

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Expanding Flexible Use of the	)	GN Docket No. 18-122
3.7 to 4.2 GHz Band	)	
	)	
Petition for Rulemaking to Amend and Modernize	)	
Parts 25 and 101 of the Commission’s Rules to	)	
Authorize and Facilitate the Deployment of	)	RM-11791
Licensed Point-to-Multipoint Fixed Wireless	)	
Broadband Service in the 3.7-4.2 GHz Band	)	
	)	
Fixed Wireless Communications Coalition, Inc.,	)	RM-11788
Request for Modified Coordination Procedures in	)	
Band Shared Between the Fixed Service and the	)	
Fixed Satellite Service	)	

**REPLY COMMENTS OF DYNAMIC SPECTRUM ALLIANCE**

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**TABLE OF CONTENTS**

**I. THERE IS STRONG SUPPORT IN THE RECORD FOR AUTHORIZING FIXED P2MP OPERATIONS THROUGHOUT THE BAND IN THE ABSENCE OF HARMFUL INTERFERENCE TO FSS OR NEW FLEXIBLE-USE LICENSEES. .... 5**

A. P2MP Operations Can Readily Coordinate Shared Use of the Ongoing FSS Portion of the Band While Protecting Earth Stations from Interference. .... 6

B. A Dynamic Spectrum Management Database Mechanism Can Best Accommodate Opportunistic Use of Unused Spectrum in the Lower Portion of the Band. .... 12

**II. THE CBA’S OFFER TO CLEAR MORE THAN 200 MEGAHERTZ OF SPECTRUM ADMITS THE GROSSLY INEFFICIENT USE OF THE BAND. .... 15**

**III. THE PRIVATE SALE OPTION PROMOTED BY THE CBA HARMS THE INTERESTS OF OTHER STAKEHOLDERS FOR THE BENEFIT OF FOUR NON-U.S. FSS INCUMBENT OPERATORS SEEKING UNJUST ENRICHMENT..... 16**

A. Protection of the Interests of C-band Users and the Public..... 17

B. Need to Protect All Parties Interested in Acquiring C-band Spectrum to Provide Flexible Use, Including Mobile Services..... 20

C. Protecting the Public Interest and the U.S. Taxpayer Must be a Priority..... 22

**IV. CONCLUSION ..... 24**

## INTRODUCTION AND SUMMARY

As stated in our initial comments in this proceeding, the Dynamic Spectrum Alliance (“DSA”)<sup>1</sup> is supportive of the Federal Communications Commission’s Notice of Proposed Rulemaking on the 3.7 to 4.2 GHz band (“NPRM”)<sup>2</sup> and is supportive of efforts to ensure that this band is used in the most efficient and intensive manner possible. To achieve these goals, the DSA recommended that the Commission: (1) permit fixed point-to-multipoint (“P2MP”) operations throughout the band; (2) amend the outdated full-band, full-arc coordination regime; and (3) assign new flexible-use licenses through a public market-based auction, rather than delegating responsibility for assignment to a private administrator of fixed satellite service (“FSS”) operators that will engage opaquely in transactions.

There is strong support in the record for the feasibility of permitting point-to-multipoint operators to coordinate shared use throughout the upper portion of the band that remains in use for FSS (e.g., 3900-4200 MHz), as well as on an opportunistic, use-it-or-share-it basis in any lower portion of the band reallocated for exclusive, flexible use licensing. A diverse group of parties representing rural broadband ISPs, technology companies, and consumer and rural broadband advocates filed comments supporting a balanced approach that would make all the unused capacity across the C-band available for both flexible use licensing (by clearing up from

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<sup>1</sup> The Dynamic Spectrum Alliance is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of DSA members is available on the DSA’s website at [www.dynamicspectrumalliance.org/members/](http://www.dynamicspectrumalliance.org/members/).

<sup>2</sup> See *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Order and Notice of Proposed Rulemaking, GN Docket No. 18-122, FCC 18-91 (rel. July 13, 2018) (“NPRM”).

3700 MHz) and for high-capacity fixed wireless (by sharing available spectrum from 4200 MHz down).

Nothing in the record undermines any of the aforementioned policy aims. Indeed, as numerous commenters agree, sharing C-band with P2MP systems is both technically feasible and offers enormous economic and societal benefits, in particular to Americans in underserved parts of the country. FSS commenters that oppose C-band sharing, rather than providing a serious analysis of the actual usage, technical feasibility, or the business case for future growth of C-band demand, engage in “hand-waving” arguments doubting the viability of sharing C-band spectrum. The Commission must reject such outright denials and independently evaluate the technical feasibility and benefits of sharing.

In addition, the record indicates that the C-band is grossly underutilized and is ripe for more intensive use by mobile, P2MP and other wireless systems. The mere fact that FSS operators have offered increasing amounts of the band for private sale proves that FSS operations are not efficiently using the entire band. Furthermore, commenters that seek to preserve full-band, full-arc coordination offer little evidence about *actual* usage of frequencies and transponders by FSS operations, and instead offer overly-conservative assertions about the supposed need for FSS operations to have access to all frequencies, transponders, and satellites across the full arc. This lack of specificity is telling, and supports elimination of the inefficient full-band, full-arc rules by the Commission.

