

**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 |
|                                                     | ) |                      |
| Petition for Rulemaking to Amend and Modernize      | ) | RM-11791             |
| Parts 25 and 101 of the Commission's Rules to       | ) |                      |
| Authorize and Facilitate the Deployment of Licensed | ) |                      |
| Point-to-Multipoint Fixed Wireless Broadband        | ) |                      |
| Service in the 3.7-4.2 GHz Band                     | ) |                      |
|                                                     | ) |                      |
| Fixed Wireless Communications Coalition, Inc.,      | ) | RM-11778             |
| Request for Modified Coordination Procedures in     | ) |                      |
| Band Shared Between the Fixed Service and the       | ) |                      |
| Fixed Satellite Service                             | ) |                      |

**REPLY COMMENTS OF T-MOBILE USA, INC.**

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**REPLY COMMENTS OF T-MOBILE USA, INC.**

T-Mobile USA, Inc. (“T-Mobile”)<sup>1/</sup> submits these reply comments in response to others’ comments on the Notice of Proposed Rulemaking (“*NPRM*”)<sup>2/</sup> in the above-referenced proceeding in which the Commission proposes to expand terrestrial use of the 3.7-4.2 GHz band (or “C-band”) for Fifth Generation (“5G”) wireless services.

**I. INTRODUCTION AND SUMMARY**

Comments demonstrate that there is a clear and urgent need for additional mid-band spectrum capacity to support the deployment of 5G wireless mobile broadband services. That need can best be met by Commission adoption of T-Mobile’s Commission-administered incentive auction proposal. Among other things, T-Mobile’s market-based approach will ensure

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<sup>1/</sup> T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

<sup>2/</sup> *Expanding Flexible Use of the 3.7 to 4.2 GHz Band, et al.*, Order and Notice of Proposed Rulemaking, 33 FCC Rcd 6915 (2018) (“*NPRM*”).

adequate spectrum for 5G operations through a transparent free market mechanism, return revenue to taxpayers, and allow satellite operators to retain sufficient spectrum on a market-by-market basis to continue necessary operations, while also potentially providing satellite users incentives to vacate the band to facilitate the conversion of even more spectrum to wireless broadband. In contrast, the C-Band Alliance's proposal: (1) is contrary to the Communications Act; (2) does not provide a sufficient amount of mid-band spectrum for mobile wireless broadband; (3) fails to provide taxpayers with any portion of the auction proceeds; (4) is not likely to generate transparent market-based results; and (5) provides no incentives for earth station users to vacate the spectrum or relocate operations, which would free up even more capacity for mobile broadband use.

In addition to urging the adoption of T-Mobile's proposal for making the 3.7-4.2 GHz band available for wireless mobile broadband, the comments in this proceeding show that –

- There are viable alternatives to accommodate satellite users, particularly in densely populated areas, including relocating earth stations to remote areas and backhauling traffic using fiber, or through the use of fiber exclusively, to deliver content.
- The Commission must ensure that the power and out of band emissions (“OOBE”) limits it adopts can support the development of mobile broadband services. The Commission should reject the C-Band Alliance's suggestion that the Commission deviate from its proposed power limits for base stations and OOBE.
- All but commenters representing fixed wireless interests oppose requests to designate some or all of the 3.7-4.2 GHz band for point-to-multipoint operations. Doing so will complicate efforts to repack the band and stifle the Commission's progress in developing

5G services and technologies. Point-to-multipoint services can be appropriately accommodated under rules that allow flexible spectrum use.

- The Commission should continue to assess whether mobile wireless operations in the 3.7-4.2 GHz band would affect adjacent band operations.

## **II. T-MOBILE’S INCENTIVE AUCTION PROPOSAL BEST SERVES THE PUBLIC INTEREST**

Other parties recognize the significant benefits of T-Mobile’s proposed multiple round, incentive auction approach. The approach provides for up to 500 megahertz of spectrum to potentially be licensed for wireless mobile broadband – the purpose of this proceeding – in an open, transparent process accessible by all interested parties. Consistent with the Communications Act’s directive for the Commission to use auctions when it receives mutually exclusive applications for initial licenses, it would also return at least some of the proceeds from the sale of the spectrum to taxpayers. Finally, T-Mobile’s approach will accommodate existing satellite operators and users. Satellite operators could retain spectrum to serve users and realize a return on the spectrum they make available for sale. Satellite users will have relocation expenses reimbursed, and they can be provided incentives to vacate the spectrum or relocate operations, potentially freeing up even more C-band spectrum.

### **A. Parties Agree That the Commission Should Pursue an Incentive Auction Approach and That T-Mobile’s Proposal Would Be the Most Effective.**

Numerous parties agree that the Commission should adopt an incentive auction-based mechanism for reallocating the spectrum in the 3.7-4.2 GHz band. An incentive auction – for which, as discussed further below, the Commission has authority pursuant to Section 309(j) of the Communications Act<sup>3/</sup> – “is the *legitimate* ‘market-based approach’ that can and should be

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<sup>3/</sup> 47 U.S.C. § 309(j)(8)(G).

designed to work for this band.”<sup>4/</sup> Indeed, an incentive auction would “allow [the Commission] ‘to apply market forces to the assignment of spectrum licenses, helping to ensure that spectrum is put to its most productive use.’”<sup>5/</sup> As AT&T points out, the Commission has extensive knowledge and experience developing auctions, and it should take advantage of that expertise.<sup>6/</sup>

Commenters agree that T-Mobile’s proposed market-based incentive auction, in particular, is the best way to advance the public interest. As U.S. Cellular highlights, a modified incentive auction framework like T-Mobile’s “could address the issues that would arise with a standard incentive auction format while retaining the primary advantages of an auction-based reallocation process.”<sup>7/</sup> Most significantly, T-Mobile’s approach “would guarantee that a socially efficient quantity of spectrum is reallocated for terrestrial mobile use and made available in a way that fosters competition,” especially in light of the uncertainty regarding the market value of the spectrum and “the dearth of valuation information for the FSS licenses in this band given that these licenses were not subject to competitive bidding when they were initially awarded.”<sup>8/</sup>

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<sup>4/</sup> Comments of the Public Interest Spectrum Coalition (“PISC”), GN Docket No. 18-122, at 26 (filed Oct. 29, 2018); *see also* Comments of United States Cellular Corporation, GN Docket No. 18-122, at 4-5 (filed Oct. 29, 2018) (citing the broadcast incentive auction and stressing that “[t]he public interest benefits of relying on competitive bidding for awarding spectrum rights are well-documented”); Comments of the American Cable Association, GN Docket No. 18-122, *et al.*, at 15-16 (filed Oct. 29, 2018) (arguing that if the Commission decides to reallocate C-band spectrum, it should do so using an incentive auction).

<sup>5/</sup> U.S. Cellular Comments at 5 (quoting *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12367 (2012)).

<sup>6/</sup> Comments of AT&T Services, Inc., GN Docket No. 18-122, at 17 (filed Oct. 29, 2018).

<sup>7/</sup> U.S. Cellular Comments at 6.

<sup>8/</sup> *Id.* at 7-8.

## **B. Criticisms of T-Mobile's Approach Are Unfounded.**

Criticisms of T-Mobile's proposed market-based incentive auction are misplaced, either because they misunderstand how the proposal functions, are based on inaccurate interpretations of the law, or characterize aspects of the proposal designed as flaws, rather than as advantages that serve the public interest.

### *The Commission Has Authority to Conduct an Incentive Auction and Repack Incumbents.*

Contrary to the claims of the C-Band Alliance,<sup>9/</sup> the Commission has ample authority to (1) conduct an incentive auction in which the satellite operators are represented by a consortium; (2) split revenues between operators, users, and the U.S. Treasury; and (3) repack satellite operator and user incumbents.

Section 309(j)(8)(G) of the Communications Act permits the Commission to conduct incentive auctions in order to encourage licensees to voluntarily relinquish some or all of their spectrum by offering them a portion of the proceeds from the auction of that spectrum to new licensees.<sup>10/</sup> Indeed, that provision of the Act provides clear congressional intent that when the Commission plans to provide incumbent licensees with proceeds from the sale of spectrum to facilitate a new service, it should employ the incentive auction structure. The Commission successfully completed the first such auction in the world with its Broadcast Incentive Auction, which resulted in the transitioning of 70 megahertz of spectrum from the TV band to the new 600 MHz wireless band, with over \$10 billion paid to TV broadcasters who relinquished their spectrum and over \$7 billion returned to the U.S. Treasury.<sup>11/</sup>

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<sup>9/</sup> Comments of the C-Band Alliance, GN Docket No. 18-122, *et al.*, at 58-62 (filed Oct. 29, 2018).

<sup>10/</sup> 47 U.S.C. 309(j)(8)(G).

<sup>11/</sup> See News Release, *FCC Announces Results of World's First Broadcast Incentive Auction*, GN Docket No. 12-269, *et al.* (rel. Apr. 13, 2017), <https://docs.fcc.gov/public/attachments/DOC-344397A1.pdf>.

T-Mobile’s proposal conforms to the requirements of Section 309(j)(8)(G). One of those requirements is that the auction must have “at least two competing licensees participate in the reverse auction.”<sup>12/</sup> In finalizing its rules for the Broadcast Incentive Auction, the Commission found that this requirement would be satisfied if at least two licensees that are not commonly controlled participated in the incentive auction.<sup>13/</sup> It found that “under [its] auction design . . . all participants in the reverse auction will compete to receive incentive payments from the same limited source – the aggregate proceeds of the forward auction.”<sup>14/</sup> It noted further that, since the auction overall could not close unless the reverse auction total was less than that of the forward auction, bidders requesting too high a price would prevent any payments being made, meaning bidders’ demands directly impacted the auction outcome of other bidders.<sup>15/</sup>

The National Association of Broadcasters challenged the Commission’s interpretation of this requirement, but the United States Court of Appeals for the D.C. Circuit upheld the Commission’s approach. It explained that Congress “granted the Commission definitional discretion to be exercised in the context of the particular incentive auction the Commission ultimately designed” and specified only that there be some kind of competition, not what “the [licensees] must compete *for*.”<sup>16/</sup> The Commission recently reaffirmed its interpretation of the “two competing licensees” requirement in its *Fourth Further Notice of Proposed Rulemaking* in the *Spectrum Frontiers* proceeding, observing that “any qualified applicant that bids in the

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<sup>12/</sup> 47 U.S.C. 309(j)(8)(G)(ii).

<sup>13/</sup> *In the Matter of Expanding Economic Opportunities of Spectrum through Incentive Auctions*, 29 FCC Rcd 6567, 6743 (2014).

<sup>14/</sup> *Id.*

<sup>15/</sup> *Id.*

<sup>16/</sup> *Nat’l Ass’n of Broadcasters v. FCC*, 789 F.3d 165,183 (D.C. Cir. 2015) (emphasis in original).



auction must take into account the presence of another qualified applicant that has the opportunity to bid,” and therefore is a “competing” licensee for purposes of the statute.<sup>17/</sup>

T-Mobile’s proposal falls squarely within the Commission’s and the Court of Appeals’ interpretation of the incentive auction provisions of Communications Act. Under the proposal, multiple satellite companies will set the price and amount of spectrum that they are willing to sell. Therefore, there will be multiple competing licensees that participate in the incentive auction. While those satellite operators are expected to coordinate their reverse auction bid in response to the forward auction price for each geographic area, the participants in the process are nonetheless competing within the definition that the Commission has adopted and the Court of Appeals has affirmed.

