

**Before the
Federal Communications Commission
Washington, DC 20554**

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

To: The Commission

REPLY COMMENTS OF THE PUBLIC INTEREST SPECTRUM COALITION

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The Public Interest Spectrum Coalition (“PISC”)¹ hereby submits its Reply Comments in response to Comments submitted in the above-captioned Notice of Proposed Rulemaking (“NPRM”).²

I. SUMMARY AND INTRODUCTION

The record reflects strong support for the Commission’s proposal to authorize shared use of vacant spectrum in the 3.7 GHz band for high-capacity point-to-multipoint fixed wireless services in rural, tribal, and other underserved areas throughout the United States. Because C-band spectrum is grossly underutilized in many areas it offers a prime opportunity to provide spectrum as infrastructure to expand the capacity and lower the costs of high-speed broadband in rural, tribal and other unserved and hard-to-serve areas. Providers will be able to deploy fixed, point-to-multipoint (“P2MP”) services in less densely populated communities at a fraction of the cost associated with wired technologies and offer consumers more affordable high-speed service.

¹ PISC groups expressly signing onto the coalition’s comments included the Open Technology Institute at New America, Consumers Union, Consumer Federation of America, National Hispanic Media Coalition, American Library Association, Next Century Cities, Public Knowledge, Common Cause, the Institute for Local Self Reliance, and Access Humboldt.

² *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”). Unless otherwise noted, all Comments referenced herein were filed in this docket on October 29, 2018.

There is also strong support in the record from a diverse range of commenters for the Commission's proposal to terminate the outdated and counter-productive "full band, full arc" policy, replacing it instead with a "when and where needed" policy that protects FSS earth stations only with respect to the spectrum they are actually using. FSS incumbents can be protected from harmful interference without warehousing the vast majority of the band's spectrum capacity for a future need that may never arise.

The record strongly supports the Commission's view in the *NPRM* that it is entirely feasible 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." PISC believes the Commission should authorize P2MP providers to coordinate shared use across the entire upper portion of the band that remains allocated to FSS (e.g., 3900-4200 MHz) on a first-in-time licensed basis. The record shows that a diverse range of commenters agree that sharing between fixed P2MP and FSS is perfectly feasible without impeding a repacking of earth stations and without risk of harmful interference to earth station incumbents in the ongoing FSS portion of the band.

In addition to authorizing coordinated sharing of the upper portion of the band that remains in use for FSS, there is strong and diverse support for authorizing fixed P2MP providers to coordinate *opportunistic use* from 3.7 GHz to the top of the guard band. PISC strongly agrees with commenters supporting the view that the Commission should authorize opportunistic use by P2MP operators, on a use-it-or-share-it basis, in any locally-unused portion of the band reallocated for flexible use terrestrial licensing.

The simple and proven coordination mechanism proposed by the Broadband Access Coalition under Part 101 can immediately allow the deployment of fixed wireless P2MP service in the band. However, to facilitate both more cost-effective sharing with FSS *and* opportunistic use of vacant spectrum in the future flexible use portion of the band, the record supports the rapid implementation of an automated frequency coordination system. Opportunistic access, on a use-it-or-share-it basis, can be managed in exactly the same way as the geolocation databases that coordinate access to the Citizens Band Radio Service (CBRS) and in the post-auction 600 MHz band (TV White Space spectrum), potentially putting every unused megahertz to work.

Finally, as our coalition did in our initial comments, PISC strongly opposes the “market-based” C-Band Alliance proposal for a number of reasons. A diverse range of commenters expressed grave concerns about the private sale proposal outlined in the *FNPRM* and expressed a preference for a public auction and FCC control over the reassignment of the new flexible use licenses. First, a private auction or negotiated sale controlled by four foreign-based companies, and with no return of the anticipated proceeds of \$10 to \$40 billion or more to the Treasury, amounts to a massive and needless giveaway of public assets. A private auction or negotiated sale would be an unlawful end-run around Section 309(j) of the Communications Act in clear contravention of Congressional intent and precedent. Only a public incentive auction run by the Commission can ensure a monetary return to the public and avoid unjust enrichment. Second, without full transparency and close FCC supervision, a private sale is also likely to distort competition in the mobile market. Third, PISC argued that allowing private deals would set a dangerous precedent: incumbent licensees in the future will wage all-out resistance to giving up or sharing unused spectrum unless the Commission agrees to give them the public revenue that until now has been returned to the public, as Section 309(j) clearly stipulates.

II. THERE IS STRONG SUPPORT FOR AUTHORIZING SHARED USE OF VACANT C-BAND SPECTRUM FOR HIGH-CAPACITY FIXED WIRELESS BROADBAND IN RURAL, TRIBAL AND UNDERSERVED AREAS

The record reflects strong support for the Commission’s proposal to authorize shared use of vacant spectrum in the 3.7 GHz band for high-capacity point-to-multipoint fixed wireless services in rural, tribal, and other underserved areas throughout the United States. Because C-band spectrum is grossly underutilized in many areas it offers a prime opportunity to provide spectrum as infrastructure to expand the capacity and lower the costs of high-speed broadband in rural and other hard-to-serve areas. Providers will be able to deploy fixed, point-to-multipoint (“P2MP”) services in less densely populated communities at a fraction of the cost associated with wired technologies and offer consumers high-speed services at much more affordable rates, stimulating broadband adoption and local economies.

In authorizing shared use of the vacant spectrum in the C-Band, the Commission should eliminate the antiquated “full-band, full-arc” policy that has resulted in the vast majority of spectral capacity lying fallow and replace it with protection from interference on a “where and when needed” basis. The full-band, full-arc reservation policy does nothing more than provide an outdated appearance of protection to incumbent Fixed Satellite Service (“FSS”) users at the expense of the broader public interest. The Commission’s proposal to unlock this wasted spectrum capacity will allow residents of rural and small town America to have both traditional media and high-capacity broadband at an affordable price. By authorizing a streamlined frequency coordination system, the Commission can ensure that FSS incumbents can continue operating in the band without any legitimate concern about harmful interference from localized and coordinated P2MP deployments.