Finally, the DSA strongly agrees with the commenters who raise serious concerns about C-band Alliance’s (CBA) private sale proposal for clearing a portion of the band. As proposed, CBA’s private sale approach benefits a small number of non-U.S. incumbent FSS operators and large national mobile operators (i.e., the highest potential bidders), at the expense of smaller

competitive operators, C-band users, and the American taxpayer, who stands to see no revenue from the sale of public spectrum. This unconscionable outcome is due to the fundamental flaw in the CBA’s plan: it places the interest of non-U.S. FSS incumbents to monetize spectrum ahead the broader public interest, a major shift in established U.S. spectrum policy. The FCC must therefore undertake a public auction—a time-tested and reliable method of protecting the interests of all stakeholders—to ensure a fair and market-based result.

**I. THERE IS STRONG SUPPORT IN THE RECORD FOR AUTHORIZING FIXED P2MP OPERATIONS THROUGHOUT THE BAND IN THE ABSENCE OF HARMFUL INTERFERENCE TO FSS OR NEW FLEXIBLE-USE LICENSEES.**

A diverse range of parties representing rural broadband ISPs, technology companies, and consumer and rural broadband advocates agree with the Commission’s underlying premise that coordinated sharing can enable fixed wireless P2MP operators to bring high-speed broadband to rural, tribal and other underserved areas while avoiding harmful interference to other band incumbents. In its comments, the DSA strongly agreed with the Commission that “regardless of how much spectrum becomes available for flexible use in the near term,”<sup>3</sup> it is entirely feasible and desirable to authorize P2MP fixed wireless to “operate on a secondary basis *vis-à-vis* FSS in any part of the band in which FSS continues to operate during a transition period to accommodate repacking and, thereafter, on a frequency-coordinated basis to protect actual FSS operations.”<sup>4</sup>

There is strong support in the record for the feasibility of permitting P2MP providers to coordinate shared use throughout the upper portion of the band that remains in use for FSS (e.g., 3900-4200 MHz) on a co-primary basis, as well as on an opportunistic, use-it-or-share-it basis in

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<sup>3</sup> *NPRM* at ¶ 119.

<sup>4</sup> *Id.* at ¶ 116.

any lower portion of the band reallocated for exclusive, flexible use licensing. Coordinated sharing can readily accommodate a repacking of earth stations in the upper FSS portion of the band, particularly if the Part 101 process is modernized to include electronic notification and real-world Geographic Information Systems (“GIS”) data on terrain and clutter. In addition, commenters also recognize that certification of a dynamic spectrum management database system can enable shared access to unused spectrum by fixed wireless *across the entire band*, making every unused megahertz of spectrum in the 3.7 GHz band available for 5G terrestrial deployments, both mobile and fixed.

**A. P2MP Operations Can Readily Coordinate Shared Use of the Ongoing FSS Portion of the Band While Protecting Earth Stations from Interference.**

There is strong support in the record for the feasibility of permitting P2MP providers to coordinate shared use throughout the upper portion of the band that remains in use for FSS (e.g., 3900-4200 MHz) on a co-primary basis.<sup>5</sup> Joint comments filed by Frontier and Windstream, for example, support the authorization of coordinated sharing for P2MP operations across the entire ongoing FSS allocation (up to 320 megahertz), observing that the unused capacity in the band can be “prime spectrum for rural fixed wireless deployment. This spectrum enables high-bandwidth applications while still allowing for non-line-of-sight deployments over considerable

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<sup>5</sup> See, e.g., Comments of Frontier Communications Corp. and Windstream Services, LLC, GN Docket No. 18-122 (filed Oct. 29, 2018) (“Frontier/Windstream Comments”); Comments of Starry Inc., GN Docket No. 18-122 (filed Oct. 29, 2018) (“Starry Comments”); Comments of Motorola Solutions, GN Docket No. 18-122 (filed Oct. 29, 2018); Comments of Microsoft Corporation, GN Docket No. 18-122 (filed Oct. 29, 2018) (“Microsoft Comments”); Comments of Google LLC, GN Docket No. 18-122 (filed Oct. 29, 2018) (“Google Comments”); Comments of the Broadband Access Coalition, GN Docket No. 18-122 (filed Oct. 29, 2018) (“BAC Comments”); Comments of the Broadband Connects America Coalition, GN Docket No. 18-122 (filed Oct. 29, 2018); Comments of Federated Wireless, GN Docket No. 18-122 (filed Oct. 29, 2018) (“Federated Wireless Comments”); Comments of the Public Interest Spectrum Coalition, GN Docket No. 18-122 (filed Oct. 29, 2018) (“PISC Comments”).

distance.”<sup>6</sup> Notably, although Frontier relies heavily on earth stations in the band for video distribution, the two companies “believe that productive coexistence with fixed wireless is possible.”<sup>7</sup> The Frontier/Windstream comments state:

Frontier, for instance, relies on C-band earth stations as the eighth largest multichannel video provider, but in our predictive judgment, we can work towards rules that protect existing users while unleashing the benefits of new productive uses.<sup>8</sup>

Starry likewise observes that doing away with the wasteful “full-band, full-arc” reservation policy and protecting earth stations by coordinating on the basis of real-world GIS information can “create a robust sharing regime for shared fixed [P2MP] operations that facilitates near term access and evolves over time.”<sup>9</sup> Starry states:

There should be no basis on which the Commission should conclude that the band cannot be shared between FSS and fixed point-to-multipoint operations. This is not a binary question. Instead, the question is what is the protection criteria, how does it impact the utility for fixed, and what tools can be leveraged to mitigate interference (technical or financial).<sup>10</sup>

Motorola Solutions “envisions that numerous types of localized public and private broadband networks will be able to operate in this spectrum without negatively impacting incumbent services.”<sup>11</sup>

[Motorola] believes that well-contained networks (e.g., indoors, or otherwise contained by terrain, clutter, etc.) will be able to utilize reasonable small cell transmit power levels of 1W EIRP/10 MHz or less over localized areas, . . . and not cause harmful interference to incumbents. The low transmit power levels, when combined with accurate propagation

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<sup>6</sup> Frontier/Windstream Comments at 3-4 (“the lower end of the band should be reserved for flexible use, while the upper portion of the band should be made available for fixed wireless and FSS users”).