*First*, while the Communications Act requires that the licensees “compete,” the Commission has broadly interpreted for what they are required to compete. In this case, as in the Broadcast Incentive Auction, their compensation comes “from the same limited source,” creating competition. *Second*, even licensees that together place a single bid after coordination compete because an overly aggressive demand from one or more licensees would foreclose others receiving any compensation for their spectrum. As the Commission stated in the 39 GHz proceeding, each participant driving a single reverse auction bid “must take into account the presence of another qualified applicant.”<sup>18/</sup> The dynamics leading to the coordinated reverse auction bid exert the same pressures that licensees experience in a reverse auction. *Finally*, the Court of Appeals has made it clear that the Commission has broad discretion, depending on the type of incentive auction, to determine whether the selling licensees are competing. T-Mobile

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<sup>17/</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Fourth Further Notice of Proposed Rulemaking, FCC 18-110, ¶ 50 (rel. Aug. 3, 2018) (“*Fourth Further Notice*”).

<sup>18/</sup> *Id.*

has proposed a new type of incentive auction, and the Commission now has the opportunity, as the Court of Appeals invited, to define the term “competing” for this auction. Any additional flexibility that the Commission requires to define the term in this context has been provided by the Court.

The Commission also has clear authority to involuntarily repack satellite operators.<sup>19/</sup> As the Commission previously stated in the context of mandatory repacking, the Commission may “modify the holdings of existing licensees ‘if in the judgment of the Commission such action will promote the public interest, convenience, and necessity.’”<sup>20/</sup> To the extent necessary, repacking non-participating incumbents in the 3.7-4.2 GHz band will “minimize encumbrances in the band, maximizing the amount of clean spectrum available for auction, while preserving existing usage rights for incumbents,”<sup>21/</sup> thereby promoting the public interest.<sup>22/</sup>

Indeed, the Commission not only has the authority to repack incumbents, it also has the authority to require them to vacate the spectrum – an option that should remain under consideration. This is precisely what it did when it required fixed microwave incumbents to vacate spectrum in favor of new AWS-1 and PCS services.<sup>23/</sup> The Commission justified its

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<sup>19/</sup> Accordingly, consistent with Section 309(j)(8)(G), satellite operators can participate in the consortium and voluntarily accept payments in an incentive auction or they can be involuntarily relocated into the spectrum remaining for satellite operations in the 3.7-4.2 GHz band. T-Mobile agrees with the C-Band Alliance that operators cannot be forced to participate in an incentive auction. Reply Comments of the C-Band Alliance, GN Docket No. 18-122, *et al.*, at 2 (filed Dec. 7, 2018). If they do not, the Commission has the authority to modify their authorizations to accommodate new spectrum uses.

<sup>20/</sup> *Fourth Further Notice*, ¶ 38 (quoting 47 U.S.C. § 316).

<sup>21/</sup> *Id.*

<sup>22/</sup> The Commission’s ability to re-pack satellite operators applies equally to satellite earth station users.

<sup>23/</sup> *See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, First Report and Order and Third Notice of Proposed Rulemaking, 7 FCC Rcd 6886, ¶ 23 (1992); *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, Memorandum Opinion and Order and Third Notice of Proposed Rulemaking and Order, 13 FCC Rcd 23949, ¶ 3 (1998) (“In the *Emerging Technologies* proceeding, concluded in

action based on the fact that the new services could be potentially “precluded or severely limited” by incumbent operations when the primary purpose of the proceeding was to “provid[e] usable spectrum for the implementation of emerging technologies.”<sup>24/</sup>

*T-Mobile’s Proposal Allows the Sale of Flexible “Products.”* T-Mobile’s proposal is clear about the “products” for sale by the satellite operators – rights to at least 300 megahertz of spectrum in most areas, defined on an area-by-area basis.<sup>25/</sup> Verizon contends that a Commission auction would be too inflexible, and that an approach based on private negotiations would be better able account for variances in the degree of encumbrance or clearance timing for the spectrum based on either the seller’s or buyer’s needs.<sup>26/</sup> This assertion is wrong for multiple reasons. T-Mobile’s approach could result in 460 megahertz sold in one market and 380 megahertz of spectrum sold in a different market, each at different MHz-pop values. Further, the Commission could refine the approach T-Mobile suggests by providing the type of flexibility in licenses that Verizon envisions. For example, it could assign different relocation timeframe obligations to different licenses. There would also be nothing to prevent licensees from agreeing with incumbent satellite operators and users, after an auction, on different relocation timeframes in different geographic areas.

*Non-Exclusivity of Licenses.* Some parties argue that an incentive auction is not possible due to the non-exclusive nature of satellite spectrum rights – or that T-Mobile’s proposal does

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1994, the Commission reserved 220 megahertz of spectrum in the 2 GHz band, at 1850-1990 MHz, 2110-2150 MHz, and 2160-2200 MHz, for reallocation to services using new and innovative technologies.”).

<sup>24/</sup> *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, Memorandum Opinion and Order, 9 FCC Rcd 1943, ¶ 34 (1994).

<sup>25/</sup> See C-Band Alliance Comments at 61 (arguing that the incentive auction proposals “are vague in defining the target products of the auction”).

<sup>26/</sup> See Comments of Verizon, GN Docket No. 18-122, at 6 (filed Oct. 29, 2018); see also *id.* Attachment A at 5.

not resolve issues stemming from these “ill-defined” rights.<sup>27/</sup> Those concerns are misplaced. T-Mobile’s proposal overcomes these issues in a manner similar to the satellite operator proposal – by requiring that a consortium comprised of all satellite licensees function as the seller. In fact, both T-Mobile’s proposal and the C-Band Alliance’s proposal require operator licensees to cooperate to re-structure current rights. Moreover, and as noted above, if satellite operators do not agree to participate in the consortium, they would not share in the incentive auction proceeds and simply be relocated to spectrum remaining for satellite operations. Verizon is therefore wrong when it asserts that a consortium would be less successful at reaching consensus among participants than private spectrum transactions.<sup>28/</sup> Under both the C-Band Alliance’s proposal and T-Mobile’s approach, the satellite operators would act as sellers. The Commission would be required to determine the rules under which satellite operators would cooperatively act under either proposal. That determination would be required to address the holdout issue and ensure that all satellite operators are treated fairly (which, as noted below, they have not been to date). Elimination of the full-band, full-arc coordination policy – as the Commission has proposed<sup>29/</sup> – and a minimum clearing target would resolve similar concerns raised by the C-Band Alliance regarding the non-exclusive nature of the satellite operator rights to the spectrum.<sup>30/</sup>

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<sup>27/</sup> See Comments of Intel Corporation, Intelsat License LLC, and SES Americom Inc., GN Docket No. 18-122, *et al.*, Appendix A at 34 (filed Oct. 29, 2018); Comments of Eutelsat S.A., GN Docket No. 18-122, *et al.*, at 12 (filed Oct. 29, 2018); *see also* Verizon Comments at 7; Intel Corporation, Intelsat License LLC, and SES Americom Inc. Comments at 9-10.

<sup>28/</sup> Verizon Comments, Attachment A at 4-5.

<sup>29/</sup> See *NPRM*, ¶¶ 39-40.

<sup>30/</sup> See C-Band Alliance Comments at 61.

*There Will Be No Delay in Implementing the T-Mobile Proposal.* Claims that an incentive auction and repack would result in lengthy delays are speculative.<sup>31/</sup> As U.S. Cellular notes, “the industry and the Commission have extensive experience with spectrum auctions, and thus can reliably predict how quickly some or all of the 3.7-4.2 GHz band could be cleared through an auction process involving *concrete and readily enforceable deadlines* that are not largely established and policed by those responsible for the actual clearing of the spectrum.”<sup>32/</sup> The C-Band Alliance’s attempts to exaggerate the time necessary to complete T-Mobile’s approach by making comparisons to the timeline for the Broadcast Incentive Auction – and by comparing from the point at which Congress granted the Commission incentive auction authority – are unavailing.<sup>33/</sup> Spectrum incentive auctions were novel at the time, and the structures and Commission capabilities needed had to be created from scratch. Any future incentive auction, however, will benefit from the knowledge gained and systems put in place for the first. Moreover, determining the appropriate formulas for splitting revenues and covering relocation costs will not be especially complex in T-Mobile’s market-based incentive auction approach. The satellite consortium could be responsible for distributing revenues received and for relocating and reimbursing users – just as in the C-Band Alliance’s approach.<sup>34/</sup>

Notably, the other “flaws” of the T-Mobile proposal claimed by the satellite operators – in particular, that the proposal will result in a “multi-stage incentive auction to find the actual

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<sup>31/</sup> See, e.g., C-Band Alliance Comments at 62, Intel Corporation, Intelsat License LLC, and SES Americom Inc. Comments, Appendix A at 34.

<sup>32/</sup> U.S. Cellular Comments at 11 (emphasis added).

<sup>33/</sup> See C-Band Alliance Comments at 62.

<sup>34/</sup> As noted below, the Commission could also require that the satellite consortium provide a portion of the auction proceeds to incumbent earth station users, providing a further incentive to clear the spectrum and make more of the band available for mobile broadband use.

amount of spectrum that satellite operators would be willing and able to vacate in each geographic area” and that the proposal relies more on government intervention than the C-Band Alliance proposal<sup>35/</sup> – are *purposeful and beneficial* auction design choices that will protect and promote the public interest. Sound spectrum management for the public’s benefit is a core function of the Commission. The Communications Act recognizes this by imposing obligations on the Commission that the C-Band Alliance would not satisfy, including using an auction mechanism to assign initial licenses for new services when faced with mutually exclusive applications.

Even apart from the Communications Act’s obligations, Commission involvement is critical in managing the licensing of the 3.7-4.2 GHz band. Contrary to the satellite operators’ claims,<sup>36/</sup> the limited amount of mid-band spectrum available for 5G and the satellite operators’ combined negotiating monopoly over the 3.7-4.2 GHz band grants them sufficient market power to artificially restrict supply in order to demand higher prices than a truly competitive market would support. This monopoly power would inefficiently reduce the amount of mid-band spectrum available for terrestrial use.<sup>37/</sup> Commission oversight is therefore essential to ensuring that the band is put to its best and highest use. Satellite operators should not be allowed to control the market to the detriment of the public by hiding behind claims of “informational

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<sup>35/</sup> See C-Band Alliance Comments at 63-64; Intel Corporation, Intelsat License LLC, and SES Americom Inc. Comments, Appendix A at 34.

<sup>36/</sup> See, e.g., Intel Corporation, Intelsat License LLC, and SES Americom Inc. Comments at 7; *Id.*, Appendix A at 36.