A. Unused C-band Spectrum is Potential Public Infrastructure to Make High-Capacity Broadband More Available and Affordable to Rural America

A diverse range of commenters agree that coordinated sharing of the 3.7 GHz band gives the Commission a rare opportunity to bring immediate relief to unserved areas that need high-speed broadband access.³ In particular, it provides the opportunity to use spectrum as public infrastructure to provide high-capacity broadband at affordable prices to rural, tribal and underserved areas across the country at no cost to the U.S. Treasury. The advocates of rural communities that comprise the Broadband Connects America coalition state that because “most of the band’s 500 megahertz of capacity lies fallow in rural and tribal areas across the country, . . . [d]eploying high-throughput fixed broadband to rural and small town America does not need to depend entirely on the Connect America Fund and other subsidy programs.”⁴ The Broadband Access Coalition (“BAC”) references a recent report concluding that “[i]n rural markets, FWA [fixed wireless access] is rapidly becoming a more prevalent solution, since there’s no magic bullet for lowering the cost to build out a fixed infrastructure”⁵ This makes access to unused mid-band spectrum for high-throughput and affordable fixed broadband service is “an essential tool for bridging that gap.”⁶

Frontier Communications and Windstream Services note that the band provides “prime” spectrum for fixed wireless broadband deployment in rural areas since the potential coordination

³ “It cannot be disputed that there is a persistent digital divide in this country, that rural Americans are on the wrong side of that divide, and that disconnection from the digital economy can have profound economic and social effects.” Broadband Access Coalition Comments, GN Docket Nos. 18-122 and 17-183 (filed Oct. 29, 2018), at 8-11 (“BAC Comments”). Unless otherwise noted, all comments cited herein were filed in GN Docket No. 18-122 on Oct. 29, 2018.

⁴ *Id.* at 17-21. “Deploying high-throughput fixed broadband to rural and small town America does not need to depend entirely on the Connect America Fund and other subsidy programs. By authorizing coordinated and shared use by point-to-multipoint (P2MP) fixed wireless services, the Commission can unlock unused spectrum as infrastructure to improve high-speed broadband access in rural areas at no cost to the Treasury.” *Ibid.*

⁵ BAC Comments at 8-11.

⁶ *Ibid.*

of wide channels on a localized basis enables high-bandwidth applications while still “allowing for non-line-of-sight deployments over considerable distance.”⁷ Frontier and Windstream elaborate on how localized access to the 3.7 GHz band for fixed wireless services would substantially advance ISP efforts to bring high-speed broadband to rural and less-densely populated areas, especially in unserved areas the Commission is supporting through with Connect America Fund (“CAF”) subsidies:

[F]ixed point-to-multipoint deployments . . . could allow us to serve additional hard-to-reach locations and enable faster speeds to others... Fixed [P2MP] is another effective way to leverage CAF’s investments in driving fiber closer to less-densely populated areas of the nation and to reach Americans who otherwise would be too far or difficult to connect to broadband.⁸

Starry calls the 3.7-4.2 GHz band the “spectral sweet spot” that offers “significant utility” to both fixed and mobile networks.⁹ “On the fixed side, the potential for wide channels, spectral re-use, and propagation through physical obstacles makes the band incredibly useful as a layer in site-based licensed, gigabit capable, fixed point-to-multipoint networks.”¹⁰ The characteristics of the band give providers the “ability to operate in wide channels coupled with the ability to

⁷ Frontier Communications Corp. and Windstream Services Comments LLC (“Frontier/Windstream Comments”), at 3.

⁸ *Id.* at 5. “Based on our experiences, in certain of the hardest to reach, most expensive areas to serve, fixed wireless is another tool we could use to reach more locations or upgrade underserved locations with fast speeds (25/3 Mbps and faster – potentially much faster if there are significant amounts of spectrum available). Fixed [P2MP] is another effective way to leverage CAF’s investments in driving fiber closer to less-densely populated areas of the nation and to reach Americans who otherwise would be too far or difficult to connect to broadband. . . our companies stand ready and eager to deploy more broadband in the most rural parts of our footprint as soon as additional spectrum (and associated equipment) become available.” *Ibid.*

⁹ Starry Comments at 2. “The Commission’s mandate is not to protect existing spectrum users into perpetuity . . . [but rather] to continually examine whether a current use is the best use in servitude of the public interest, or whether the benefits of enabling a new technology outweigh the costs of transitioning – in some manner – an incumbent use case.” *Ibid.*

¹⁰ *Ibid.*

transmit through obstacles,” which all make the 3.7 GHz band a powerful tool in increasing broadband access and competition, Starry explains.¹¹

The Dynamic Spectrum Alliance (“DSA”), the Broadband Connects America Coalition, Microsoft and the Broadband Access Coalition all similarly assert that opening up this band for point-to-multipoint fixed wireless services would have a significant impact in bridging the digital divide and would be in the public interest.¹² Google observes that “[w]ith known FSS frequency use parameters, frequency separation could facilitate P2MP broadband connectivity to as many as 120 million Americans.”¹³ PISC agrees with Google that the Part 101 coordination process that currently governs shared use of the band between the Fixed Service and FSS incumbents should be amended to “enable a greater diversity of terrestrial deployments, while still protecting FSS incumbents . . . and retaining the ability to clear part of the 3.7 – 4.2 GHz band for flexible use.”¹⁴

The lower costs and faster deployment times associated with coordinated, localized deployments of fixed wireless in less densely populated and hard-to-serve areas make the 3.7 GHz band particularly compelling for P2MP service. Advocates for rural communities stated:

Freeing up the 3.7-4.2 GHz band for coordinated use by fixed wireless providers will help bring higher-speed broadband to rural and unserved areas sooner and at a much more affordable cost to providers and, ultimately, to consumers, small businesses and community anchor institutions. This increased connectivity will boost private sector investment in rural communities, which in turn will generate opportunity and greater economic activity.¹⁵

¹¹ Starry Comments at 5.

¹² DSA Comments at 5; Broadband Connects America Coalition Comments at 17-21; BAC Comments at 8-11; Microsoft Comments at 3.

¹³ *Id.* at 7.

¹⁴ Google LLC Comments (“Google Comments”) at 2-3.

¹⁵ Broadband Connects America Coalition Comments at 17-21, and at 23-26 (“The Commission can help providers bring high-speed broadband to rural areas that are currently unserved by empowering fixed wireless providers to use the 3.7-4.2 GHz band to make efficient and cost-effective use of spectrum in areas where the business case for broadband has so far failed to attract ISPs.”).