<sup>7</sup> *Id.* at 4.

<sup>8</sup> *Id.*

<sup>9</sup> Starry Comments at 5. “[A]ll spectrum that is not made available for terrestrial flexible use should be made available on a shared basis between FSS and terrestrial fixed operations,” at a minimum 160 megahertz wide, and ideally up to 320 megahertz.” *Id.* at 6.

<sup>10</sup> *Id.* at 8 n. 23.

<sup>11</sup> Motorola Comments at 3.

modeling performed in an SAS or AFC (taking into account antenna patterns on both ends of the link, terrain effects and high resolution clutter models) should allow operation within several kilometers of FSS sites.<sup>12</sup>

Google supports this view and correctly observes that by using “updated and corrected IBFS [data] that provides complete and accurate information,” an “interference analysis can account for a new fixed wireless broadband system’s proposed location, beam pattern, combined interference power with other systems in the surrounding area, and transmitted frequency and bandwidth.”<sup>13</sup> Importantly, Google’s comments explain that fixed P2MP services can “immediately coexist with FSS operations,” an advance the Commission can accelerate and make more robust through the adoption of a few specific changes to the Part 101 coordination rules, changes the DSA endorses as well.<sup>14</sup>

While DSA member companies and rural broadband ISPs that actually engaged in the development and deployment of spectrum sharing technologies fully agree that the coordination of P2MP operations is entirely feasible, FSS incumbents predictably express a combination of outright resistance to more intensive use of the band (satellite operators) and legitimate concern about harmful interference to ongoing earth station operations (cable, broadcast and content parties). The four incumbent FSS operators, coordinating as the C-Band Alliance (“CBA”), advance both economic and technical arguments in opposition to the Commission’s proposal to authorize coordinated sharing with fixed P2MP operators.<sup>15</sup> The CBA includes a technical annex

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<sup>12</sup> *Id.* at 4. Microsoft similarly states, agreeing with Nokia, that “real-world attenuation from natural and man-made obstacles. . . must be taken into account ‘when determining potential interference....’” Microsoft Comments at 7.

<sup>13</sup> *See* Google Comments at 2-3; *see also* Comments of Google LLC at 4, GN Docket No. 18-122 (filed May 31, 2018).

<sup>14</sup> Google Comments at 3-7.

<sup>15</sup> *See, e.g.*, Comments of the Satellite Industry Association at 31, GN Docket No. 18-122 (filed Oct. 29, 2018) (“SIA Comments”); Comments of Intel Corporation, Intelsat License LLC, and SES Americom, Inc. at 8, GN Docket No. 18-122 (filed Oct. 29, 2018) (“Intel/Intelsat/SES Comments”);



with data based on a field study,<sup>16</sup> but it is a worst-case scenario based on coordination in Virginia Beach (a flat, coastal, urban area) that does not represent the locations (e.g., rural and/or uneven terrain) where there is the greatest need and potential for high-capacity P2MP in this band. In addition, broadcast, cable and content company incumbents express grave concerns about whether coordinated sharing by P2MP operators can reliably avoid harmful interference to earth stations while also accommodating their occasional need to add or switch among transponders on satellites.

Despite this combination of disingenuous hand-waving (among FSS operators) and well-founded caution (among earth station incumbents), the reality is that coordinated sharing between fixed terrestrial services and FSS is well-established and easily supported by current technology. The DSA agrees with BAC, Google, Starry, Microsoft, Motorola, PISC and other parties that coordinated sharing between fixed P2MP operations and FSS earth stations is fundamentally no different than the coordination between fixed P2P operations and FSS operations that has been managed under Part 101 of the Commission’s rules for many years. As the Commission itself observes in the NPRM, there were more than 39,000 P2P licenses in this band in 1988 and 13,000 as recently as 1997.<sup>17</sup>

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Comments of the C-Band Alliance at iii, 39-49, GN Docket No. 28-122 (filed Oct. 29, 2018) (“CBA Comments”); Comments of the Content Companies at 11, GN Docket No. 18-122 (filed Oct. 29, 2018) (“in a re-packed C-band, there is no feasible way to permit fixed wireless usage while ‘protect[ing] incumbent earth stations from harmful interference and avoid[ing] disruption to existing operations in the band’”); Comments of Ericsson at 11, GN Docket No. 18-122 (filed Oct. 29, 2018) (noting concerns while conceding that “some sharing could occur on a limited basis”). The C-Band Alliance’s comments include a technical annex purporting to show that FSS operations will require separation distances that “will significantly limit the areas within which P2MP operations . . . will be possible.” CBA Comments, Technical Annex at 13.

<sup>16</sup> CBA Comments, Technical Annex at 13.

<sup>17</sup> NPRM at ¶ 9. There would undoubtedly be a far greater number of P2P links coordinated in the band today if not for the full-band, full-arc policy that leaves so much of the band fallow that the satellite operators can express confidence about serving roughly the same number of earth stations on 60 percent as much spectrum (300 megahertz).