<sup>37/</sup> Because the satellite operators are each licensed to operate in the entire band, it is hard to completely eliminate the problem of monopoly power of the sellers. However, T-Mobile’s auction design greatly reduces the monopoly problem in comparison to the C-Band Alliance’s proposal and hence will result in a more efficient amount of spectrum transferred. See Verizon Comments, Attachment at 4 (“A positive feature of [T-Mobile’s] proposal is that, because of the timing and because of the explicit auction structure, some of the sell-side advantage of the satellite operators is reduced.”).

efficiencies” and regulatory complexity.<sup>38/</sup> Indeed, it is telling that the largest satellite operators in the band believe mechanisms for promoting sound Commission spectrum management are negative features, rather than positive ones.

*The Exposure Risk Is Overstated.* Verizon overstates the exposure risk, arguing for instance that “a bidder that needs to acquire a license in both areas A and B may be reluctant to bid aggressively for A . . . if it is uncertain whether the satellite operators will be willing to clear sufficient spectrum in B.”<sup>39/</sup> But even in a traditional auction, a bidder that needed spectrum in areas A and B would not be guaranteed to win sufficient spectrum in either, and would be required to calibrate its bidding strategy accordingly. In any event, T-Mobile’s approach is intended to clear sufficient spectrum to provide spectrum to numerous competing carriers. The C-Band Alliance’s proposal, in contrast, does not provide enough spectrum for terrestrial use – a fact that Verizon admits.<sup>40/</sup> Indeed, Verizon’s support of the satellite operators’ approach is inconsistent with its request that the *Commission* decide how much spectrum to make available.<sup>41/</sup> T-Mobile’s approach, which creates the possibility of much more spectrum for terrestrial use, would reduce any exposure risk.

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<sup>38/</sup> See, e.g., Intel Corporation, Intelsat License LLC, and SES Americom Comments at 10; *id.*, Appendix A at 34.

<sup>39/</sup> Verizon Comments, Attachment A at 5.

<sup>40/</sup> See *id.* at 9-10 (“[T]he Commission should require an Initial Minimum Spectrum Benchmark greater than the C-Band Alliance’s recent proposal of 200 megahertz.”).

<sup>41/</sup> *Id.* (“[T]he Commission should require an Initial Minimum Spectrum Benchmark greater than the C-Band Alliance’s recent proposal of 200 megahertz. That proposal is significantly better than the 100 megahertz originally offered, but the Commission should require the Transition Facilitator to clear more than that amount.”).

### III. T-MOBILE’S PROPOSAL WILL BEST ACCOMMODATE SATELLITE USER AND OPERATOR CONCERNS

T-Mobile recognizes the important functions that C-Band earth stations serve and appreciates concerns from satellite users that their operations may be affected.<sup>42/</sup> Accordingly, the T-Mobile approach would allow satellite operators to retain some spectrum in order to continue to provide service to earth stations where necessary.<sup>43/</sup> The T-Mobile approach would also allow satellite operators to designate locations outside of major metropolitan areas where satellite operators could potentially retain even more spectrum – up to 300 megahertz – for satellite operations. And, consistent with concerns from some satellite users, in some areas no spectrum need be converted to terrestrial use.<sup>44/</sup>

*Satellite Operations Can Be Relocated.* To facilitate terrestrial use of the 3.7-4.2 GHz band, the Commission proposes repurposing the band by relocating incumbent services to other spectrum or other transmission services.<sup>45/</sup> T-Mobile has demonstrated that alternatives, such as fiber, exist for current C-band operations. Despite the C-Band Alliance’s claims, relocation of existing satellite users to such alternatives would not be “cost prohibitive.”<sup>46/</sup> Notably, the C-

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<sup>42/</sup> See, e.g., Comments of Block Communications, Inc., Gray Television, Inc. and Meredith Corporation (“Local Broadcasters”), GN Docket No. 18-122, *et al.*, at 9 (filed Oct. 29, 2018); Comments of Charter Communications, Inc., GN Docket No. 18-122, at 3 (filed Oct. 29, 2018); Comments of Altice USA, Inc., GN Docket No. 18-122, at 1 (filed Oct. 29, 2018).

<sup>43/</sup> C-Band Alliance Comments at 25 (making available up to 200 megahertz for terrestrial mobile use and retaining the rest).

<sup>44/</sup> See, e.g., Comments of Speedcast Communications, Inc., GN Docket No. 18-122, *et al.*, at 5 (filed Oct. 29, 2018) (“Speedcast urges the Commission to limit its introduction of licenses for new terrestrial mobile services in this band to points within the 48 contiguous United States.”); Comments of National Public Radio (“NPR”), GN Docket No. 18-122, at 14 (filed Oct. 29, 2018) (“NPR urges the Commission to define the geographic scope of any C-band reallocation to the lower 48 states.”); Comments of GCI Communication Corp., GN Docket No. 18-122, *et al.*, at 2 (filed Oct. 29, 2018) (“The C-Band is oftentimes GCI’s only option to provide critical and important services to rural and remote areas.”).

<sup>45/</sup> *NPRM*, ¶¶ 66, 98, 110.

<sup>46/</sup> C-Band Alliance Comments at 7.



Band Alliance provides no data for this claim.<sup>47/</sup> T-Mobile, on the other hand, has demonstrated that there *are* cost-effective options outside of the 3.7-4.2 GHz band that can be used as substitutes for the satellite spectrum in most areas.<sup>48/</sup>

As demonstrated by the Chicago and Phoenix case studies presented in T-Mobile's comments, fiber is a viable alternative for existing FSS use in many locations throughout the country.<sup>49/</sup> The Chicago and Phoenix case studies show that earth stations currently using the C-band can be relocated to less populated areas with relative ease and that fiber deployment is robust. That means some users can receive content exclusively through fiber links, bypassing the use of earth stations altogether.<sup>50/</sup> Moreover, T-Mobile's proposal does not require that the 300 megahertz minimum target be cleared in all locations – satellite operators will be able to designate certain locations in which they will only be required to clear 200 megahertz, an amount that even the C-Band Alliance agrees can be cleared quickly and cost-effectively.<sup>51/</sup> In those cases, earth station users will have access to ample spectrum and can backhaul traffic from those remote areas by fiber. And in very remote areas where relocation is difficult because alternatives do not yet exist, no spectrum need be converted to terrestrial use.

Commenters agree that the conversion of current FSS use from the C-band to fiber contemplated by T-Mobile's approach is feasible. CTIA notes that "fiber can substantially

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<sup>47/</sup> See *id.* at 7. Significantly, the NPR *ex parte* letter that the C-Band Alliance cites to support its bald assertion is not about costs, in general, but is, instead, about the ability of noncommercial satellite users to pay for the costs of relocation and the available alternatives in rural and remote areas. As discussed in this Section, T-Mobile's proposal addresses NPR's concerns regarding affordability of relocation for satellite users and the possible lack of alternatives in rural and remote areas.

<sup>48/</sup> See Comments of T-Mobile USA, Inc., GN Docket No. 18-122, *et al.*, at 7-10, Attachment A (filed Oct. 29, 2018).

<sup>49/</sup> *Id.* at 7-10.

<sup>50/</sup> *Id.*

<sup>51/</sup> See C-Band Alliance Comments at 25.

replace some services provided by FSS without significant disruption to customers.”<sup>52/</sup> And Verizon points out that fiber may even be preferable over the C-band for some FSS operations because it “offers lower latency than C-band connectivity, greater capacity, and greater security from radio frequency (RF) interference” and “is increasingly available.”<sup>53/</sup> Even AT&T, a C-band user, finds that fiber is a viable alternative for some use cases, so long as it provides the requisite capacity to meet current FSS needs.<sup>54/</sup>

The satellite operators, themselves, present conflicting assertions about the critical nature of C-band spectrum for satellite purposes. Eutelsat, for example, states its support for the C-Band Alliance’s approach “to repurpose a major portion of the 3.7-4.2 GHz band for terrestrial wireless services.”<sup>55/</sup> And Intel, Intelsat, and SES Americom note that they “stand ready to facilitate secondary-market transactions through the C-Band Alliance to feed America’s 5G spectrum pipeline in the quickest way possible.”<sup>56/</sup> Their willingness to support the C-Band Alliance’s proposal to repurpose at least 200 megahertz of spectrum makes clear that all spectrum in the 3.7-4.2 GHz band is *not* needed to support their operations. Indeed, based on previous statements by satellite operators, the Commission should be skeptical that they can only relinquish 200 megahertz and continue to service customers. Only months ago, that ceiling was

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<sup>52/</sup> Comments of CTIA, GN Docket No. 18-122, *et al.*, at 17 (filed Oct. 29, 2018); *see also* Comments of Qualcomm Inc., GN Docket No. 18-122, *et al.*, at 5 (filed Oct. 29, 2018).

<sup>53/</sup> Verizon Comments at 14. Verizon also highlights mechanisms for substantially reducing C-band traffic needs, such as upgrading to the latest compression techniques. *See id.* at 15. The C-Band Alliance, itself, recently *increased* the amount of spectrum it believes can be cost-effectively cleared based on further technical assessments, such as assessment of a new filtering specification. *See* C-Band Alliance Comments at n.6.

<sup>54/</sup> *See* Comments of AT&T Services, Inc., GN Docket No. 18-122, at 9 (filed Oct. 29, 2018).

<sup>55/</sup> Eutelsat S.A. Comments at 3.

<sup>56/</sup> Intel Corporation, Intelsat License LLC, SES Americom, Inc. Comments at 8.

100 megahertz.<sup>57/</sup> It is likely even higher than today’s asserted limit, particularly if end users are provided with appropriate incentives to relocate earth stations to more remote locations or use other media. Statements by the satellite operators make it clear that hundreds of megahertz of spectrum in the band can – and should – be repurposed for mobile wireless operations.

Similarly, the satellite operators’ willingness to make satellite spectrum available makes it clear that full-band, full-arc protection is not required, as they claim.<sup>58/</sup> Commenters agree that the full-band, full-arc policy is outdated, causes use of the band to be overstated, and limits the spectrum’s efficiency.<sup>59/</sup> Eliminating the full-band, full-arc policy is necessary to achieve the Commission’s goal of maximizing the band’s use.<sup>60/</sup>

*Satellite Users Will Not Be Required to Pay for Relocation.* Satellite users will not be responsible for the costs of relocation under T-Mobile’s approach and indeed, as explained below, could be provided with an incentive payment to vacate the spectrum in favor of using other media or relocating to less populated areas.<sup>61/</sup> T-Mobile agrees with AT&T’s suggestion

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<sup>57/</sup> See, e.g., Letter from Henry Gola, Counsel to Intelsat Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122 (filed Apr. 23, 2018), Letter from Henry Gola, Counsel to Intelsat Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122 (filed Apr. 20, 2018), Letter from Karis A. Hastings, Counsel for SES Americom, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 17-183 (filed Feb. 9, 2018).

<sup>58/</sup> C-Band Alliance Comments at 43.

<sup>59/</sup> See, e.g., CTIA Comments at 13 (“FSS rules designed to protect against interference are overprotective, contributing to inefficient use of the band. . . Indeed, a typical earth station actually uses only a small part of the band.”); Verizon Comments at 11-12 (“[T]he spectrally inefficient nature of the full-band, full-arc policy, result[s] in fallow spectrum where other operations would not cause harmful interference.”); Comments of Dynamic Spectrum Alliance, GN Docket No. 18-122, *et al.*, at 14-15 (filed Oct. 29, 2018); PISC Comments at 14.