Microsoft, which has extensive experience working with rural ISPs to leverage TV White Spaces through its Rural Airband Initiative, similarly states: “Fixed wireless broadband is an ideal solution for eliminating the digital divide in rural areas because it can be deployed for a fraction of the capital expense of fiber-to-the-home or cable broadband.”¹⁶ Geolinks emphasized cost as well, stating that “fixed wireless broadband technology can provide high-speed broadband to consumers in these areas for a fraction of the cost of traditional, wired networks.”¹⁷ The BAC also maintains that fixed P2MP is currently the most cost-effective method of bringing high-speed broadband service in rural areas due to the fact that the capital costs of deploying fixed wireless systems are about one-seventh the cost of deploying fiber, while still providing high-throughput.¹⁸

Midco, a mid-tier cable operator that serves roughly 385,000 customers across Kansas, South Dakota, North Dakota, Minnesota, and Wisconsin, serves as a strong example of how fixed wireless can be utilized to bring broadband to areas where the business case for fiber is lacking. Like any other cable MSO, Midco relies on C-band earth stations for its video programming feeds, and yet its experience in less densely populated areas leaves it open to coordinated sharing for P2MP. “We can also deploy new fixed wireless networks during the winter months, when harsh weather makes fiber construction impossible,” Justin Forde, Midco’s

¹⁶ Microsoft Comments at 4.

¹⁷ California Internet LP, dba Geolinks Comments at 2.

¹⁸ BAC Comments at 11-13. “Capital costs to deploy fixed wireless systems are a fraction – about one-seventh the cost – of fiber and are still able to provide high-throughput broadband service. They are also far more cost-effective per gigabyte for this purpose than mobile systems. This comes about primarily because of their longer range through use of highly-directional client antennas (as proposed by the Coalition) that have considerable gain compared to mobile client antennas, and are mounted at a higher location above ground, typically near rooftop height. This approach also makes efficient use of spectrum, as the directional client antennas can separate out signals from multiple base stations whose coverage may overlap on the same frequency.” *Ibid.*

director of government relations, said in Congressional testimony earlier this year.¹⁹ Forde went on to state that “[f]ixed wireless allows Midco to offer internet where the terrain makes it difficult, if not impossible, to provide fiber internet connectivity, such as through the Badlands of North Dakota and South Dakota, the granite fields in Northern Minnesota, or the limestone cliffs in Eastern Minnesota. This technology also allows Midco to reach vast areas of farmland where it is not economically feasible to run fiber to every farm”²⁰

B. The Record Strongly Supports the Commission’s Proposal to End the Antiquated Policy of ‘Full Band, Full Arc’ Spectrum Warehousing

There is strong support in the record from a diverse range of commenters for the Commission’s proposal to terminate the outdated and counter-productive “full band, full arc” policy, replacing it instead with a “when and where needed” policy that protects FSS earth stations only with respect to the spectrum they are actually using. Commenters representing the mobile industry, consumer and public interest advocates, the technology industry, wireless internet service providers, and rural broadband advocates all concur that allowing earth stations to reserve 500 megahertz of spectrum regardless of their actual usage is unnecessary and inefficient. Allowing the reservation of 500 megahertz – regardless of actual need or use – leaves spectrum fallow in many areas across the country that could be put to productive use for terrestrial broadband, both fixed and mobile. FSS incumbents can be protected from harmful interference without warehousing the vast majority of the band’s spectrum capacity for a future need that may never arise.

¹⁹ Mike Dano, “Another major cable operator ditches fiber for fixed wireless on rural build-outs,” *FierceWireless* (July 27, 2018), <https://www.fiercewireless.com/tech/another-major-cable-operator-ditches-fiber-for-fixed-wireless>.

²⁰ *Ibid.*

There is widespread support in the record for a new policy directly related to protecting FSS earth stations in relation to spectrum actually in use. PISC concurs with Verizon that the Commission should “replace the full-band, full-arc coordination policy with a new approach that grants protection for ‘those frequencies, azimuths and elevation angles and other parameters reported as in regular use’”²¹ T-Mobile similarly calls on the Commission to “eliminate the full-band, full-arc coordination policy, as it proposes, which will also more accurately depict the band’s current Fixed Satellite Service (“FSS”) use.”²²

PISC agrees with Microsoft that the inevitable result of a “full-band, full-arc” licensing policy is that most of C-band spectrum lies fallow in rural and small town communities across the country.²³ Microsoft correctly observes that the “willingness of the C-Band Alliance to clear 200 megahertz of the 3.7 GHz band for flexible use, purportedly within 18 - 36 months, is indicative of the gross underutilization of the spectrum.”²⁴ Since the density of earth stations is far greater in metropolitan areas, the fact that the satellite incumbents believe they can so quickly clear *200 megahertz nationwide* indicates that substantial unused spectrum would remain in rural, tribal and small town areas even after an earth station re-pack.

PISC agrees with the R Street Institute’s view that “full-band, full-arc” gives “expansive rights to incumbents that are outsized when compared to the benefits they achieve, while blocking numerous alternative uses of the band that may be more productive.”²⁵ Starry similarly argues that “[t]he Commission’s mandate is not to protect existing spectrum users into perpetuity in the name of predictability and certainty in vested spectral rights. It is to continually examine whether a current use is the best use in servitude of the public interest, or whether the benefits of

²¹ Comments of Verizon at 11.

²² T-Mobile USA Comments at 19 (“T-Mobile Comments”).

²³ Microsoft Comments at 5.

²⁴ *Ibid.*

²⁵ Comments of the R Street Institute at 7.

enabling a new technology outweigh the costs of transitioning – in some manner – an incumbent use case.”²⁶

The DSA correctly observes that the current policy is also extremely inefficient it since it unnecessarily “blocks shared uses of the band based on the possibility that an earth station may one day need to switch between transponders or between satellites rather than basing coordination on actual use.”²⁷ For example, as of 2017, the Associated Press had 975 receive-only C-band earth stations registered that all fixed on a single transponder, using only 23 megahertz of spectrum. National Public Radio, similarly, has 475 earth stations that use four satellite transponders that transmit between 3702-3858 MHz. The full band, full arc fallacy forces aspiring Fixed Service entrants (whether point-to-point or P2MP) to coordinate with thousands of these limited-use earth stations as if they used the “entire 500 MHz along the entire geostationary arc from the earth station location.”²⁸

The record also shows that full-band, full-arc warehousing is entirely unnecessary. The coordinated sharing of P2MP deployments, as proposed in the NPRM, can protect earth stations that still operate in the 3.7 GHz band. Google, Starry, DSA, Federated Wireless, the Broadband Connects America coalition and BAC all detailed how P2MP can exist in the band while also protecting incumbent users.²⁹ Federated Wireless makes the point that a frequency coordination system is able to manage band usage to “assign new spectrum users across the 3.7-4.2 GHz band when and where the spectrum becomes available.”³⁰ PISC agrees with Microsoft that although this can be accomplished immediately using the well-established Part 101 coordination process,

²⁶ Starry Comments at 3.