Under the Commission’s proposal, the only difference is that a P2MP operator would be required to coordinate all fixed link paths within a defined sector rather than a single fixed link path. Fixed wireless operators have the distinct ability to coordinate spectrum use on a localized basis and by sector. Depending on the location and proximity of earth stations, the sector that limits the directionality of the transmission (both to and from customers) may be quite narrow. Moreover, advances in propagation modeling, antenna directionality, compute power, geo-mapping, database automation and other technologies make the coordination of P2MP links more reliable, cost-effective and protective of FSS incumbents than the manual coordination of P2P links has been in the past.<sup>18</sup> The DSA therefore agrees with Starry that “[b]asing the coordination and registration on existing tools, like Part 101, enhanced to reflect more modern coordination, will facilitate robust deployment in the band.”<sup>19</sup>

The DSA concurs with the straightforward technical presentation by BAC and Google to FCC staff in March 2018, which explained how both co-channel and adjacent-channel coordination among P2MP deployments and FSS earth stations are feasible, particularly in rural areas and where terrain provides natural shielding.<sup>20</sup> Although co-channel sharing is considered impractical for mobile operations, Google’s comments accurately summarize why P2MP operators can feasibly coordinate even co-channel sharing on a localized and sectorized basis:

In the co-channel case, frequency separation . . . is not necessary. Instead, fixed deployments protect FSS earth stations either by separation distance (i.e., a fixed deployment is not located near any earth stations) or by directional separation (i.e.,

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<sup>18</sup> See PISC Comments at 17.

<sup>19</sup> Starry Comments at 7.

<sup>20</sup> See Letter from Stephen A. Coran, Counsel, Wireless Internet Service Providers Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket 17-183, RM-11791 (filed March 29, 2018) (“Google/BAC Technical Presentation”). The technical analysis can be found at: <https://ecfsapi.fcc.gov/file/10329174176162/Notice%20of%20Ex%20Parte%20Meetings%20-%20Broadband%20Access%20Coalition%20and%20Google%20LLC.pdf>.

designing a fixed broadband deployment so that the earth station is not within the beam of either the base station or any remote stations served by the base station).<sup>21</sup>

Because FSS earth station locations can be known before designing a fixed broadband network, both geographic and directional separation would be effective, long-term solutions to sharing spectrum if new FSS deployments are prohibited in the C-band, as proposed in the NPRM,<sup>22</sup> and as supported by the DSA, Google, Microsoft, Starry and other parties.

The adjacent-channel sharing scenario is similarly straightforward. The DSA concurs with Google that fixed P2MP deployments “would have additional freedom when not attempting to share the same frequency range as a nearby earth station, because only the broadband system’s out-of-band emissions, or the earth station’s out-of-band filter response, must be considered.”<sup>23</sup> When P2MP networks operate on frequencies not in use by a nearby earth station, rural ISPs “could radiate higher power in the earth station’s direction without causing harmful interference, compared to the co-channel case.”<sup>24</sup> In short, the DSA agrees with Microsoft that the “simple and proven mechanism” proposed by the Broadband Access Coalition (“BAC”) under Part 101 will provide ample coordination to immediately allow the deployment of fixed wireless service in the band.<sup>25</sup>

The economic benefits of authorizing P2MP operators to coordinate into unused C-band spectrum to provide high-capacity and more affordable broadband in rural, tribal and other

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<sup>21</sup> Google Comments at 8-9.

<sup>22</sup> See NPRM at ¶ 30 (proposing to revise Part 25 rules to “permanently limit eligibility to file applications for earth station licenses or registrations to incumbent earth stations”); see also Google Comments at 9.

<sup>23</sup> Google Comments at 9.

<sup>24</sup> *Id.*

<sup>25</sup> Microsoft Comments at 8.

underserved areas clearly outweigh the hypothetical concerns of FSS incumbents. Revealingly, the Intel/Intelsat/SES economic analysis opines that if the BAC “proposal is implemented, . . . [it] will negatively impact the ability to *repurpose* spectrum to support 5G in the future and diminish the C-Band’s ability to meet future demand for satellite services if it is not cleared.”<sup>26</sup> In other words, FSS operators hope to maintain the option to receive yet another multi-billion dollar windfall if many years from now it becomes feasible to clear the upper segment of the band that continues to be used by FSS incumbents. They prefer to warehouse unused frequencies indefinitely, even in rural areas, rather than put them to use immediately for high-capacity fixed broadband. To the contrary, the DSA agrees with the diverse range of commenters who asserted in various ways that America’s rural digital divide is an urgent problem that demands the sort of balanced, “win-win” framework that the Commission proposes in the NPRM.

**B. A Dynamic Spectrum Management Database Mechanism Can Best Accommodate Opportunistic Use of Unused Spectrum in the Lower Portion of the Band.**

There is strong support in the record for the feasibility of permitting P2MP operations to coordinate shared use in local areas on an opportunistic, use-it-or-share-it basis in any lower portion of the band that is reallocated for exclusive, flexible use licensing, or reserved as a guard band between the flexible use and ongoing FSS portions of the C-band. The DSA strongly agrees with Microsoft and other commenters that in addition to authorizing coordinated sharing of the upper portion of the band that remains in use for FSS, on a licensed basis under Part 101, fixed P2MP providers should also be authorized to coordinate “*opportunistic use*. . . from 3.7 GHz to the top of the guard band.”<sup>27</sup> As Microsoft observes, this “will ensure efficient use of

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<sup>26</sup> Intel/Intelsat/SES Comments, Appendix A at 35 (emphasis added).