<sup>60/</sup> *NPRM*, ¶ 39.

<sup>61/</sup> See, e.g., Charter Comments at 4 (“Any solution also must include relocation of incumbents’ existing services from the 3.7- 4.2 GHz Band to other comparable spectrum bands or transmission methods (such as fiber), and full reimbursements to incumbents in the event that they are forced to modify services.”); Comments of NCTA – The Internet & Television Association, GN Docket No. 18-122, at 22-23 (filed Oct. 29, 2018) (“[E]xisting C-band customers must be compensated for costs incurred as a result of efforts to accommodate new terrestrial wireless broadband operations in the band.”); National Public

that satellite providers' bids must take into account the costs of relocation,<sup>62/</sup> and T-Mobile's proposal requires that satellite operators pay to relocate satellite users using the funds they obtain through the auction.<sup>63/</sup> These relocation costs could include, for instance, hard costs to relocate; costs such as filtering, engineering, Commission filing, and project management costs; and ongoing increased costs, such as leasing fiber. This is similar to the approach the Commission took when it mandated relocation cost reimbursement in, for example, the 2.1 GHz microwave relocation.<sup>64/</sup>

T-Mobile's approach also better serves the financial interests of satellite *users*, who are legitimately concerned that satellite operators will reap enormous benefits from the sale of spectrum, while they receive nothing.<sup>65/</sup> In particular, under the C-Band Alliance's approach,

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Radio Comments at 13 (“[T]he Commission should adopt appropriate procedures to ensure that any existing users and earth station operators are . . . fully reimbursed for any and all transition costs.”).

<sup>62/</sup> See AT&T Comments at 16-17 (“As the FCC has done in the past with minimum bids to guarantee incumbent relocation costs, or to fund Federal relocation, the C-band mechanism must address—and guarantee—that C-band users will be made whole.”).

<sup>63/</sup> Under T-Mobile's proposal, if the satellite consortium does not agree to sell anything more than the minimum amount in a particular area, it might receive sufficient revenue to cover clearing costs plus 10%. However, if the Commission determines that satellite operators should retain no portion of the auction revenues under that scenario, it can consider the auction under its usual auction authority and require new licensees, and not satellite operators, to pay relocation costs, consistent with other instances in which the Commission repurposed spectrum. Requiring new licensees to pay for relocation would also permit the market, with a regulatory backstop, to determine the timing of relocation by permitting new licensees to offer incentive payments for early clearing.

<sup>64/</sup> See 47 C.F.R. § 27.1164; *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, Second Report and Order, 17 FCC Rcd 23193 (2002); U.S. Department of Commerce, National Telecommunications and Information Administration, *Mandatory Reimbursement Rules for Frequency Band or Geographic Relocation of Federal Spectrum-Dependent Systems*, Final Rule, 67 Fed. Reg. 41182-01 (June 17, 2002).

<sup>65/</sup> See, e.g., Comments of Global Eagle Entertainment Inc., GN Docket No. 18-122, at 9 (filed Oct. 29, 2018) (“[C]osts incurred by C-band customers can and should be reimbursed by the satellite operators who stand to potentially reap windfall profits from secondary market transactions involving Lower C-band spectrum. Basic principles of fairness and equity mandate that if the Commission approves some form of the CBA's proposal to allow satellite operators to sell all or a portion of their rights to Lower C-

satellite operators would receive a windfall, and any payment of satellite user costs would be left to the C-Band Alliance's discretion. That is why the Commission may wish to consider providing satellite users with an option to receive a portion of the auction proceeds designated for satellite operators if they vacate the C-Band spectrum, otherwise reducing traffic requirements or relocating earth station operations to less populated areas. Under this approach, satellite operators would be required to distribute, on a *pro rata* basis, a percentage of the auction proceeds they obtain to satellite users that vacate the band or reduce their use of spectrum in the area covered by an auctioned license. Satellite users could use these funds for substitute transmission media or other purposes they deem appropriate. Satellite operators could also agree to pay satellite users even more than their *pro rata* share of the proceeds. This plan will create a virtuous cycle – as more satellite users agree to be relocated from the band or relocate their operations to less populated areas, satellite operators will be able to sell more spectrum in more densely populated geographic areas, increasing the amount of money that both the satellite users and satellite operators will realize from the auction. This type of regulatory guardrail could ensure that satellite users are treated fairly. And with some of the payments guaranteed to go to satellite users (beyond costs), the holdup problem (*i.e.* the satellite users holding up the satellite operators) would be reduced.

Requiring satellite operators to be responsible for relocation of their users or share a portion of the auction revenues with end users will also serve the public interest in efficient spectrum management, as the satellite operators will be able to balance the relocation cost requirement against their ability to monetize the spectrum at auction. As with other bands that

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band spectrum, it should ensure that their end-user C-band customers are also assured of the ability to recapture all of their lost value.”).

have been relocated, services can be relocated over time in accordance with a reasonable schedule. Therefore, contrary to the C-Band Alliance's assertions, T-Mobile's approach is the most effective way to ensure conversion of C-band spectrum where it is most highly valued.<sup>66/</sup>

#### **IV. THE C-BAND ALLIANCE'S PROPOSAL DOES NOT SATISFY REQUIREMENTS FOR WIRELESS MOBILE BROADBAND SPECTRUM**

The C-Band Alliance proposes to repurpose up to 180 megahertz of spectrum in the 3.7-4.2 GHz band, plus a 20-megahertz guard band, for terrestrial 5G services.<sup>67/</sup> The C-Band Alliance would privately negotiate one or more secondary market agreements with one or more wireless mobile operators.<sup>68/</sup> But the C-Band Alliance's proposal also comes with the threat that unless the Commission agrees with *its* approach for relicensing the 3.7-4.2 GHz band, under which it will have complete control of the relicensing process and solely reap the gains from that process, satellite operators will seek to disrupt the Commission's public interest-driven actions by, among other things, refusing to participate in an open and transparent auction.<sup>69/</sup> The Commission must be guided by its statutory obligations and public interest considerations, not threats.

Moreover, those implicit threats are empty. *First*, the Commission retains the authority to simply require that satellite operators and users vacate the spectrum without sharing in any auction revenues. *Second*, the 3.7-4.2 GHz band is valuable, as evidenced by the rise in the value of companies that hold it.<sup>70/</sup> Based on the potential benefit to these companies in the

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<sup>66/</sup> See, e.g., C-Band Alliance Comments at 7-8.

<sup>67/</sup> See *id.* at 1-8.

<sup>68/</sup> See *id.*

<sup>69/</sup> See Reply Comments of Intel Corporation, Intelsat License LLC, and SES Americom, Inc., GN Docket No. 18-122, *et al.* (filed Dec. 7, 2018).

<sup>70/</sup> For example, on December 6, 2017, Intelsat's stock closed at \$3.06 per share. A year later, on December 6, 2018, Intelsat's stock closed at \$23.27 per share.

potential sale of the spectrum, it is not realistic that they would forego billions of dollars of incentive auction revenue merely because the Commission declines to adopt *their* proposal and uses a mechanism required by the Communications Act and otherwise in the public interest.<sup>71/</sup> Therefore, in assessing T-Mobile's proposal, the Commission need not question whether satellite operators, and potentially users, will significantly benefit from selling spectrum – they will. Instead, the Commission must address whether satellite operators will retain the *entire* benefit of that sale, and whether smaller satellite companies, end users, and the American public will be excluded from those benefits.

While T-Mobile appreciates the C-Band Alliance's efforts to relinquish C-band spectrum for mobile wireless services, the C-Band Alliance's proposal contravenes several provisions of the Communications Act. The C-Band Alliance's proposal also misses the mark with respect to the amount of spectrum to be made available, the transparency of the repurposing process, and the treatment of other interests, including satellite users, consumers, and competition policy.

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<sup>71/</sup> Estimates of the value of the C-Band spectrum vary. While some have estimated that the value of the band is as little of \$0.13 MHz-pop, *see* Stephen Flynn, *Intelsat Credit Primer*, Bloomberg Intelligence, <https://www.investireoggi.it/forums/attachments/intelsat-credit-primer-pdf.461274/> (last visited Dec. 11, 2018), others have said that the value is between \$0.50 and \$0.60 MHz-pop. *See* Gagan Agrawal, *C-Band Spectrum Reallocation: Too Lucrative To Ignore*, Northern Sky Research (Oct. 18, 2018), <https://www.nsr.com/c-band-spectrum-reallocation-too-lucrative-to-ignore/>; *Intelsat S.A. & SES S.A.: To The Moon*, Kerrisdale Capital Management, LLC (June 2018), <https://www.kerrisdalecap.com/wp-content/uploads/2018/06/Intelsat-and-SES.pdf>. Assuming an auction of 500 megahertz over a United States population of approximately 325 million people, *see Population Estimates, July 1, 2017*, United States Census Bureau Quick Facts, <https://www.census.gov/quickfacts/fact/table/US/PST045217> (last visited Dec. 11, 2018), those valuations mean that the C-Band spectrum is worth between \$21.13 billion and \$97.5 billion. The consultant for Intel, Intelsat and SES Americom has recently estimated the value to be even higher – between \$0.93 and \$2.72 MHz-pop. Coleman Bazelon, *The Next Wave of Spectrum Reallocation: The Value of Additional Mid-Band Spectrum Reallocations*, The Brattle Group, at 14 (Nov. 14, 2017), <https://docs.house.gov/meetings/IF/IF16/20171116/106636/HHRG-115-IF16-20171116-SD005-U5.pdf>. That would mean, according to the Intel, Intelsat and SES Americom consultant, the band is worth between \$151.1 billion and \$442 billion. The Commission must reject any claim that the satellite companies would leave that money, or a meaningful portion of that money, behind in order to insist on adoption of their proposal.

The C-Band Alliance’s proposal focuses on the speed by which it would bring the C-band spectrum to market for wireless use.<sup>72/</sup> But the C-Band Alliance proposal *never* provides sufficient spectrum to meet the requirements for mobile broadband spectrum. Therefore, comparing a rush to an inferior solution, as proposed by the C-Band Alliance, versus an incentive auction solution that applies market forces to meet the need for mobile broadband spectrum is not meaningful.

Regardless, while there may be a relatively small difference in the time to develop the rules for an incentive auction, measured in months, there is little difference in the overall timing between the two approaches. The C-Band Alliance envisions a potential 36-month transition period before the spectrum can be available for terrestrial use.<sup>73/</sup> That is no different than the Commission-directed and significantly more complex transition of broadcasters after the Commission established a television channel reassignment plan.<sup>74/</sup> Moreover, the C-Band Alliance’s claims about speed are unsupported. Indeed, U.S. Cellular points out that the C-Band Alliance has “merely stated that the spectrum could be cleared within three years of a final Commission order in this proceeding.”<sup>75/</sup> The C-Band Alliance has not said or done anything

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<sup>72/</sup> C-Band Alliance Comments at 10-11 (“The C-Band Alliance intends to move quickly to develop secondary market transactions. The C-Band Alliance is committed to making as much as 200 MHz, including a 20 MHz guard band, of the C-band Downlink available for licensed terrestrial service within a period of only 18 months to 3 years—years before any proposed alternative mechanism could do so.”). While the C-Band Alliance has now back-tracked from its initial representation to sell to only one or more wireless operators, there can be no assurance that it will conduct a process with the type of transparency that a Commission-conducted auction would offer. *See* Letter from Michele C. Farquhar, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122, Attachment C, at 4 (filed Nov. 19, 2018).