²⁷ DSA Comments at 14-15.

²⁸ *Ibid.*

²⁹ Google Comments; Starry Comments; DSA Comments; Federated Wireless Comments; Broadband Connects America Coalition Comments; BAC Comments.

³⁰ Federated Wireless Comments at 3.

“the current process needs to be slightly amended, by requiring an expedited coordination process with mandatory electronic notification and response.”³¹

Longer term, as in the adjacent Citizens Broadband Radio Service (“CBRS”) band, an automated frequency coordination system can ensure that “[r]eal-time coordination among satellite use, fixed links, and mobile operations would take place seamlessly to enable interference-free operation for all users and could be initiated with very short lead time.”³² PISC agrees with Microsoft, BAC, Google, and others that “[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, including FSS operators.”³³ DSA likewise suggests that an automated frequency coordination system would be particularly protective of FSS incumbents.³⁴ Earth station operators would simply need to notify the database – or a Commission online portal – that they are adding or switching frequencies for actual use. Upon this notification, those frequencies would no longer be available in that local area and P2MP operators would need to immediately accommodate the satellite or transponder change.

The ability of earth stations to switch transponders as needed would be facilitated by a requirement that P2MP transmitters be capable of operating across the entire band. As Google suggested in its comments, 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

³¹ Microsoft Comments at 8.

³² *Ibid.*

³³ *Ibid.*

³⁴ DSA Comments at 6-8 (“The Commission should act rapidly to replace the system of manual expedited coordination (mandatory electronic notification and response) with an fully automated dynamic spectrum management database system. The Commission should delegate development of the database to a representative group of industry stakeholders . . .”).

future frequency relocations or band reallocations.³⁵ New rule language could provide that “[s]tations that operate on any portion of the frequencies within the 3700–4200 MHz band must be capable of operating on all frequencies within that band.”³⁶

The FSS industry also exaggerates the purported harms that the elimination of the full-band, full-arc policy will impose on transportable earth stations. The C-Band Alliance argues that the “[f]lexibility to access the full C-Band Downlink is also essential for live coverage of breaking news, sporting events and entertainment programming.”³⁷ However, it’s critical to realize that the primary function of C-band transportable earth stations is to uplink video programming using the 5925 – 6.425 GHz band, which is not at issue here. These transportable earth stations use a downlink in the 3.7 GHz band downlink only to monitor the video feed to the satellite - an internal function that does not require a high degree of reliability.³⁸ What the FSS industry fails to acknowledge is that this sporadic downlink monitoring does not actually need broadcast quality video, and therefore even if there is intermittent interference, which is unlikely, the material functionality of the transportable earth station would not be harmed.

III. THE RECORD SUPPORTS THE VIEW THAT COORDINATED SHARING BETWEEN P2MP AND FSS WILL NOT IMPEDE AN EARTH STATION REPACK OR INTERFERE WITH FSS INCUMBENTS

There is strong support in the record in support of the Commission’s position that “regardless of how much spectrum becomes available for flexible use in the near term,”³⁹ it is

³⁵ Google Comments at 4-5.

³⁶ *Ibid.*

³⁷ C-Band Alliance Comments at 44.

³⁸ *See, e.g.*, NCTA Comments at 26 (“While the [transportable] trucks use C-band uplink to deliver the live programming back to the [Network Operations Centers], the trucks rely on downlink spectrum in the 3.7 – 4.2 GHz band to monitor onsite the quality of the video they are delivering and to verify use of the correct uplink frequency”).

³⁹ *NPRM* at ¶ 119.

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.”⁴⁰ PISC believes the Commission should authorize P2MP providers to coordinate shared use across the entire upper portion of the band that remains allocated to FSS (e.g., 3900-4200 MHz) on a first-in-time licensed basis. In addition, PISC strongly agrees with commenters supporting the view that the Commission should authorize opportunistic use by P2MP operators, on a use-it-or-share-it basis, in any locally-unused portion of the band reallocated for flexible use terrestrial licensing. Coordinated sharing can enable P2MP services to bring high-speed broadband to underserved rural areas without impeding a repacking of earth stations and without risk of harmful interference to earth station incumbents in the remaining FSS portion of the band.

A. A Diverse Range of Parties Support Licensed and, as Necessary, Opportunistic Access for Fixed P2MP Operations Across the Entire 500 MHz

In its comments, PISC strongly supported the Commission’s view in the *NPRM* that it is entirely feasible 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

⁴⁰ *NPRM* at ¶ 116. *See, e.g.*, Comments of Frontier Communications Corp. and Windstream Services, LLC (“Frontier/ Windstream Comments”); Starry Comments; Comments of Motorola Solutions (“Motorola Comments”); Microsoft Comments; Google Comments; BAC Comments; DSA Comments; Broadband Connects America Comments; Federated Wireless Comments.

operations.”⁴¹ The record shows that a diverse range of commenters agree that sharing between fixed P2MP and FSS is perfectly feasible.

Frontier and Windstream, for example, assert that a “productive coexistence” between fixed wireless P2MP and FSS operations is possible.⁴² Significantly, Frontier reports that although it relies on C-Band earth stations “as the eighth largest multichannel video provider . . . in our predictive judgment we can work toward rules that protect existing users while unleashing the benefits of new productive uses.”⁴³ Similarly, as noted above, Midco, a mid-size cable MSO, relies on C-band earth stations for its video programming feeds and yet, in the upper Midwest states where operates, it sees a huge need and the feasibility of P2MP deployments operating on a prior-coordinated, shared basis with FSS earth stations.

BAC and Google presented Commission staff with a detailed and extensive technical analysis demonstrating how incumbent FSS users can coexist with P2MP services in an effective and efficient manner, particularly in large, rural parts of the country, on both a co-channel and non-co-channel basis.⁴⁴ The Dynamic Spectrum Alliance highlights the “real-world” example in that BAC/Google presentation, on the Monterey Peninsula in California, which demonstrated that coordinated sharing by P2MP is feasible in the portion of the band that remains in use for FSS by “taking advantage of antenna directionality and other methods to avoid harmful interference, even to nearby earth stations operating co-channel.”⁴⁵

⁴¹ *NPRM* at ¶ 116.

⁴² Frontier/Windstream Comments at 4.

⁴³ *Ibid.*

⁴⁴ See Broadband Access Coalition, Notice of Oral Ex Parte Presentation, GN Docket 17-183 and RM-11791 (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>.

