investors with the necessary assurances that a sufficient amount of time [would] be available to recoup the initial costs of developing and deploying advanced wireless networks in these bands."[157] USCC also agrees with Verizon that, "[f]or investment purposes, a renewal

[154] *See*, *e.g.*, Qualcomm Comments at 8; CTIA Comments at 21; Nokia Comments at 11; Verizon Comments at 21; AT&T Comments at 19.

[155] Verizon Comments at 21.

[156] Qualcomm Comments at 8; *see* CTIA Comments at 21 (noting that the Commission "has adopted longer terms where, as here, band clearing, relocation, or repacking may be needed to accommodate existing licensees").

[157] *Service Rules for Advanced Wireless Service in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, 25190-91 (2003).

expectancy is equally important."[158] As CTIA explained, a "renewal expectancy is important to assure prospective licensees that investing in the band will not lead to stranded investment."[159]

Commenters also joined USCC in supporting the adoption of performance requirements to prevent the warehousing of this valuable spectrum, but urging the Commission to adopt construction benchmarks that are less stringent than the benchmarks on which the Commission specifically seeks comment in the NPRM (*i.e.*, at least 45% population coverage within six years and at least 80% population coverage within twelve years).[160] Like USCC, Verizon noted that these population coverage requirements "are more stringent than for other bands – including lower frequency bands with more favorable propagation characteristics."[161] Similarly, CTIA noted that these benchmarks "are more aggressive than any other Part 27 performance requirements, including in lower frequency bands with better propagation characteristics than exist in the 3.7-4.2 GHz band, including BRS, AWS-2, AWS-3, AWS-4, and the 600 MHz band."[162] USCC therefore continues to urge the Commission to adopt performance requirements for the MBX spectrum that are based on the existing requirements for these other bands but that are tailored to account for the inferior propagation characteristics of the 3.7-4.2 GHz band. Specifically, USCC urges the Commission to adopt interim and final construction benchmarks of 35% and 60% population coverage, respectively, for MBX licenses providing mobile or point-to-multipoint services.

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[158] Verizon Comments at 21.

[159] CTIA Comments at 22.

[160] *See* NPRM at ¶ 151.

[161] Verizon Comments at 21.

[162] CTIA Comments at 22.

USCC again emphasizes that overly stringent population-based performance requirements disproportionately impact licensees seeking to serve rural areas because, as compared to more densely-populated areas, a far greater number of base stations are required in order to provide reliable signal coverage to the same percentage of a license area's population. As a consequence, rather than facilitate service to rural and other underserved areas, overly stringent performance requirements can dissuade service providers from acquiring licenses for less densely-populated areas. USCC also previously explained how overly stringent performance requirements generally are unnecessary given that licensees already have a strong incentive to quickly build out their service areas in order to provide current and potential customers robust coverage and the latest service offerings, as well as to begin to earn a return on their investments as soon as possible. Further, with respect to the 3.7-4.2 GHz band specifically, terrestrial licensees will have every motive to put this spectrum to use as quickly as possible to compliment the low- and high-band spectrum suitable for 5G deployments that already has been, or currently is being, made available for flexible use operations.

While USCC supports the Commission's proposed penalty for a licensee's failure to meet the interim construction benchmark, regarding the proposed penalty for a failure to timely satisfy the final construction benchmark, USCC agrees with T-Mobile that "it is overly punitive for the Commission to cancel an entire license if a provider is serving customers in part of the license area, but not in others."[163] As Verizon explained, under the Commission's proposals, a "licensee that invests in a network to serve 74 percent of the population by the end of its term would lose its entire license, disrupting service to nearly three quarters of the population."[164] Accordingly,

[163] T-Mobile Comments at 29; *see* Verizon Comments at 22 ("[T]erminating the license where the licensee falls short of meeting the final benchmark is unnecessarily harsh…").

[164] Verizon Comments at 22.

if a licensee fails to timely satisfy the final construction benchmark, the Commission "should instead recapture the unserved portions of [the] licensed area, consistent with the approach the Commission took for the 700 MHz band."[165] Stated differently, the licensee "should be able to retain areas where service is being provided."[166] At a minimum, USCC urges the Commission to provide the same options to MBX licensees that fail to satisfy the final construction benchmark that it allows flexible use licensees in most of the millimeter wave bands. Specifically, the Commission should allow an MBX licensee that does not meet the final construction benchmark for an entire license area to choose either "(1) automatic termination of the entire license, or (2) partition the license at the county level, and return a portion of the license to the Commission such that the applicable performance requirements are met for the remaining non-forfeited area."[167]

VII. CONCLUSION

For the reasons set forth above, in order to maximize the amount of spectrum in the 3.7-4.2 GHz band repurposed for terrestrial operations and to ensure small and regional carriers have an opportunity to acquire flexible use licenses for this spectrum – and thus, have an opportunity to deploy next generation wireless networks in the rural areas they serve and to act as a competitive check on the dominant nationwide carriers – the Commission should utilize an incentive auction-based reallocation mechanism for the 3.7-4.2 GHz band, license the MBX spectrum on the basis of CMAs and 20 megahertz blocks, adopt a 15-year license term with reasonable performance requirements tailored to this band, and limit the amount of MBX spectrum a single entity may acquire.

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[165] *Id.*

[166] T-Mobile Comments at 30.

[167] *mmW R&O*, 31 FCC Rcd 8014, 8090-91.

Respectfully submitted,

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