<sup>73/</sup> *See, e.g.,* Letter from Michele C. Farquhar, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122 (filed Nov. 19, 2018).

<sup>74/</sup> *See Incentive Auction Task Force and Media Bureau Adopt a Post-Incentive Auction Transition Scheduling Plan*, Public Notice, 32 FCC Rcd 890 (2017); *Incentive Auction Closing and Channel Reassignment Public Notice*, Public Notice, 32 FCC Rcd 2786 (2017).

<sup>75/</sup> U.S. Cellular Corporation Comments at 11.



more to substantiate this claim, nor has it attempted to demonstrate how this novel and complex approach will, any more quickly than a Commission incentive auction, repurpose spectrum while also accounting for the significant number of parties involved and the varied interests represented.<sup>76/</sup> Even if the C-Band Alliance’s plan resulted in the spectrum becoming available slightly quicker, the flaws associated with the proposal outlined below dramatically outweigh any benefit to its approach.<sup>77/</sup>

The C-Band Alliance also makes the irresponsible and unsupported claim that T-Mobile is attempting to “slow our process until their merger is resolved” and that T-Mobile is thereby “hold[ing] 5G for America hostage.”<sup>78/</sup> Not only is the C-Band Alliance’s claim wrong, but it is ironic. If any entity is holding the 3.7-4.2 GHz band hostage, it is the C-Band Alliance, with its implicit threat to challenge Commission adoption of any rules that make the band available other than through its proposal. Although the Commission should correctly be concerned with making

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<sup>76/</sup> *Id.*; see also Comments of Nokia, GN Docket No. 18-122, *et al.*, at 6-7 (filed Oct. 29, 2018) (“[W]e continue to be underwhelmed by the amount of spectrum that would be made available in the near term, and by the lack of transparency regarding a future path to additional spectrum. At this time, the public has simply not been provided sufficient information to determine: (1) whether the data supports FSS continuing to operate in 300 MHz of the band indefinitely, only committing to clearing 200 MHz in the near-term; or (2) whether a greater amount of spectrum – perhaps the entire 500 MHz – could be freed for 5G over a longer timeline.”).

<sup>77/</sup> More recently, the C-Band Alliance has attempted to justify its proposal by asserting the superiority of a market-based approach in a declaration by Jeffrey Eisenach. C-Band Alliance Reply Comments, Attachment 2 (“Eisenach Declaration”). While T-Mobile agrees that the Commission should favor spectrum flexibility and market-based solutions, the Eisenach Declaration overlooks that satellite operators do not have the rights – to operate terrestrial systems in the 3.7-4.2 GHz band – that they would like to sell. And while Eisenach attempts to show the public interest benefits of making the 3.7-4.2 GHz band available quickly, he fails to acknowledge that: (1) there may be little time difference between the time it takes to make spectrum available through the C-Band Alliance proposal versus a Commission-run incentive auction; (2) an open, public process would lead to more competition for the spectrum being made available; and (3) whatever additional timing advantage there may be – if any – would be significantly outweighed by the additional spectrum that could be made available through a market-based incentive auction.

<sup>78/</sup> Letter from Michele C. Farquhar, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122, Attachment C, at 8 (filed Nov. 19, 2018).

spectrum available in a timely manner, it should not buckle to the C-Band Alliance’s threats, but should, instead, evaluate public interest concerns.<sup>79/</sup> Here, the public interest would be best served by a process that assures that sufficient spectrum is allocated for flexible use, is transparent, and is inclusive, including with respect to satellite users, rather than solely focusing on unsupported claims of speed.

**A. Implementation of the C-Band Alliance’s Proposal Would Violate Several Provisions of the Communications Act**

*Section 309(j)(1).* Section 309(j)(1) requires the Commission to use a “system of competitive bidding” when it receives “mutually exclusive applications” for “any initial license.”<sup>80/</sup> The C-Band Alliance would cause the Commission to violate this obligation. The C-Band Alliance argues that its proposal “will not trigger any obligation” under Section 309(j) because the proposal would require terrestrial service providers seeking spectrum access to negotiate private agreements with the C-Band Alliance.<sup>81/</sup> But the Commission does not have the ability to avoid its obligations under Section 309(j)(1) by simply outsourcing the process of assigning initial applications. If the Commission made this spectrum available in the normal course, it would certainly receive mutually exclusive applications covering initial authorizations for terrestrial wireless broadband services. As the Commission recognizes, the band is highly attractive for wireless broadband services because of its “favorable propagation characteristics” and “opportunity for channel re-use.”<sup>82/</sup> And as the Public Interest Spectrum Coalition (“PISC”) explains, “licenses for exclusive use spectrum over large geographic areas – as the Commission

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<sup>79/</sup> See 47 U.S.C. § 303(y)(2)(A).

<sup>80/</sup> 47 U.S.C. § 309(j)(1).

<sup>81/</sup> C-Band Alliance Comments at 29.

<sup>82/</sup> *NPRM*, ¶ 5.

envisions for this band – [have] been subject to assignment by auction, in part because there have always been competing demands to use it.”<sup>83/</sup> Because the potential licensing of 3.7-4.2 GHz band spectrum would meet all the requirements of Section 309(j)(1), the Commission cannot evade the obligation to auction the spectrum.

The C-Band Alliance’s proposal would enable transfers of spectrum without any return to the public, while allowing the satellite operators – who did not initially pay for the spectrum and do not have the terrestrial rights they propose to sell – to receive a windfall.<sup>84/</sup> Commenters agree that this result is both contrary to Section 309(j) and the public interest.<sup>85/</sup> As the PISC notes, it would be contrary to congressional intent in Section 309(j) for the Commission “to give away tens of billions of dollars in public revenue with no return to the Treasury.”<sup>86/</sup> Moreover,

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<sup>83/</sup> PISC Comments at 24.

<sup>84/</sup> *Id.* at 23-25. Indeed, satellite companies may realize returns that exceed the market capitalization of their companies. For example, as of December 6, 2018, Intelsat’s market capitalization was \$3.4 billion (having grown from approximately \$476 million prior to announcing its willingness to sell a portion of the C-band). Analysts estimate that Intelsat may “gain mid to high single-digit billion dollars” under the C-Band Alliance’s proposal. Gagan Agrawal, *C-Band Spectrum Reallocation: Too Lucrative to Ignore?*, Northern Sky Research (Oct. 18, 2018), <https://www.nsr.com/c-band-spectrum-reallocation-too-lucrative-to-ignore/>.

<sup>85/</sup> See PISC Comments at 27-31; see also Dynamic Spectrum Alliance Comments at 17 (“While a private transaction approach to clearing could result in a tremendous windfall for a handful of C-band operators and the administrator, an auction would better serve the Commission’s wider responsibilities.”).

<sup>86/</sup> PISC Comments at 4; see also Dynamic Spectrum Alliance Comments at 16-17 (“[E]schewing an auction for a private administrator would result in a loss of auction revenue for the U.S. Treasury. . . . If the lower segment of 3.7-4.2 GHz band is cleared and repurposed through an auction, the U.S. Treasury would receive most of the auction proceeds, which by some estimates could be billions of dollars.”); see also Statement of Ed Markey, 149 Cong. Rec. H. 5179, June 11, 2003 (“I believe that when the Federal Communications Commission does decide to proceed with auctions as a means of granting licenses for use of the public’s airwaves the public deserves to reap the benefits of the sale of licenses to its airwaves.”); Statement of John McCain, 141 Cong. Rec. S. 33602, Nov. 17, 1995 (“I believe that auctioning this and other spectrum is the fairest, most equitable manner in which to allocate spectrum. I would hope that the Commission would understand this fact and become spectrum auction proponents. The auctioning of spectrum in an orderly manner – done so that the public interest is served both by maximizing revenue to the Treasury and ensuring that services that use the spectrum continue in a manner that benefits the public – should be a goal of all FCC proceedings regarding the spectrum.”); see also Comments of Google LLC, GN Docket No. 18-122, at 11 (filed Oct. 29, 2018) (“Unlike a Commission auction, moreover, revenues generated from private industry negotiations will not return funds to the U.S.

as U.S. Cellular correctly observes, “a private sale would set a dangerous precedent, suggesting that incumbent licensees should always wage maximum resistance against giving up or sharing unused spectrum unless the Commission agrees to give them all the public revenue[.]”<sup>87</sup>

*Section 309(j)(6)(E).* Section 309(j)(6)(E) states that the Commission is not relieved of the obligation *in the public interest* to use various tools to avoid mutual exclusivity – and thereby avoid auctions. But those tools do not include ceding authority for others to do privately what the Commission can and should do publicly and transparently.<sup>88/</sup> However, if the Commission created an open process for licensing the spectrum – as it should – it would plainly receive mutually exclusive applications. The Commission cannot avoid this obligation and sound spectrum management principles by creating a private spectrum sale. The C-Band Alliance contends that its approach satisfies subsection (j)(6)(E) because it is “Congress’s intent that the Commission continue to employ a variety of tools at its disposal ‘in order to avoid mutual exclusivity in application and licensing proceedings.’”<sup>89/</sup> But the Commission has previously rejected this argument in the context of private negotiations.<sup>90/</sup> Therefore the private spectrum

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Treasury. FSS incumbents, including non-U.S. operators that acquired their C-band rights from the Commission at no cost, would reap a financial windfall. As Commissioner O’Rielly recently noted in the context of the CBRS proceeding, ‘spectrum belongs to the people and . . . it is the Commission’s obligation to manage it in the public interest for all Americans.’”) (internal citations omitted).

<sup>87/</sup> U.S. Cellular Comments at 4.

<sup>88/</sup> 47 U.S.C. § 309(j)(6)(E).

<sup>89/</sup> C-Band Alliance Comments at 30.

<sup>90/</sup> *See Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band; Implementation of Sections 3(n) and 322 of the Communications Act – Regulatory Treatment of Mobile Services; Implementation of Section 309(j) of the Communications Act – Competitive Bidding*, Second Report and Order, 12 FCC Rcd 19079, ¶ 62 (1997) (“Furthermore, the Industry Proposal provides no method for the Commission to recover a portion of the value of public spectrum pursuant to Section 309(j)(3)(C) of the Communications Act. Instead, incumbent licensees who negotiate expansion rights among themselves could obtain a windfall by obtaining rights to an entire EA without having to pay for such expanded rights. We disagree with commenters who attempt to justify this potential windfall by arguing that the proposed settlement procedure complies with the directive in Section 309(j)(6)(E) for the Commission to avoid mutual

negotiations and agreements contemplated in the C-Band Alliance’s proposal cannot qualify as “negotiations.”<sup>91/</sup> Moreover, even if there were a mechanism to avoid auctions, the Commission would be required to find that use of the mechanism is in the public interest. In this case, the public interest requires an open and transparent process that would result in the maximum amount of spectrum made available for wireless mobile broadband.