⁴⁵ DSA Comments at 9.

PISC similarly agrees with Starry's assessment that protecting earth stations by coordinating on the basis of real-world GIS information can "create a sharing regime for shared P2MP operations that allows for near term access and grows over time."⁴⁶ The only unknown is the degree to which sharing will be possible, since in any given community it will depend on geographic and frequency separation with FSS incumbents, antenna directionality, terrain shielding, and other factors.⁴⁷ The coexistence of both high-power, tall-tower, point-to-point ("P2P") FS and FSS operations in the 3.7 GHz band for decades shows that coordinated sharing is indeed feasible. In 1988, there were more than 39,000 P2P licenses; and just under a decade later, in 1997, more than 13,000 P2P licenses remained.⁴⁸ All of these deployments were of course sharing spectrum with FSS earth stations.

PISC agrees with BAC, DSA, Microsoft, Starry, Google and other parties that coordinated sharing between fixed P2MP operations and FSS earth stations is fundamentally no different than the coordinated sharing between fixed P2P operations and FSS operations that has been managed under Part 101 of the Commission's rules for many years. Under the BAC proposal, successful frequency coordination *prior to* the deployment of P2MP links would be required, just as prior coordination has been required for P2P links for decades. The only substantial difference is that a P2MP operator would need to coordinate multiple fixed link paths within a defined sector rather than just a single fixed link path. Moreover, advances in propagation modeling, compute power, geo-mapping, database automation, and other

⁴⁶ 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.

⁴⁷ *See, e.g.*, Google Comments at 8-9 ("Because FSS earth station locations could be known before designing a fixed broadband network, both geographic and directional separation would be effective, long-term solutions to sharing C-band spectrum if new FSS deployments are prohibited in the C-band, as proposed in the NPRM").

⁴⁸ *NPRM* at ¶ 9.

technologies will make the process of coordinative fixed P2MP links more reliable, cost-effective and protective of FSS incumbents than the manual coordination of P2P links has been in the past.

In both their joint technical presentation and in their comments, BAC and Google correctly explained why 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.⁴⁹ Fixed wireless operators have the distinct ability to coordinate spectrum use on a localized basis and by sector. *Co-channel sharing* with FSS earth stations is considered impractical for mobile operations because handsets are mobile and omnidirectional. In contrast, Google’s comments accurately summarize why P2MP operators can feasibly coordinate sharing on a localized and sectorized basis:

In the co-channel case, . . . 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., 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).⁵⁰

The coordination of *adjacent channel sharing* between localized P2MP deployments and FSS earth stations is even more promising, since there could be both substantial frequency and geographic separation. PISC agrees with Google’s observation 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.”⁵¹ Google further states that when P2MP networks operate on frequencies not in use by a nearby earth station, rural ISPs “could

⁴⁹ See Google/BAC Technical Presentation, *supra*; Google Comments at 8-10; BAC Comments at 14-16.

⁵⁰ Google Comments at 8-9.

⁵¹ *Id.* at 9.

radiate higher power in the earth station’s direction without causing harmful interference, compared to the co-channel case.”⁵²

PISC strongly agrees with the DSA, BAC, Microsoft, Starry, the Broadband Connects America coalition 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 first-in-time licensed basis, fixed P2MP providers should also be authorized to coordinate *opportunistic use* from 3.7 GHz to the top of the guard band. As Microsoft states, this “will ensure efficient use of the entire 3.7 GHz band without delaying, or interfering with, the deployment of flexible use services.”⁵³ Microsoft, BAC, DSA, Starry 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.⁵⁴

Broadband Connects America coalition correctly observes that “because this process of clearing and transitioning thousands of FSS earth stations higher up in the band will take years – and is also likely to occur in two stages – our groups strongly urge the Commission to make all of the future flexible use spectrum, as well as all of the frequencies that remain occupied by FSS, available for opportunistic sharing by P2MP fixed wireless operators, particularly in rural and tribal areas.”⁵⁵ Starry agrees, encouraging the Commission “to create a shared underlay in the flexible-use portion of the band . . . on a non-interference basis and only in the frequencies or geographies unoccupied by a flexible-use licensee.”⁵⁶

⁵² *Ibid.*

⁵³ Microsoft Comments at 9.

⁵⁴ See BAC Comments at 30-34; DSA Comments at 12-13; Broadband Connects America Comments at 16-17 and at 21-23; Microsoft Comments at 9-11; Starry Comments at 6.

⁵⁵ Broadband Connects America Comments at 21.

⁵⁶ Starry Comments at 6.

The record shows strong support for the implementation of an automated frequency coordination system to facilitate spectrum sharing more efficiently and across the entire 3.7-4.2 GHz band. PISC agrees with Microsoft that the “simple and proven mechanism” proposed by BAC under Part 101 will provide ample coordination to immediately allow the deployment of fixed wireless service in the band.⁵⁷ DSA and Microsoft both note that the coordination system for the 3.7 GHz band would not need to be as sophisticated as the Spectrum Access Systems in the 3.5 GHz CBRS band.⁵⁸ PISC also agrees with DSA that if FSS incumbents “need to retain flexibility to switch or add transponders, a more dynamic frequency management database system, combined with a requirement that equipment be operable across the entire 3.7-4.2 GHz band, would better ensure that C-band operations have the flexibility to switch transponders or frequencies quickly, as necessary, and that fixed operators can accommodate the changes.”⁵⁹

Opportunistic access to unused spectrum in the future flexible use portion of the band can increase capacity for localized P2MP deployments without imposing any significant burden on flexible use licensees. Accordingly, PISC and a diverse range of commenters support the expedited certification of an automated frequency coordination database capable of ensuring that opportunistic use of locally-vacant spectrum fully protects flexible use licensees by requiring P2MP operators to frequently renew their permission to transmit.

Opportunistic access, on a use-it-or-share-it basis, can be managed in exactly the same way the Commission has authorized the geolocation databases that coordinate access to the Citizens Band Radio Service (CBRS) and in the post-auction 600 MHz band (TV White Space spectrum).⁶⁰ In the adjacent CBRS band, Section 96.25(c)(1) permits opportunistic use in areas

⁵⁷ Microsoft Comments at 8.

⁵⁸ DSA Comments at 7; Microsoft Comments at 8-9.

⁵⁹ DSA Comments at 7.