<sup>27</sup> Microsoft Comments at 9.

the entire 3.7 GHz band without delaying, or interfering with, the deployment of flexible use services.”<sup>28</sup> The BAC, the PISC, and the Broadband Connects America Coalition likewise explicitly support the feasibility and desirability of authorizing access on an opportunistic, use-it-or-share-it basis in any lower portion of the band reallocated for flexible use licensing until such time as the licensee is ready to commence service.<sup>29</sup>

The automated frequency coordination mechanism supported by many commenters, including the DSA, can ensure that opportunistic access in localized areas protects the rights of flexible use licensees by requiring P2MP operations to frequently renew their permission to transmit. Opportunistic access in the C-band can be managed by one or more geolocation databases in exactly the same way the Commission has authorized the geolocation databases that coordinate access to the Citizens Band Radio Service (“CBRS”) and TV White Spaces (in the post-auction 600 MHz band). These databases can ensure that opportunistic users immediately vacate the channel when the flexible use licensee deploys and is ready to commence service. Google correctly notes that “like CBRS, frequency agile fixed broadband systems governed by an automated Part 101 geolocation database could accommodate future use of a portion of the band by mobile operators.”<sup>30</sup>

The DSA agrees with Federated Wireless that although traditional coordination between P2MP and FSS could begin immediately, the development and certification of an automated database mechanism would allow “[r]eal-time coordination among satellite use, fixed links, and mobile operations [to] take place seamlessly [and] enable interference-free operation for all users

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<sup>28</sup> *Id.*

<sup>29</sup> See BAC Comments at 33-34; Comments of the Broadband Connects America Coalition at 21-23, GN Docket No. 18-122 (filed Oct. 29, 2018); PISC Comments at 17-21.

<sup>30</sup> Google Comments at 8.

and could be initiated with very short lead time.”<sup>31</sup> To facilitate this more intensive use of the entire band, the DSA also agrees with Google that requiring in Rule 101.103 that fixed service devices be capable of operating across the full 500 MHz of the 3.7–4.2 GHz band “would ensure easy adaptation to future frequency plans or band allocations.”<sup>32</sup>

The DSA continues to believe that the timely certification of one or multiple database systems for the C-band will speed coordination times, lower coordination costs, protect incumbents from interference with greater certainty, while reducing the burden on Commission staff. “Most importantly, it could facilitate more intensive use of unused spectrum across the entire band in rural and other underserved areas.”<sup>33</sup> The DSA agrees with Microsoft that although the coordination of P2MP operations under an updated version of the current Part 101 process can begin immediately, “[a]fter an appropriate transition period, the mandatory electronic notification and response coordination process should be replaced by an automated frequency coordination process to be developed by a multi-stakeholder process” that includes FSS incumbents.<sup>34</sup>

This multi-stakeholder process should be able to develop and test an automated frequency coordination mechanism within 12 to 18 months not only because of the experience gained in developing the Spectrum Access System (“SAS”) that will soon be coordinating access to the CBRS band, but also because there is no need for such a dynamic or complex coordination system in the C-band. The DSA agrees with Microsoft and BAC that like P2P coordination with

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<sup>31</sup> Federated Wireless Comments at 3, 5 (“dynamic spectrum sharing is the best method to ‘ensure that protected incumbent earth stations are indeed protected.’”).

<sup>32</sup> Google Comments at 4.

<sup>33</sup> Comments of the Dynamic Spectrum Alliance at 7, GN Docket No. 18-122 (filed Oct. 29, 2018) (“DSA Comments”).

<sup>34</sup> Microsoft Comments at 8.

FSS under Part 101 today, an automated frequency coordination database for P2MP will be far simpler and static.<sup>35</sup> Any changes in the status of incumbent operations can be accommodated by electronic notification and/or a requirement that P2MP operations periodically contact the database to renew their grant to transmit. There is simply no technical reason why the Commission would not make available every vacant megahertz across the entire band to improve the availability, capacity and affordability of broadband across rural and small-town America.

**II. THE CBA’S OFFER TO CLEAR MORE THAN 200 MEGAHERTZ OF SPECTRUM ADMITS THE GROSSLY INEFFICIENT USE OF THE BAND.**

As Microsoft and others made clear on the record, the very willingness of FSS operators to clear for sale increasing amounts of C-band spectrum through private transactions is an obvious indication that the band is being grossly underutilized.<sup>36</sup> In their prior comments, FSS operators touted their extensive use of C-band (and still do to this day),<sup>37</sup> and in February 2018 Intelsat proposed to make 100 megahertz available for private sale and clearing.<sup>38</sup> Yet, several months later, despite the purported extensive and intensive use of the band, the CBA doubled the amount of spectrum FSS operators offered to vacate if the price is right.<sup>39</sup> With C-band FSS operators proposing to part with 40 percent of their downlink bandwidth, and doubling the

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<sup>35</sup> Microsoft Comments at 8-9; BAC Comments at 28.

<sup>36</sup> Microsoft Comments at 5.

<sup>37</sup> See Comments of SES Americom, Inc. at 2, GN Docket No. 17-183 (filed Oct. 2, 2017); Comments of Intelsat License LLC and Intel Corporation at 9, GN Docket No. 17-183 (filed Oct. 2, 2017); CBA Comments at 11-12.