*Section 309(j)(3).* Private spectrum transactions contravene the purpose of Section 309(j)(3), which requires the Commission to “protect the public interest” when assigning licenses by auction.<sup>92/</sup> The Commission cannot transfer this responsibility to self-interested private operators who may undervalue or overvalue spectrum based on their own interests and market power.<sup>93/</sup> With private spectrum transactions that lack Commission oversight, there is no guarantee that the satellite operators would act in the public interest in negotiating a price for the spectrum. Private spectrum negotiations without Commission oversight are not likely to result in optimal outcomes, especially given the “sell-side advantage of the satellite operators.”<sup>94/</sup> On their own, the satellite operators would likely be incentivized to structure pricing to maximize their potential profits rather than to reflect market values.<sup>95/</sup> As the Broadcast Incentive Auction demonstrated, firm rules can act as a much-needed backstop, for instance to ensure clearing

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exclusivity through ‘engineering solutions, negotiation, threshold qualifications, service regulations, and other means.’”).

<sup>91/</sup> 47 U.S.C. § 309(j)(6)(E).

<sup>92/</sup> 47 U.S.C. 309(j)(3). Although Section 309 applies to competitive bidding, it is still relative here. Under the C-Band Alliance’s proposal, satellite operators are essentially engaging in private auctions for spectrum.

<sup>93/</sup> NCTA Comments at 6.

<sup>94/</sup> Verizon Comments, Attachment A at 4.

<sup>95/</sup> Dynamic Spectrum Alliance Comments at 16-17.

occurs efficiently and by a set deadline. To the extent needed, auction winners would be free to negotiate different arrangements post-auction.

*Section 309(j)(8)(G).* Section 309(j)(8)(G) of the Act states that the Commission may encourage a licensee to relinquish voluntarily some or all of its spectrum in order to permit assignment of flexible-use licenses by sharing some of the proceeds of the auction revenue with the licensee.<sup>96/</sup> The C-Band Alliance would do precisely what this subsection contemplates – except without the Commission involvement that the Communications Act requires. Moreover, the C-Band Alliance would retain *all* of the revenue from the incentive auction, which is contrary to the public interest, as noted above. This provision is a clear expression of congressional intent – when spectrum is newly made available and the incumbents receive the proceeds, the process should be conducted through a Commission incentive auction, not a private sale. Therefore, “[w]here an incentive auction is viable, the Commission should choose the methodology that comports with the statutory objective of paying only a portion of proceeds to licensees, particularly those that never paid for the spectrum in the first place.”<sup>97/</sup>

*Section 303(c).* Section 303(c) of the Act requires the Commission to assign “bands of frequencies to various classes of stations” and “assign frequencies for each individual station.”<sup>98/</sup> Under the C-Band Alliance’s proposal, through one or more private transactions, *it* – and not the Commission – would decide how much and which particular C-band spectrum would be made available for terrestrial use in various markets.<sup>99/</sup> The C-Band Alliance argues that “only the free

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<sup>96/</sup> 47 U.S.C. § 309(j)(8)(5).

<sup>97/</sup> PISC Comments at 26-27 (internal quotation marks omitted).

<sup>98/</sup> 47 U.S.C. § 303(c).

<sup>99/</sup> C-Band Alliance Comments at 24, 28; *see also* Comments of Intel Corporation, Intelsat License LLC, and SES Americom, Inc. at 10-11.

market can efficiently determine the amount and time of clearing that optimizes both terrestrial mobile use and continued satellite operations.”<sup>100/</sup> But that is exactly the opposite of the Commission’s obligations under the Communications Act.

While the Commission has allowed third parties to assist it in fulfilling its obligations under Section 303(c), the C-Band Alliance proposal goes well beyond what is permitted. For example, the Commission has provided private entities some responsibility over the frequency coordination process, but the Commission has not granted those private entities the type of unfettered authority the C-Band Alliance seeks or the ability to sell licenses that they do not have in order to derive the likely billions of dollars that sale of the band will command.<sup>101/</sup> And the permitted private negotiations concerned technical interference considerations – not how much spectrum an entity should or should not have.<sup>102/</sup>

*Section 307(b).* Section 307(b) of the Act requires the Commission to ensure an equitable distribution of frequencies “among the several States and communities.”<sup>103/</sup> The C-Band Alliance’s proposal would prevent the Commission from making any determination on

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<sup>100/</sup> C-Band Alliance Comments at 28.

<sup>101/</sup> *Frequency Coordination in the Private Land Mobile Radio Services*, Report and Order, 103 F.C.C.2d 1093, ¶ 127 (1986) (“While we expect coordinators to serve the public in a responsible manner, we feel impelled to maintain oversight of the coordinators’ actual performance. As noted earlier, Congress has encouraged us to do just that. The unique position in which we are placing the certified coordinators and the importance we place on the integrity of the process makes monitoring and enforcement, if necessary, essential. Coordinators will be providing a service to applicants and will be assisting the Commission in managing the use of the private land mobile radio spectrum. We are elevating the role and importance of coordinators, but we are also imposing certain responsibilities on the coordinators in the process. Assignment of such status cannot go unfettered. We will measure the performance of coordinators against the responsibilities described. Where it appears that a coordinator is not performing its duties in a manner consistent with the public interest obligations imposed in this proceeding, the Commission may, on its own motion or at the public’s request, conduct an inquiry into the coordinator’s performance.”).

<sup>102/</sup> *See Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band*, Order on Reconsideration, 27 FCC Rcd 13651 (2012).

<sup>103/</sup> 47 U.S.C. § 307(b).

frequency distribution; it would be the C-Band Alliance that does so. Like its obligations under Section 303(c), the Commission is responsible for overseeing how spectrum is distributed.

**B. Implementation of the C-Band Alliance’s Proposal Would Violate the Administrative Procedure Act**

In addition to violating provisions of the Communications Act, Commission delegation of decisions regarding the disposition of spectrum would violate the Administrative Procedure Act. The United States Court of Appeals for the D.C. Circuit has held that “while federal agency officials may subdelegate their decision-making authority to subordinates absent evidence of contrary congressional intent, they may not subdelegate to outside entities—private or sovereign—absent affirmative evidence of authority to do so.”<sup>104/</sup> Courts prohibit delegation to advance accountability in government: “when an agency delegates power to outside parties, lines of accountability may blur, undermining an important democratic check on government decision-making.”<sup>105/</sup> Delegations to a private party are especially suspect where, as here, conflicts of interest may color the private actor’s objectivity.<sup>106/</sup> Agency oversight over the private body’s ultimate decision, the courts have found, is insufficient. Instead, courts have demanded that agencies explain how the composition of the private body is representative of the public interest the agency is charged with administering and then sought specific details as to how the agency’s review process will operate, as well as exactly how the agency intends ensure

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<sup>104/</sup> *U.S. Telecom Ass’n v. F.C.C.*, 359 F.3d 554 (D.C. Cir. 2004); *see also, e.g., National Park and Conservation Ass’n v. Stanton*, 54 F.Supp.2d 7 (D.D.C. 1999).

<sup>105/</sup> *Id.*, *citing Nat’l Ass’n of Reg. Util. Comm’rs v. FCC*, 737 F.2d 1095, 1143–44 & n.41 (D.C.Cir.1984); *Printz v. United States*, 521 U.S. 898, 922-23 (1997).

<sup>106/</sup> *See, e.g., Sierra Club v. Sigler*, 695 F.2d 957, 963 n. 3 (5th Cir. 1983); *National Park and Conservation Ass’n v. Stanton*, 54 F.Supp.2d 7, 18 (D.D.C. 1999).



the private body's compliance with all applicable federal laws, such as the Administrative Procedures Act and the Freedom of Information Act.<sup>107/</sup>

In this case, as demonstrated above, the Commission has a statutory obligation to manage the nation's spectrum resources in the public interest. Nothing in the Communications Act or its amendments provides the Commission with the discretion to delegate spectrum-allocation responsibilities for a vast amount of public resources to a private-sector consortium, and, even if such authority were to exist, no explanation has been advanced demonstrating how delegating authority to the C-Band Alliance would be consistent with the broad public interest in spectrum management embodied in Title III of the Communications Act, much less how the C-Band Alliance would comply with the numerous procedural safeguards designed to ensure reasoned and transparent decision making.

### **C. Several Hundred Megahertz of Spectrum in the Band Must Be Cleared.**

The C-Band Alliance's proposal is also flawed because there would be no minimum amount of spectrum available.<sup>108/</sup> But the C-Band Alliance ignores the public interest benefits of a minimum nationwide spectrum benchmark.<sup>109/</sup> Commenters agree with T-Mobile that "hundreds of megahertz" of C-band spectrum, at a minimum, is necessary to realize the promises of 5G, help meet the growing demand for mobile broadband, and maintain U.S. leadership.<sup>110/</sup>

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<sup>107/</sup> See *Stanton*, 54 F.Supp.2d at 20.

<sup>108/</sup> C-Band Alliance Comments at 24-25.

<sup>109/</sup> Indeed, as noted above, because of the shifting amount of spectrum satellite operators appear to be willing to make available, the Commission should be skeptical of how much spectrum is actually required to meet satellite needs.

<sup>110/</sup> CTIA Comments at 9 ("For an effective mid-band 5G initiative, a substantial amount of 3.7-4.2 GHz spectrum, in the range of hundreds of megahertz, needs to be transitioned nationwide."); Comments of Ericsson, GN Docket No. 18-122, at 10 (filed Oct. 29, 2018) ("[T]he Commission should make sure that hundreds of megahertz of usable spectrum is transitioned for 5G and other next generation services as quickly as possible."); Nokia Comments at 7 ("The public interest demands that the Commission require

Contrary to the assertions of the Local Broadcasters, 3.7-4.2 GHz band spectrum is not “fungible for wireless carriers.”<sup>111/</sup>

Even Verizon, which supports the C-Band Alliance’s approach, realizes that the *Commission* must ensure that sufficient spectrum is made available and asks the Commission to repurpose “several hundred megahertz of 3.7-4.2 GHz band spectrum [to] complement existing millimeter wave spectrum assets now coming on line” for 5G.<sup>112/</sup> Several hundred megahertz of 3.7-4.2 GHz spectrum will allow multiple licensees to have access to the band.<sup>113/</sup> This significant amount of spectrum will also help facilitate the realization of economies of scale in equipment, both domestically and internationally, that will lead to lower prices and higher quality for consumers. T-Mobile’s market-based incentive auction approach will maximize the amount of spectrum for terrestrial use in the 3.7-4.2 GHz band, while still ensuring that important programming and other services can be delivered to end users.

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a plan and path forward for clearing additional spectrum in the band over and above the recently proposed 200 MHz.”).

<sup>111/</sup> Local Broadcasters Comments at 3.

<sup>112/</sup> Verizon Comments at 3; see News Release, *FCC’s First-Ever High Band 5G Spectrum Auction Begins Today*, FCC Office of the Chairman (Nov. 14, 2018), <https://docs.fcc.gov/public/attachments/DOC-355073A1.pdf> (“Between the auctions this year and next, the FCC will push almost 5 gigahertz of spectrum into the commercial marketplace over the course of the next 15 months.”).