⁶⁰ See 47 C.F.R. § 96.25(c)(1) and 47 C.F.R. § 15.712, respectively.

where a PAL is not in use or where a licensed CBSD does not contact the SAS for seven days within a default protection contour. In both bands, this enhanced ability to put unused spectrum protects primary licensees completely by relying on an automated database system (the TV Bands Database and Spectrum Access System, respectively). In the lower C-band, a geolocation database can likewise ensure that opportunistic users –whether fixed or mobile – immediately vacate channels when the flexible use licensee deploys and notifies either the database or the Commission it is ready to commence service.

Our groups concur with DSA that “the same automated frequency management database system that could facilitate faster, more efficient, and lower cost coordination between fixed service and FSS in the upper segment of the band could be used to govern opportunistic access, on at least a temporary basis, by fixed services in vacant lower band frequencies until future licensees commence service.”⁶¹ 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.”⁶² Google explained this:

As in the adjacent CBRS band, database management techniques, relatively low transmit power limits, and band-wide operability requirements can be quickly employed to unleash C-band spectrum for high-capacity fixed wireless or capacity-enhancing mobile access points.⁶³

The Broadband Connects America coalition correctly observes that “recent advances in geolocation database technology, frequency coordination can be done faster, at lower cost, and with the ability to ensure that opportunistic users (such as GAA use of vacant licensed spectrum)

⁶¹ DSA Comments at 12.

⁶² Google Comments at 8. *Accord Federated Wireless Comments* at 5 (“In the CBRS, incumbent FSS users operate in the extended C-band in the same manner in which they operate in the conventional C-band at 3.7-4.2 GHz. To provide these incumbent FSS users the necessary protection, the Commission thoroughly evaluated and determined the protection criteria needed to enable flexible co-channel terrestrial use of C-band FSS spectrum.”)

⁶³ Google Comments at 8.

are immediately denied permission to continue operating when an incumbent or higher-priority licensee commences service.”⁶⁴ PISC also agrees with Federated Wireless that an automated frequency coordination mechanism is the most cost-effective and reliable way to protect both FSS earth stations and future flexible use licensees in their actual use of the band.

[B]oth during and after a transition, dynamic spectrum sharing is the best method to ‘ensure that protected incumbent earth stations are indeed protected.’ The robust protections offered by dynamic spectrum sharing allow high-value FSS services to remain protected without disruption to their current operations.”⁶⁵

Federated Wireless describes how a dynamic spectrum sharing database can facilitate the greatest degree of utility in the band: “Real-time coordination among satellite use, fixed links, and mobile operations would take place seamlessly to enable interference-free operation for all users and could be initiated with very short lead time.”⁶⁶

In sum, PISC strongly agrees with DSA that:

The ultimate certification of one or multiple database systems for the 3.7-4.2 GHz band could speed coordination times, lower coordination costs, protect incumbents from interference with greater certainty, and reduce the burden on Commission staff. Most importantly, it could facilitate more intensive use of unused spectrum across the entire band in underserved areas.⁶⁷

B. The Satellite Incumbents Seeking to ‘Sell’ the Spectrum Falsely Claim that a Part 101 Coordination Process Cannot Protect FSS

While a diverse range of technology companies and rural ISPs actually engaged in the development and deployment of spectrum sharing technologies agree that the coordination of P2MP operations with FSS incumbents is entirely feasible, the satellite operators trying to “sell”

⁶⁴ *Ibid.*

⁶⁵ Federated Wireless Comments at 5.

⁶⁶ *Id.* at 3 (“The strength of dynamic spectrum sharing lies in its ability to adapt quickly: as the transition progresses, and more spectrum is cleared, incumbent protection parameters can be changed easily to facilitate rapid spectrum access in newly cleared geographic areas and portions of the band”).

⁶⁷ DSA Comments at 7. *See also* Federated Wireless Comments at 3.

the public's spectrum make a series of false claims about the supposed impossibility of coexistence between the two services. Proposals to coordinate sharing in the upper 3.7 GHz band would not "displace" satellite operations, or preclude a repacking of the band, as claimed by satellite interests.⁶⁸ Nor are the purported harms described by the satellite industry remotely credible.⁶⁹

As a starting point, PISC concurs with Starry's observation that authorizing P2MP access to the band on a coordinated basis is "not a binary question."⁷⁰ As 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)."⁷¹

PISC agrees with DSA, Google, Microsoft, BAC and other parties noted in the section above that "interference calculations to permit FS-FSS sharing in the band would be particularly straightforward because the locations of both earth stations and proposed [P2MP] deployments would be geographically fixed and their operational parameters well known."⁷²

As noted above, PISC agrees with BAC, DSA, Microsoft, Google and other parties that coordinated sharing between fixed P2MP operations and FSS earth stations is fundamentally no different than the coordinated sharing between fixed P2P operations and FSS operations that has been managed under Part 101 of the Commission's rules for many years. The only substantial

⁶⁸ Joint Intel/Intelsat/SES Comments at 8.

⁶⁹ See, e.g., Satellite Industry Association Comments ("SIA Comments") at 31.

⁷⁰ Starry Comments at 8 n. 23.

⁷¹ *Ibid.*

⁷² DSA Comments at 8 ("The directional nature of fixed point-to-multipoint radios permits the coordination of sectors even where earth stations are in the same geographic area but located outside the beam of the base station and the client device return path. The arc of the sector can be variable and based on antenna beamwidth, as adjusted to conform to the arc that could be successfully coordinated. The radius of the sector should be specified and its maximum could be different in rural and more densely populated areas. In more complex situations, individual base stations and user nodes could be coordinated through the Commission to ensure they do not cause harmful interference.").

difference is that a P2MP operator would need to coordinate multiple fixed link paths within a defined sector rather than just a single fixed link path. DSA further explained:

The directional nature of fixed point-to-multipoint radios permits the coordination of sectors even where earth stations are in the same geographic area but located outside the beam of the base station and the client device return path. The arc of the sector can be variable and based on antenna beamwidth, as adjusted to conform to the arc that could be successfully coordinated.

In an economic analysis appended to their comments, Intel/Intelsat/SES argue that if the Commission allows P2MP fixed wireless services to share with FSS in the 3.7-4.2 GHz band, satellite operators will “lose the ability to use the C-Band more intensively.”⁷³ In parallel, the C-Band Alliance claims that “terminating full-band, full-arc protection and permitting new P2MP services would leave earth stations vulnerable to harmful interference if they change frequencies or antenna pointing.”⁷⁴ As PISC explained in its comments and in section II.B above, satellite operators will *not*, in fact, lose the ability to use the C-Band more intensively, nor will earth stations lose the ability to add or switch transponders as needed due to outages or new contracts. FSS earth station operators would simply need to notify the frequency coordinator or, if the Commission prefers, an online agency portal that coordination databases would synchronize with for updates. After such notification, P2MP licensees would be required to immediately accommodate any satellite or transponder changes required by FSS operators.