<sup>38</sup> See Letter from Karis Hastings, Counsel, SES Americom, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183 (filed Feb. 9, 2018); Letter from Henry Gola, Counsel, Intelsat Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183 (filed Feb. 14, 2018); Letter from Michele Farquhar, Counsel, SES Americom, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 17-183 (filed Feb. 21, 2018).

<sup>39</sup> Letter from Jennifer Hindin, Counsel, C-Band Alliance, to Marlene H. Dortch, Secretary, Federal Communications Commission (filed Oct. 22, 2018); C-Band Alliance Comments at i, 5.

amount offered in a mere eight months, the only logical conclusion is that C-Band is far from being intensively utilized.

The DSA is also in agreement with PISC and Microsoft that full-band, full-arc coordination exacerbates underutilization of the C-Band.<sup>40</sup> The CBA insists on maintaining full-band, full-arc coordination, yet fails to make any showing—beyond mere assertions—that FSS operations in fact require access to *any* transponder on *any* satellite across the full arc. To ensure that the C-band is used to the most efficient extent possible, the Commission must investigate what frequencies and transponders are in *actual* use and what practically may be required for back-up capacity. Indeed, a dynamic database mechanism could ensure that C-band operations are afforded the flexibility to switch transponders or frequencies quickly as circumstances may require.<sup>41</sup>

### **III. THE PRIVATE SALE OPTION PROMOTED BY THE CBA HARMS THE INTERESTS OF OTHER STAKEHOLDERS FOR THE BENEFIT OF FOUR NON-U.S. FSS INCUMBENT OPERATORS SEEKING UNJUST ENRICHMENT.**

The DSA continues to oppose use of a private sale to clear C-band spectrum as proposed by the CBA. As many commenters point out, the private sale option raises significant concerns about fairness and efficiency, which the DSA does not believe can be cured by Commission oversight of a private sale. First, the DSA does not believe that a private sale can provide any assurance or confidence to C-band users, or the public that relies upon their services' future availability, reliability, or costs.

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<sup>40</sup> PISC Comments at 13-17; Microsoft Comments at 5.

<sup>41</sup> DSA Comments at 4, 6, 9, 12, 15.



Second, a private sale will not protect the interests of all parties who are interested in acquiring C-band spectrum for flexible use, or the interests of the public in ensuring the sale is conducted in a manner that ensures a competitive market going forward.

Third, a private sale would guarantee that U.S. taxpayers would not see any money from the auction of this public asset, a result that would be alarming given the estimates of the value of such a sale being between \$30-60 billion.<sup>42</sup> The DSA continues to believe that the Commission should conduct a public auction—a time-tested and reliable method of protecting the interests of all stakeholders and ensuring a market-based result—instead of allowing for private sale. FCC-led auctions have been some of the most successful auctions in the world in terms of revenue and protecting the public interest and ensuring the results promote a pro-competitive marketplace. The NPRM describes an incentive auction framework that seems entirely feasible and the DSA sees no reason why such an auction and subsequent transition cannot be completed within the same general time frame as the private sale proposal, particularly since both would necessitate launching one or more additional satellites to accommodate the earth stations relying today on the lower band segment.

#### **A. Protection of the Interests of C-band Users and the Public.**

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<sup>42</sup> See e.g., Phil Kurz, *U.S. C-Band Sale Could Wipe Slate Clean for Intelsat, SES, Say Analysts*, TVTechnology.com (Oct. 18, 2018), <https://www.tvtechnology.com/news/u-s-c-band-sale-could-wipe-slate-clean-for-intelsat-ses-say-analysis> (“Taking into account a 50 to 100 MHz guard band to protect against interference, the value of 400MHz based on a U.S. population of 330 million people theoretically falls between \$60 billion and \$75 billion, based on a conservative estimate of \$0.5 to \$0.6 MHz-pop”); Comments of Comcast Corporation and NBCUniversal Media, LLC at 26, GN Docket No. 18-122 (filed Oct. 29, 2018) (“Comcast/NBCUniversal Comments”) (citing 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-lucrativeto-ignore>) (“one analyst recently postulated that the total value of repurposed spectrum could theoretically be \$60-75 billion under a market-based mechanism”); PISC Comments at 22 (stating that an auction could raise \$10-30 billion).

Throughout this proceeding, satellite C-band users have expressed concern regarding their access to enough spectrum and capacity to continue to deliver high-quality video signals to every corner of the U.S.<sup>43</sup> The CBA has essentially responded with a “trust us” approach without providing any details as to how such access would be provided and video distribution would be protected in the future.<sup>44</sup> Given that FSS operators initially offered to clear 100 megahertz, stating that they could not and would not be able to clear more spectrum for flexible use, and yet only a few months later, managed to find an additional almost 100 MHz to monetize, it is clear that FSS operators are driven by more than the protection of C-band users. As evidence of these divergent interests, one need look no further than the record. For example, Comcast and NBCUniversal, a major user of C-band FSS for video distribution the U.S., states “the proposed [private sale] framework calls to mind the proverbial fox guarding the henhouse. Each dollar spent on protecting incumbent downstream users of the band is a dollar less received by the satellite operators in profit, thus creating incentives to cut corners.”<sup>45</sup> For this fundamental reason, private sale cannot result in a fair solution that protects all the interests of stakeholders in this proceeding. By contrast, a public auction process run by the FCC can ensure that C-band users have a seat at the table regarding how this spectrum is reallocated.