<sup>113/</sup> Qualcomm Comments at 3 (“[T]he FCC should look to repurpose a certain amount of spectrum nationwide, *i.e.*, hopefully the entire band, in order to create spectrum access opportunities for multiple licensees.”); CTIA Comments at 10 (“[T]he Commission should set an aggressive benchmark in the hundreds of megahertz so multiple licensees will have an opportunity to deliver on the full promise of 5G in the mid-band range.”); 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.”).

**D. Commission Oversight Is Needed to Ensure That the Transition Process Is Transparent.**

The C-Band Alliance asserts that a benefit of its proposal is the minimal need for Commission oversight and intervention.<sup>114/</sup> But a lack of Commission oversight would actually be detrimental to all of the parties that would be involved in the repurposing process. In order for the spectrum reallocation process to be successful, commenters agree that it must be transparent and have the Commission's guidance.<sup>115/</sup>

In fact, the C-Band Alliance's comments highlight its proposal's flaws, which stem from the lack of transparency associated with its proposed private spectrum transactions. Under the C-Band Alliance's proposal, spectrum would be distributed from satellite operators to terrestrial wireless providers by negotiating private, secondary market agreements.<sup>116/</sup> The C-Band Alliance argues that since the private spectrum transactions are voluntary and driven by market forces, its proposal does not require significant Commission oversight.<sup>117/</sup> Specifically, it contends that the level of oversight associated with the Commission's traditional auction mechanism and the level contemplated in the *NPRM* – Commission approval of the C-Band Alliance as the Transition Facilitator – is both unnecessary and unwarranted.<sup>118/</sup> The C-Band Alliance asserts that the Commission's review of the flexible use license applications and subsequent license issuance provides adequate Commission oversight of the process. It does not.

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<sup>114/</sup> C-Band Alliance Comments at 21-23.

<sup>115/</sup> See, e.g., Dynamic Spectrum Alliance Comments at 18. The C-Band Alliance's recent claim that its proposal represents an "open, fair, and transparent process" is betrayed by its own description of how it would enter into agreements for use of the spectrum. Letter from Michele C. Farquhar, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122, at 1 (filed Nov. 19, 2018).

<sup>116/</sup> C-Band Alliance Comments at 4.

<sup>117/</sup> *Id.* at 21-23.

<sup>118/</sup> *Id.* at 21.

The degree of transparency contemplated by the C-Band Alliance’s proposal is insufficient. To the contrary, and as others recognize, private spectrum transactions “raise[] serious policy concerns” and therefore should be rejected.<sup>119/</sup>

Private spectrum transactions could exclude potential bidders, thereby reducing competition. The C-Band Alliance’s proposal does not guarantee participation from “enough players to maximize the deployment of robust 5G networks.”<sup>120/</sup> Commenters stress that the C-Band Alliance’s proposed private spectrum transactions would not provide “multiple, different-sized buyers” the opportunity to bid on spectrum.<sup>121/</sup> Under the C-Band Alliance’s proposal, the satellite operators could choose to sell spectrum to only a limited number of buyers – possibly only one. Auctions, on the other hand, by their very nature “ensure that as wide a set of potential bidders can participate as possible”<sup>122/</sup> and that all interested parties have the opportunity to compete. Moreover, as noted above, the proposal would also violate several provisions of the Communications Act, all intended to ensure that spectrum is made available in the public interest.

**E. The Repurposing Approach That the Commission Adopts Must Consider the Treatment of Satellite Interests Other Than the C-Band Alliance.**

Smaller satellite operators – ABS, Hispasat, and Embratel Star One – are understandably skeptical of the C-Band Alliance’s proposal and do not believe that the C-Band Alliance’s proposal considers their needs. Even though the C-Band Alliance states that it is comprised of the four largest satellite operators, “representing virtually all of the operational” C-band services

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<sup>119/</sup> Dynamic Spectrum Alliance Comments at 18. A public spectrum auction with Commission oversight addresses these public policy concerns, while private spectrum transactions heighten them.

<sup>120/</sup> U.S. Cellular Comments at 8.

<sup>121/</sup> U.S. Cellular Comments at 8.

<sup>122/</sup> PISC Comments at 18.

in the continental U.S.,<sup>123/</sup> it also contends that, as the Transition Facilitator, it will account for all operators’ interests in the repurposing process, as “additional satellite operator members are not essential.”<sup>124/</sup> However, as explained in their comments, the small satellite operators have been excluded from the C-Band Alliance – and the process by which the C-Band Alliance developed its market-based proposal – even though they are “similarly situated to—and regularly compete with” the members of the C-Band Alliance, with whom they share spectrum rights.<sup>125/</sup>

The C-Band Alliance did not consider the small satellite operators in the Alliance’s formation and in designing the role that it will play as the Transition Facilitator in its market-based approach.<sup>126/</sup> The small satellite operators point out that the C-Band Alliance is a “self-selected group” that “imposed arbitrary—and undisclosed—conditions on eligibility for participation in the Transition Facilitator.”<sup>127/</sup> As a result, the smaller satellite operators’ comments contradict the claim that the C-Band Alliance has overcome the holdout problem identified by the Commission in the *NPRM*. The small satellite operators also urge the Commission to ensure that any proceeds the C-Band Alliance satellite operators recoup from the

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<sup>123/</sup> C-Band Alliance Comments at 4.

<sup>124/</sup> *Id.* at 22.

<sup>125/</sup> Comments of ABS Global Ltd., Hispasat S.A., Embratel Star One S.A. (“Small Satellite Operators”), GN Docket No. 18-122, at 11 (filed Oct. 29, 2018).

<sup>126/</sup> This is contrary to the C-Band Alliance’s assertion that there is “widespread support” for its proposal. Letter from Michele C. Farquhar, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122, at 1 (filed Nov. 19, 2018). To the contrary, as the following demonstrates, other satellite operators and satellite users generally *opposed* the C-Band Alliance proposal. And, as noted above, many other terrestrial interests did not support the proposal. And, as even the C-Band Alliance observed, the cable industry remains opposed to its proposal. *See* Letter from Michele C. Farquhar, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-183, 18-122, Attachment C, at 8 (filed Nov. 19, 2018).

<sup>127/</sup> Small Satellite Operators Comments at 10-11.

auction are also allocated equally to the small satellite operators that also made investments in C-band services.<sup>128/</sup>

As the small satellite operators demonstrate, and, as described above, the C-Band Alliance has not engaged in a transparent process to date, and there is no guarantee that it will in the future. The Commission should therefore reject the C-Band Alliance's assertion that it should be left alone to form and operate the Transition Facilitator. The Commission is in a better position to mandate all satellite operators' actions during a spectrum reallocation rather than allow only some operators to dictate those terms. Only a Commission-mandated auction and relocation scheme will protect the interests of those other than the satellite operators that comprise the C-Band Alliance.<sup>129/</sup>

The Commission should also be suspicious of Verizon's support of the C-Band Alliance's proposal, which could prove to be detrimental to other mobile wireless providers.<sup>130/</sup> Verizon would presumably enter into a private spectrum agreement with the C-Band Alliance to acquire all of the C-band spectrum, avoiding the need to participate in an auction against other terrestrial wireless providers. When spectrum is becoming newly available for mobile wireless use, all industry participants should have an opportunity to obtain the spectrum, just as Section 309(j) of the Communications Act contemplates. This is particularly true with respect to mid-band spectrum, where supply is limited and demand is high.<sup>131/</sup> Verizon's support of the C-Band

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<sup>128/</sup> *Id.* at 12.

<sup>129/</sup> The Commission can also dictate the division of auction revenues between satellite operators. For example, the Commission may wish to consider requiring that satellite operators divide revenues for a geographic area license based on the number of base stations they serve as of the last date that the Commission permitted registrations of earth stations.

<sup>130/</sup> See Verizon Comments at 4-9.

<sup>131/</sup> As even the C-Band Alliance admits, the 3.7-4.2 GHz band "is a 'Goldilocks' band that will facilitate 5G coverage throughout suburban and rural America." C-Band Alliance Comments at 7. Mid-band spectrum "combines favorable propagation characteristics compared to high-band spectrum along

Alliance’s approach is particularly troublesome when combined with its support for 100 megahertz channels and the fact that the C-Band Alliance currently plans to offer only 180 megahertz of usable spectrum.<sup>132/</sup> That means that Verizon could be the only mobile wireless provider to secure the amount of spectrum assets that it argues is desirable to offer service.

**V. THE COMMISSION SHOULD ADOPT POWER AND OOB LIMITS THAT SUPPORT THE DEVELOPMENT OF MOBILE BROADBAND SERVICES<sup>133/</sup>**

**A. Power Limits for Fixed and Base Stations**

The spectrum in the 3.7-4.2 GHz band that the Commission clears for terrestrial wireless services cannot be restricted by unrealistic power limits, such as those suggested in the C-Band Alliance’s comments in this proceeding.<sup>134/</sup> Commenters agree with the Commission’s proposal<sup>135/</sup> to adopt its well-established base station power limit of 1640 watts equivalent isotropically radiated power (“EIRP”) for emission bandwidths less than one megahertz, 1640 watts EIRP for emission bandwidths greater than one megahertz, and 3280 watts EIRP in rural

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with potentially large channel sizes compared to low-band spectrum” and therefore “provides a unique platform to advance next-generation technologies[.]” Comments of Competitive Carriers Association, GN Docket No. 18-122, *et al.*, at 3 (filed Oct. 29, 2018); *see also* CTIA Comments at 2 (“The 3.7-4.2 GHz band is a unique and critical opportunity to make much-needed mid-band spectrum available for 5G.”); U.S. Cellular Comments at 2 (“[T]his proceeding provides an important opportunity to address the current deficiency in mid-band spectrum by making available up to 500 megahertz of spectrum that is ideally positioned for the deployment of next generation wireless networks.”).

<sup>132/</sup> Verizon Comments at 4, 18.

<sup>133/</sup> T-Mobile notes that the C-Band Alliance submitted its reply comments in this proceeding and an associated Technical Annex on December 7, 2018. Reply Comments of the C-Band Alliance, GN Docket No. 18-122 *et al.*, Technical Annex (filed Dec. 7, 2018). T-Mobile continues to review the Technical Annex to evaluate the changes proposed, and T-Mobile may respond further in an *ex parte* communication.

<sup>134/</sup> C-Band Alliance Comments, Technical Annex at 9.

<sup>135/</sup> AT&T Comments at 20; CTIA Comments at 23; Ericsson Comments at 19 (“For fixed and base stations in the 3.7-4.2 GHz band, Ericsson would accept the Commission’s proposed power limits of 1640 watts EIRP for emission bandwidths less than one megahertz, and 1640 watts per MHz (62 dBm/MHz) EIRP for emission bandwidths greater than one megahertz.”); Verizon Comments at 23 (“The Commission should adopt the proposed limits of 1640 watts EIRP per megahertz, with double that level (3280 watts EIRP per megahertz) in rural areas.”).

areas, for the 3.7-4.2 GHz band.<sup>136/</sup> Indeed, the proposed base station power limits are consistent with the power limits permitted for other wireless services.<sup>137/</sup> As AT&T notes, “the characteristics of the band are not so different from other bands that changes in the regulations are warranted.”<sup>138/</sup>

The C-Band Alliance, however, urges the Commission to adopt a total base station power limit of 66 dBm per 100 megahertz – or 46 dBm per megahertz<sup>139/</sup> – a limit that is 16 dB below the current EIRP limit of 1640 watts per MHz or 62 dBm per megahertz for the AWS bands.<sup>140/</sup> The C-Band Alliance’s proposal, if implemented, would cause 5G cell coverage in the 3.7-4.2 GHz band to be significantly smaller than Advanced Wireless Service (“AWS”) band cell site coverage, stifling terrestrial wireless use of the band. In particular, the 3.7-4.2 GHz band cell site radius would be 5.3 times smaller than AWS band cell radius, and its coverage would be 28 times less than the AWS cell coverage. In other words, the 3.7-4.2 GHz band’s coverage area would only be a small portion – 3.6 percent – of the AWS band’s coverage area.