To the extent that repacking earth stations into the upper half of the band reduces the spectrum available for coordinated sharing, this will reduce unused C-band spectrum disproportionately in urban and suburban areas, where most earth stations are located (and where they are less dispersed geographically). There is no question that substantial vacant spectrum will

⁷³ Intel/Intelsat/SES Comments, Appendix A at 35.

⁷⁴ C-Band Alliance Comments at 42 – 43. *See also* SIA Comments at 21 (“Satellite service customers rely heavily on the flexibility provided by the Commission’s long-standing policy in favor of full-band, full-arc earth station licensing”).

remain in rural and underserved areas that the Commission has made it a priority to serve.

Regardless, the cost-effectiveness of P2MP deployments by rural ISPs in local areas are properly a business decision for internet service providers interested in using 3.7 GHz band spectrum for P2MP services, not for the FSS incumbents.

More generally, the claims of satellite companies seeking a \$20 to \$50 billion windfall at the expense of U.S. taxpayers is more than suspect. The goal of C-band satellite companies is neither to optimize use of the band in the public interest, nor even to safeguard earth stations from harmful interference. Their overriding goal is to continue to hold the upper portion of the 3.7 GHz band hostage in pursuit of a second multi-billion-dollar payoff at some indefinite future date. However, the Commission's primary concern should not be whether Intelsat can stave off bankruptcy, or whether any of the four satellite operators can bring a windfall back to Europe, but instead it should be what is best for the American public.

Perhaps more revealing than the satellite operators' false claims about the infeasibility of coordinated sharing is the claim that P2MP use of unused spectrum in the upper portion of the band "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."⁷⁵ In this sentence, the European satellite operators reveal their core strategy: to deny fixed broadband ISPs seeking to serve rural and small town America access to vacant spectrum that they intend to warehouse – for another decade or as long as it takes – until they can harvest a second multi-billion windfall for spectrum they received free at the expense of U.S. taxpayers.

By asserting that they could quickly and easily give up 40 percent of the band (200 megahertz), the satellite operators are admitting that the band is grossly underutilized. Despite this, the nation's cable, broadcast and content companies make clear in their comments that the

⁷⁵ Intel/Intelsat/SES Comments, Appendix A at 35.

band remains essential for video, radio and data distribution. If half or more of the band will remain in use for FSS for the indefinite future, as PISC and nearly every other commenter seems to believe, it would not serve the public interest to allow these foreign satellite companies to warehouse the unused portion of the band that could be used *almost immediately* as public infrastructure to narrow the nation's stubborn rural connectivity divide. While the satellite operators are justified in coveting the option value of a hypothetical second windfall a decade or more in the future, PISC urges the Commission to adopt a balanced policy that puts every megahertz of the underutilized C-band to use today for both mobile and fixed broadband capable of offering high-capacity and affordable service to rural and underserved areas nationwide.

IV. A Diverse range of Commenters Support a Public Auction and Take Issue with Reassigning Spectrum Through Private Auctions or Deals that Confer a Windfall on Satellite Operators

In our initial comments, PISC strongly opposed the “market-based” C-Band Alliance proposal for a variety of reasons. First, a private auction or negotiated sale controlled by four foreign-based companies, and with no return of the anticipated proceeds of \$10 to \$40 billion or more to the Treasury, amounts to a massive and needless giveaway of public assets. A “market-based” approach that is tantamount to a private auction would be an unlawful end-run around Section 309(j) of the Communications Act in clear contravention of Congressional intent and precedent. Only a public incentive auction run by the Commission can ensure a monetary return to the public and avoid unjust enrichment.

Second, without full transparency and close FCC supervision, a private sale is also likely to distort competition in the mobile market. Eligibility, bidding credits, band plan, license areas, anti-collusion rules, bidding procedures, and many other policy choices must be made openly

and through notice and comment rulemaking. Reassignment of such a competitively critical swath of mid-band spectrum must not be outsourced to foreign companies whose interests are not aligned with the public interest, or even with FSS earth stations and American consumers, but rather with maximizing their own short-term windfall profits.

Third, PISC argued that allowing private deals would set a dangerous precedent: If FSS satellite operators are given a \$20 or \$30 billion windfall in exchange for using a band more efficiently – while continuing their operations and keeping their FSS revenue streams – incumbent licensees in the future will wage all-out resistance to giving up or sharing unused spectrum unless the Commission agrees to give them the public revenue that until now has almost always been returned to the public, as Section 309(j) clearly stipulates.

A wide range of commenters representing the technology industry, a national mobile carrier, consumer advocates, and even the cable and broadcast industry, expressed grave concerns about the private sale proposal outlined in the *FNPRM* and expressed a preference for a public auction and FCC control over the reassignment of the new flexible use licenses.⁷⁶ The record shows strong concern about each of the three general problems with the CBA proposal summarized just above. In aggregate, the concerns expressed by this diverse group of commenters suggests that the proposed ‘private sale’ option would in practice be *less* market-based than a public auction.

1. *A Private Sale Would Confer a Massive Windfall with No Return to the Treasury*

First, the record shows strong opposition to the proposal from the satellite industry to allow a private sale of spectrum in the 3.7 GHz band in part because it violates the Communications Act and because it would be deprive the American public of billions of dollars

⁷⁶ See, e.g., T-Mobile Comments at 3; DSA Comments at 15-19; Comcast Comments at 23-32; Google Comments at 10-15; ACA Comments at 15; Microsoft Comments at 11.

that could instead be used to build rural broadband infrastructure to help rural and underserved areas, or for other purposes. PISC agrees with T-Mobile’s criticism of the satellite industry proposal, whereby four incumbents “would retain all proceeds from the sale of spectrum and U.S. taxpayers would get nothing – an outcome directly contrary to the Communications Act’s structure for making the public’s spectrum available.”⁷⁷ Google similarly observes that a private sale would fail to bring any revenue to the U.S. Treasury.⁷⁸ “FSS incumbents, including non-U.S. operators that acquired their C-band rights from the Commission at no cost, would reap a financial windfall”⁷⁹

Comcast similarly highlights both the inequity and the perverse incentives that are inherent in the C-Band Alliance proposal:

[A]mid a government-wide effort to focus on policies that put “America First,” including when it comes to facilitating 5G, the notion of handing the reins of mid-band spectrum clearing for 5G to entities based outside the United States and relying on those parties to reallocate spectrum belonging to the American public seems to cut decidedly against the grain.⁸⁰

Aggravating the cost of this windfall, Comcast notes, is the fact that “the proposed framework calls to mind the proverbial fox guarding the henhouse” since “[e]ach 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.”⁸¹ For example, Intelsat began 2018 teetering on bankruptcy, but thanks to positive news about its regulatory arbitrage scheme, its stock price ran up from less than \$4 in April to over \$20 when the FCC adopted its *NPRM* in July, a 400 percent increase. This misalignment of interests creates an even larger moral hazard

⁷⁷ T-Mobile Comments at 3.