Another serious concern about the private sale is that rural Americans will pay the highest price in this reallocation. Rural areas are the most reliant on satellite distribution,

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<sup>43</sup> Comcast/NBCUniversal Comments at 5-7; Comments of NCTA at 7-18, GN Docket No. 18-122 (filed Oct. 29, 2018); Comments of the National Association of Broadcasters at 3-8, GN Docket No. 18-122 (filed Oct. 29, 2018).

<sup>44</sup> ITIF, *Mid-band Spectrum: Transitioning the C-Band and More* at 1:12:25-1:13:55 (Nov. 13, 2018), <https://itif.org/events/2018/11/13/mid-band-spectrum-transitioning-C-band-and-more> (Responding to question about how much spectrum to clear, Preston Padden said you “can take it on faith” that 200 megahertz is the right amount to clear and 300 megahertz is sufficient to continue providing service.) (“ITIF Mid-Band Spectrum Panel Video”).

<sup>45</sup> Comcast/NBCUniversal Comments at 26.

because alternatives to C-band, such as fiber, are often completely unavailable.<sup>46</sup> The idea of forcing certain video content to be distributed by terrestrial means due to lack of capacity or increased costs would thus impact rural communities the most. The reality is that satellite operators do not have an incentive to prioritize these rural communities over their shareholder interests of maximizing revenues from spectrum sales.

Clearing portions of the C-band will require that C-band customers incur significant costs to move existing services. Although the CBA has made vague claims that private sale revenues could be used to cover these costs,<sup>47</sup> there is no way that a private sale can insure this result, and indeed the CBA's profit incentives point to a different outcome. The fiduciary duties of FSS operators to their shareholders will in fact ensure that they work to minimize such payments so that they can maximize the retained profits from a private sale.<sup>48</sup> It is unclear how the FCC can, in such a private process, ensure that all reasonable costs of programmers be covered or that all services be maintained. The difficulty and administrative cost of such oversight would likely be prohibitive, especially compared to a public auction process as an alternative.

The FSS operators own statements also contribute to the fear that C-band users will get a bad deal, because the CBA has suggested it controls the information regarding their networks and customers.<sup>49</sup> With such control, allowing FSS operators alone to decide the outcomes

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<sup>46</sup> See Comments of the American Cable Association 3, GN Docket No. 18-122 (filed Oct. 29, 2018); Comcast/NBCUniversal Comments at 5.

<sup>47</sup> See CBA Comments at 3, 4, 9, 23.

<sup>48</sup> Reply Comments of the C-Band Alliance at 25, GN Docket No. 18-122 (filed Dec. 7, 2018); *see also* Letter from Michele Farquhar, Counsel, the C-Band Alliance, to Marlene H. Dortch, Secretary, Federal Communications Commission, at Attachment C, p. 5, GN Docket Nos. 17-183 and 18-122 (filed Nov. 19, 2018).

<sup>49</sup> See CBA Comments at 17 (“the C-Band Alliance, acting in its role as the Transition Facilitator, will be best positioned to determine protection requirements for telemetry, tracking, and control. . . operations necessary to ensure safe flight of in-orbit C-band spacecraft.”).

would, as Comcast/NBCUniversal has rightly pointed out, be the very definition of leaving the fox in charge of the hen house. Again, only a public auction process can ensure that all sides and interests have a seat at the table.

Finally, it is almost certain that if satellite operators follow through on their comments about building new satellites to make up for the spectrum losses on existing spacecraft,<sup>50</sup> those satellites will be more costly and less efficient than the larger spacecraft that are currently in operation. Regardless of the availability of auction revenue to offset costs, satellite operators will have every incentive to raise both the short-term and long-term costs to their customers for access to this more expensive capacity. Again, only a public process can ensure that C-band users and the public are protected.

**B. Need to Protect All Parties Interested in Acquiring C-band Spectrum to Provide Flexible Use, Including Mobile Services.**

The DSA agrees with numerous commenters that argue that a fair and transparent process is critical for the auction of newly cleared C-band capacity. All interested parties, not just a few large mobile operators, must have an opportunity to gain access to the C-band spectrum. Interests in C-band spectrum for flexible use extend beyond the two largest mobile operators and any spectrum sales process must ensure that all parties have a reasonable opportunity to participate. Further, competition in the mobile wireless marketplace, particularly in light of potential mergers, requires that more entities gain access to spectrum resources; this includes all of the national mobile operators, as well as regional operators, cable companies, and new potential providers. Sweetheart deals with only one class of entity cannot be allowed.

The FCC in fact recognizes that spectrum auctions and the results must accommodate broader societal needs beyond merely maximizing the revenues of such a sale. These include

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<sup>50</sup> CBA Comments at 18.

access to spectrum for smaller players, prioritizing results that ensure a pro-competitive market, and protecting the broader public interests.

The CBA's proposed private sale, by contrast, cannot be relied upon to either define or protect the public interests. A private sale, by dint of normal market behavior and FSS operators' stated fiduciary obligations, would be focused chiefly on one thing—maximizing the amount of money that flows into the pockets of the FSS operators. The Commission must not allow this to happen, particularly given the large amount of C-band spectrum that may be available through clearing. Indeed, the potential size of this sale may be so large that it would have a defining impact on what the mobile market and 5G look like in the U.S. Allowing non-U.S. FSS operators to define this critical part of the U.S. economy and our path to 5G would be an abrogation of the Commission's responsibilities. No amount of front-end tweaking of the rules or complex administrative oversight can adequately manage all the ways FSS operators can serve their own interests through a private sale. Only a process that allows all interested parties to share their views under the sunshine of an open and transparent public debate can ensure a result that deserves the confidence of U.S. public.