The C-Band Alliance’s proposal is inconsistent with the primary purpose of this proceeding and clearly defeats the purpose of using mid-band spectrum to achieve relatively larger coverage areas than, for example, millimeter bands for 5G services. As described above, the C-Band Alliance’s proposal would shrink the 3.7-4.2 GHz band cell coverage to levels that

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<sup>136/</sup> *NPRM*, ¶ 164.

<sup>137/</sup> *See id.* (“The current rules for AWS-1, AWS-3 and AWS-4 limit base station power in non-rural areas to 1640 watts EIRP for emission bandwidths less than one megahertz and to 1640 watts per MHz EIRP for emission bandwidths greater than one megahertz, and they double these limits (3280 watts EIRP or 3280 watts/MHz) in rural areas. The same limits apply to broadband PCS stations.”) (internal citations omitted); 47 CFR § 27.50(d)(2)(i)-(ii); *see also* Ericsson Comments at 19 (“These levels are commensurate with existing rules and deployments.”).

<sup>138/</sup> AT&T Comments at 20.

<sup>139/</sup> C-Band Alliance Comments, Technical Annex at 9.

<sup>140/</sup> *See* 47 CFR § 27.50(d)(2)(i)-(ii).



reduce the coverage advantage of this band over millimeter bands and prevent licensees from deploying 5G over wide channels – an advantage that has made the 3.7-4.2 GHz band a desirable complement to the millimeter bands. The C-Band Alliance’s proposal would also make U.S. 5G services less efficient and less competitive relative to global deployments, as other regulators are introducing mid-band spectrum that is not restricted in the manner that the C-Band Alliance proposes.<sup>141/</sup> Accordingly, in order to maximize the usefulness of the 3.7-4.2 GHz band for mobile wireless broadband services and not hamper U.S. operations of mid-band spectrum, the Commission should reject the C-Band Alliance power limit proposal.

The Commission suggests limiting the total power of a base station to 75 dBm EIRP,<sup>142/</sup> but imposing that limit would penalize large bandwidth channels. Other commenters agree.<sup>143/</sup> Adopting the 75 dBm EIRP limit would limit the EIRP of a 100 megahertz channel to 316 watts per megahertz, as compared to the 1640 watts per megahertz proposed in the *NPRM*.<sup>144/</sup> A similar power density reduction would be required for bandwidths greater than 20 megahertz. The 75 dBm total power limit would diminish the coverage area of channels that are greater than 20 megahertz wide and prevent 5G base stations from supporting the highest possible throughput throughout the cell coverage area. The Commission should address concerns about overload by first quantifying them and then implementing studies that use realistic 5G deployment

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<sup>141/</sup> See, e.g., *Award of the 2.3 and 3.4 GHz Spectrum Bands, Competition Issues and Auction Regulations*, Ofcom, at 18 (July 11, 2017), [https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0022/103819/Statement-Award-of-the-2.3-and-3.4-GHz-spectrum-bands-Competition-issues-and-auction-regulations.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0022/103819/Statement-Award-of-the-2.3-and-3.4-GHz-spectrum-bands-Competition-issues-and-auction-regulations.pdf) (“We set out decisions on coordination to avoid interference between neighbouring users within the 2.3 and 3.4 GHz bands. . . For the 3.4 GHz band we said there should be a flexible approach to synchronisation between users to allow for innovation.”).

<sup>142/</sup> *NPRM*, ¶ 165.

<sup>143/</sup> CTIA Comments at 23-24; Ericsson Comments at 19.

<sup>144/</sup> *NPRM*, ¶ 164.

configurations. Before adopting EIRP limits that may unnecessarily reduce the usability of the 3.7-4.2 GHz band for 5G services, other avenues, such as improved satellite earth stations receiver Adjacent Channel Selectivity and coordination on a case-by-case basis, should be considered.

## **B. Out of Band Emissions Limits**

The Commission should similarly reject the C-Band Alliance's proposed OOB limits for the 3.7-4.2 GHz band.<sup>145/</sup> Several commenters agree that the Commission's proposed -13 dBm/MHz OOB limit is appropriate for 5G user equipment and base stations deployed in the band.<sup>146/</sup> As the Commission recognizes, the proposed limit of -13 dBm "has been used successfully to protect adjacent operations from harmful interference in the AWS bands."<sup>147/</sup> But the C-Band Alliance proposes a much more stringent OOB mask.<sup>148/</sup> The C-Band Alliance provides no reasonable justification why the Commission should adopt these very low limits. Adoption of such stringent OOB limits would hamper the capability of 5G user equipment and indirectly require reduction of base stations and user equipment EIRPs, which, in turn, would result in further reduction of the 3.7-4.2 GHz band's value as integral mid-band spectrum for 5G services. Just as the proposed -13 dBm OOB limit has adequately protected operations from

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<sup>145/</sup> C-Band Alliance Comments, Technical Annex at 9.

<sup>146/</sup> Verizon Comments at 24 ("The Commission should extend its 'longstanding' OOB limit of -13 dBm/MHz at the authorized channel edge to the 3.7-4.2 GHz band, finding that it 'will provide protection to incumbent services in adjacent bands, while allowing the full use of the new band.' This limit will protect adjacent operations and should be adopted."); CTIA Comments at 24 ("CTIA supports the proposal to extend the longstanding limit on out-of-band emissions ("OOB") of -13 dBm/MHz at the authorized channel edge, provided an appropriate guard band is adopted."); Ericsson Comments at 20 ("Ericsson generally supports the Commission's proposal to apply its longstanding limit on conducted emissions (-13 dBm/MHz) to the 3.7-4.2 GHz band."); *see NPRM*, ¶ 168.

<sup>147/</sup> *NPRM*, ¶ 168.

<sup>148/</sup> C-Band Alliance Comments, Technical Annex at 9.

harmful interference in other bands, it can be used here to protect operations in the adjacent 3.5 GHz band.

## **VI. THERE IS WIDESPREAD OPPOSITION TO USE OF THE 3.7-4.2 GHz BAND FOR POINT-TO-MULTIPOINT OPERATIONS**

Most commenters oppose the introduction of point-to-multipoint services in any portion of the band. Commenters representing mobile wireless interests and equipment manufacturing interests agree that designating the 3.7-4.2 GHz band for point-to-multipoint services forecloses other uses of the spectrum and hinders the development of 5G services.<sup>149/</sup> Instead, the Commission should implement flexible use licensing, which helps satisfy the spectrum needs of various applications, including point-to-multipoint operations, without adding encumbrances to the band. The entities with whom the spectrum would be shared – FSS users – uniformly reject the point-to-multipoint sharing proposals. In addition to further complicating repacking, FSS users find that point-to-multipoint use of the band would further increase the difficulty of frequency coordination in the band and cause harmful interference to incumbent operations.<sup>150/</sup> Commenters advocating for point-to-multipoint services have not demonstrated why they cannot, as T-Mobile has suggested throughout this proceeding, participate in an auction of flexible use spectrum and use the spectrum as they deem appropriate.

T-Mobile appreciates the benefits of point-to-multipoint systems. The Broadband Connects America Coalition’s comments demonstrate that many Americans who live in rural and underserved areas disproportionately lack access to high-speed broadband. Despite the benefits

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<sup>149/</sup> Nokia Comments at 9-10; Verizon Comments at 17; Ericsson Comments at 17; Qualcomm Comments at 6-7; Comments of the Telecommunications Industry Association, GN Docket No. 18-122, *et al.*, at 8-9 (filed Oct. 29, 2018).

<sup>150/</sup> *See, e.g.*, Comments of the Content Companies, GN Docket No. 18-122, at 10-12 (filed Oct. 29, 2018); GCI Communication Corp. Comments at 21-23; Comments of Cumulus Media Inc. and Westwood One, LLC, GN Docket No. 18-122, at 18 (filed Oct. 29, 2018).

of point-to-multipoint operations, designating spectrum for a particular application, as the proponents of point-to-multipoint use request, is out of step with sound spectrum management policies and diverges from the Commission's recent licensing structure.<sup>151/</sup> These commenters are essentially asking the Commission to choose technology winners and losers. The Commission should not foreclose allocation of some portion of this band for flexible services, including mobile broadband, by limiting its use to fixed services.

## **VII. ADJACENT BAND OPERATIONS CAN BE PROTECTED**

T-Mobile agrees with commenters that urge the Commission to continue studying the impact of mobile wireless systems in the 3.7-4.2 GHz band on aviation and aeronautical services operating in the 4.2-4.4 GHz band, specifically Wireless Avionics Intra Communication ("WAIC") systems and radio altimeters.<sup>152/</sup> T-Mobile supports the safe operation of such systems, but their use should not foreclose the Commission's allocation of the 3.7-4.2 GHz band for flexible use and subsequent mobile wireless use of the band. Contrary to arguments made by some commenters,<sup>153/</sup> the Commission can still accommodate both WAIC and radio altimeters in the 4.2-4.4 GHz band and mobile wireless use in the 3.7-4.2 GHz band. The Commission should work with other federal agencies to determine an appropriate technical framework to allow mobile use at 3.7-4.2 GHz without causing harmful interference to properly engineered adjacent aviation operations. The Commission should also ensure that WAIC systems are engineered recognizing the potential for adjacent channel operations. While T-Mobile does not anticipate

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<sup>151/</sup> See T-Mobile Comments at 22.

<sup>152/</sup> Comments of Aerospace Industries Association and the General Aviation Manufacturers Association, GN Docket No. 18-122, at 4 (filed Oct. 29, 2018); Comments of Garmin International, Inc., GN Docket No. 18-122, *et al.*, at 1-3, 9-11 (filed Oct. 29, 2018).

<sup>153/</sup> See Comments of The Boeing Company, GN Docket No. 18-122, *et al.*, at 5-6 (filed Oct. 29, 2018).

mobile wireless services causing harmful interference, it urges the Commission to adequately address any interference concerns related to these services before mobile wireless services are deployed.

## **VIII. CONCLUSIONS**

T-Mobile appreciates the Commission's efforts to make 3.7-4.2 GHz band spectrum available for mobile broadband services. The Commission should adopt T-Mobile's proposed market-based approach because it offers a transparent process that will maximize the amount of spectrum that will be made available for wireless mobile broadband, with a portion of the proceeds returned to taxpayers, while accommodating satellite operators and users. In contrast, the C-Band Alliance envisions a series of private transactions that limit the amount of spectrum made available, and a process that is closed to many interested parties and smaller satellite operators, with revenues going exclusively to entities that paid nothing for the spectrum.

Respectfully submitted,

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