⁷⁸ Google Comments at 10.

⁷⁹ Google Comments at 10.

⁸⁰ Comcast Comments at 26-27.

⁸¹ Comcast Comments at 26.

because, as Comcast notes, “operators of receive-only earth stations *almost never* have any kind of contractual relationship with a satellite operator.”⁸²

In contrast, as DSA highlights, a public incentive auction could bring in billions of dollars to the Treasury and better ensure a smooth transition for earth station incumbents and the American public that relies on the band for its video and radio programming. A “portion of the auction proceeds could be used to create a relocation fund to compensate the affected earth station and FSS operators for relocation and cost recovery, or provide the technical assistance needed for relocation.”⁸³

2. A Private Sale Could Distort Markets and Abdicates the FCC’s Duty to Conduct an Open Process that Protects the Public Interest

In addition to potentially diverting \$20 to \$40 billion or more away from the U.S. Treasury, the private sale proposal advanced by the CBA would also represent a complete abdication of the Commission’s traditional responsibility to ensure that both the reallocation and assignment of spectrum best serves the overall public interest.⁸⁴ In this respect, Google is correct that a private sale process “may not yield ‘the most economically efficient allocation of the band between services’ or take into account other important public interest goals.”⁸⁵

PISC strongly agrees with Comcast that it is “inappropriate for one class consisting of four incumbent, non-U.S.-based, self-interested operators who control nearly 100 percent of the C-Band capacity in the U.S. to make decisions that will have huge implications for more than 100 million American households that rely on incumbent C-Band operations.”⁸⁶ PISC further agrees that if the Commission decides that some form of private auction is better policy, “the

⁸² Comcast Comments at 25 (emphasis in original).

⁸³ DSA Comments at 16-17. *Accord* Microsoft Comments at 11; NCTA Comments at 29; Charter Comments at 2.

⁸⁴ *See, e.g.*, Comcast Comments at 24; T-Mobile Comments at 2-4.

⁸⁵ Google Comments at 10-11, quoting *NPRM* at ¶ 57.

⁸⁶ *Ibid.*

Commission first should request clear Congressional direction and legal authority to do so, as it did in the broadcast incentive auction.”⁸⁷

The implementation of a private auction or negotiated sale would actually *not* be as market-based as a public auction orchestrated by the Commission. As DSA explains, C-band operators would serve only “their own narrow interests” and have the incentive, for example, to “reduce the supply of spectrum to drive up prices . . .”⁸⁸ T-Mobile similarly states that “the private sale that the satellite operators contemplate is not likely to generate true market-based results. It does not assure wide participation from all potential mobile wireless broadband providers and otherwise does not represent a transparent market-based outcome.”⁸⁹ Additionally, DSA states:

[P]rivate negotiations are opaque by their nature and could potentially result in ‘sweetheart deals’ antithetical to the Commission’s goals. . . . there would always be a temptation by participants to collude, enter into side agreements, or engage in other behavior to maximize individual financial gain or minimize potential competition, rather than advancing the public interest.”⁹⁰

Only a public auction would provide the transparency necessary for the transfer of licenses governing such expensive and potentially profitable spectrum.

3. A Private Sale Would Set a Dangerous Precedent that Forecloses Efficient Spectrum Sharing

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 that until now has always, with few exceptions, flowed back to the public, as Section 309(j) clearly intends. PISC believes that the

⁸⁷ *Ibid.*

⁸⁸ *Id.* at 17.

⁸⁹ T-Mobile Comments at 13.

⁹⁰ *Id.* at 18.

precedent of a private sale will foreclose more efficient band sharing in particular. That is already evidenced in this proceeding. The C-Band Alliance adamantly opposes even the consideration and testing of coordinated shared use of unused capacity in the band, even in the most remote rural areas. This is not surprising, since any vacant FSS spectrum put to use in addressing the rural broadband gap is spectrum that they fear they won't be able to monetize later.

Another example of how the precedent of a 'private sale' could harm the public interest relates to the Commission's ability to condition licenses with public interest obligations. PISC agrees with DSA that "a private transaction in all likelihood will not include opportunistic sharing between fixed point-to-multipoint and flexible-use licensees," whereas the public promulgation of auction rules "could condition licenses on complying with a use-or-share requirement similar to the one the Commission adopted for the CBRS band."⁹¹ As described in the section just above, many parties noted in their comments that if the Commission certifies an automated database system to coordinate shared use of the upper portion of the band, that same mechanism can enable opportunistic access to spectrum in the lower, flexible use portion of the band. This would be particularly valuable in rural areas. More generally, if the Commission decides that the incumbent satellite companies should decide if opportunistic sharing is feasible, it will be difficult if not impossible to adopt efficient use-it-or-share-it conditions, such as the Commission adopted as part of the 600 MHz auction rules, in the future.

⁹¹ DSA Comments at 16.

V. CONCLUSION

A diverse range of parties strongly support the Commission's proposal to authorize fixed P2MP operations to coordinate shared use of vacant spectrum in the remaining FSS portions of the 3.7 GHz band to enable high-speed and more affordable broadband service in rural, tribal and other underserved areas. In addition, on any lower portion of the band that is reallocated or reserved for flexible use, PISC urges the Commission to also authorize shared access for P2MP operations on an opportunistic basis, thereby enabling the greatest possible public benefit from the band in rural, tribal and other less densely populated areas where it could be many years before mobile networks are deployed and commence service. The rapid development of an automated frequency coordination system can ensure the most intensive and cost-effective use of the entire band in the future. The Commission should also reject a private auction or negotiated sale that would result in a massive and needless giveaway of public assets and a clear violation of both Section 309(j) of the Communications Act and Congressional precedent. Only a public incentive auction run by the Commission can ensure a monetary return to the public and avoid unjust enrichment.

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