If the Commission were to endorse the CBA's private sale approach, it would essentially be turning the policy focus of spectrum auctions away from the public interest broadly and towards an approach focused on putative speed to market and revenue; in this case, revenue that would go to the pockets of a few non-U.S. FSS operators rather than the U.S. Treasury. Such a significant policy shift by the Commission—essentially allowing a subset of incumbents to decide future use, access, and allocation of spectrum within the band—would affect every future auction the Commission would undertake and therefore should not be made without an act of Congress.

### **C. Protecting the Public Interest and the U.S. Taxpayer Must be a Priority**

Early on in this proceeding some satellite operators suggested that a private sale of portions of the C-band spectrum would provide revenue that would cover the relocation costs of their customers and cover some level of disruption to their business.<sup>51</sup> The argument seemed to suggest that there was no massive windfall profit that was likely and that any profit was reasonably tied to costs incurred or disruption in business opportunity. Since that time, however, it has become clear that such claims dramatically low-balled the estimated revenue from the sale of C-band spectrum. Estimates are now in the tens of billions of dollars for the more than 200 megahertz of spectrum that is currently being proposed for clearing.

As the PISC recounts in detail, subsequent to its enactment of Section 309(j) of the Communications Act, Congress has twice passed legislation dictating the terms of auctions for broadcast spectrum that clearly express an intent to avoid the sort of massive and unnecessary windfall for private parties that this NPRM contemplates.<sup>52</sup> It is therefore baffling that one of the largest spectrum auctions ever to take place would leave the U.S. taxpayer cut out of all revenue and inconceivable that U.S. elected officials would not take notice. This is particularly true given FSS operators' not-so-subtle hints regarding their power to delay U.S. 5G adoption. Indeed, the CBA's own Head of Advocacy and Government Relations recently promised "the United States would be a small object in China's rearview mirror" by the time the FCC resolved a government-controlled public auction process.<sup>53</sup>

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<sup>51</sup> CBA Comments at ii, 3, 4, 9, 23.

<sup>52</sup> PISC Comments at 27-31.

<sup>53</sup> ITIF Mid-Band Spectrum Panel Video at 14:25, 14:35.

Furthermore, FSS operators' rights to C-band spectrum have always been limited, in both scope (directionality toward an orbital slot) and duration.<sup>54</sup> This spectrum has also been shared with terrestrial services, although inefficient rules such as full-band, full-arc have limited that sharing. For the Commission to enable FSS operators in effect to claim ownership of spectrum, and thus retain the full right to monetize a public good, it is a major departure from the axiom that "spectrum belongs to the people" and that the Commission's "obligation to manage it in the public interest for all Americans."<sup>55</sup>

This is particularly true when the American taxpayer gets no revenue for the sale of a public good they supposedly own, and the four largest FSS operators that stand to benefit are non-U.S. companies, two of which are headquartered in a European tax haven in Luxembourg. A private sale is even more audacious when considering that Europe reclaimed C-band spectrum from satellite operators, and we are unaware that any country in Europe has undertaken a similar private sale mechanism for reallocation of this spectrum, and certainly not one where revenues run directly to the benefit of the incumbent operators. In this proceeding, three of the four members of the CBA are themselves European entities that are thus seeking a massive windfall in the U.S. when Europe itself denied them such a winning lottery ticket. At a time when the U.S. taxpayer is seeing \$1 trillion budget deficits and being asked to bear the burden of budget cuts for a variety of government programs, allowing tens of billions of dollars of revenue arising out of the sale of spectrum rights that the FSS operators do not actually possess, is illogical and indefensible. A portion of that revenue, for example, could be earmarked by Congress to pay for infrastructure investment aimed at closing the rural digital divide that Chairman Pai has made a

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<sup>54</sup> See 47 C.F.R. §§ 25.114, 121.

<sup>55</sup> Michael O'Rielly, Commissioner, Federal Communications Commission, Statement at October Open Commission Meeting, *Promoting Investment in the 3550-3700 MHz Band* (Oct 24, 2018).

top priority of his tenure. Rather than address the concerns about public revenue head on, FSS operators and the CBA argue that speed should be the chief policy consideration and that only a private sale could rapidly free up the spectrum for the “race to 5G.” The FCC, however, has always had the ability and legal right to manage C-band spectrum and decide the future use of that spectrum. Dubious self-serving proposals by these companies cannot be allowed to override the national interest or dictate how it should be properly protected.

#### **IV. CONCLUSION**

The C-band offers enormous promise for flexible use and fixed P2MP services, which will further the goal achieving 5G. The Commission can take immediate steps today to ensure more intensive and efficient use of this spectrum by getting rid of outdated full-band, full-arc coordination requirements, and allowing fixed P2MP operations throughout the band—either on a coprimary basis in the upper part of the band or opportunistic basis in the lower part of the band cleared for flexible use—enabled by the adoption of dynamic spectrum database technology. In achieving more efficient use of the C-band, the Commission must reject the CBA’s private sale approach that unfairly favors FSS incumbents at the expense of other stakeholders and the American taxpayer.

Respectfully submitted,

*/s/ Kalpak Gude*



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