

**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: Chief, Office of Engineering and Technology  
Chief, International Bureau  
Chief, Wireless Telecommunications Bureau

**REPLY COMMENTS OF THE BROADBAND ACCESS COALITION**

The Broadband Access Coalition (“BAC” or “Coalition”) hereby submits Reply Comments to address initial comments filed in response to the *Public Notice* seeking comment on the feasibility of allowing commercial wireless services to use or share the 3.7-4.2 GHz band.<sup>1</sup> In sum, the record shows that there is strong support for the Commission to consider spectrally efficient sharing among existing and prospective users of the 3.7-4.2 GHz band to promote the public interest in providing high-speed fixed broadband service to consumers across the country, especially those in rural communities that lack access.

**I. Introduction and Summary**

The BAC supports a “win-win-win” solution that: (1) protects incumbent Fixed-Satellite Service (“FSS”) providers from harmful interference; (2) clears a portion of the band (e.g., 3.7-3.8 GHz) for exclusive licensing by mobile 5G providers in densely populated urban areas; and (3) enables fixed point-to-multipoint (“P2MP”) broadband wireless providers to deploy badly needed high-throughput broadband to unserved and underserved consumers, particularly in rural

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<sup>1</sup> Public Notice, *Expanding Flexible Use of the 3.7-4.2 GHz Band*, GN Docket No. 18-122, DA 18-446 (rel. May 1, 2018).

areas. The Coalition's proposal for sharing among FSS and P2MP services, are not inconsistent with other proposals to clear a portion of the band for mobile licensing.

The Coalition has repeatedly demonstrated the feasibility of allowing commercial licensed P2MP fixed wireless broadband services to share use of the 3.7-4.2 GHz band while fully protecting FSS and Fixed Service ("FS") incumbents from harmful interference through Part 101 frequency coordination. The BAC's Petition for Rulemaking ("Petition") proposed specific and concrete rule changes that would enable the immediate introduction of P2MP fixed wireless broadband service into the 3.7-4.2 GHz band.<sup>2</sup> The diverse nature of the thirty-plus members of the Coalition manifests strong support for the flexible use opportunities that adopting the proposals in the Petition would foster.

In this same vein, the Commission should reject arguments that would only clear a portion of the band for 5G services without enabling sharing of the rest of the band for fixed P2MP services. Such an outcome would short-change millions of rural Americans that lack broadband access in their homes, farms and businesses. The Coalition's approach serves the twin objectives of fostering 5G and P2MP services. The upcoming rulemaking proceeding presents a golden opportunity for the Commission to make a significant amount of spectrum available for connecting the unconnected – a policy priority for Congress and the Commission.

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<sup>2</sup> One year ago, the Coalition filed its Petition proposing to amend and modernize Parts 25 and 101 of the Commission's Rules to enable deployment of high-throughput, licensed P2MP fixed wireless broadband service in the 3.7-4.2 GHz band in a spectrally efficient manner, while protecting FSS and FS incumbents from harmful interference through Part 101 frequency coordination. Broadband Access Coalition Petition for Rulemaking, Public Notice, RM-11791, Report No. 3080 (rel. July 7, 2017). The Coalition filed its Reply Comments in RM-11791 on August 22, 2017.

## **II. Fixed Satellite Interests Mischaracterize the Nature and Feasibility of Proposals to Coordinate Fixed P2MP Deployments**

From the outset of this proceeding, the Coalition has repeatedly demonstrated the feasibility of authorizing a licensed, co-primary, P2MP fixed wireless broadband service to share use of the 3.7-4.2 GHz band with incumbent FSS users and FS licensees under the well-established Part 101 coordination process.<sup>3</sup> Subsequently and more specifically, the Coalition,<sup>4</sup> together with Google,<sup>5</sup> presented an extensive technical analysis to Commission staff showing how P2MP fixed wireless broadband services can effectively and efficiently share use of the 3.7-4.2 GHz band with incumbent FSS users, particularly in large, rural parts of the country, on both a co-channel and non-co-channel basis.

Despite this record, the incumbent satellite interests proposing to “sell” a portion of the band (spectrum they never paid for and do not own), repeatedly mischaracterize the Coalition’s proposal in several ways that suggest that the coordinated sharing of the band for fixed P2MP wireless deployments in rural and other underserved areas is neither technically feasible nor desirable. In a single paragraph, the joint comments filed by Intel, Intelsat and SES (“Intelsat/SES”) manage to make several inaccurate or misleading assertions.

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<sup>3</sup> See Comments of the Broadband Access Coalition, filed Oct. 2, 2017, and Reply Comments of the Broadband Access Coalition, filed Nov. 15, 2017, in response to the *Mid-Band NOI*.

<sup>4</sup> 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>.

<sup>5</sup> Google is not a member of the Coalition.

First, Intelsat/SES disingenuously claim that the BAC’s proposal is designed to “mitigate[e] interference after it occurs.”<sup>6</sup> In fact, the Coalition’s initial Petition proposed specific changes to Parts 25 and 101 of the Commission’s Rules, including radio agility requirements and automated frequency coordination, which would ensure that P2MP is not deployed unless and until the coordination process demonstrates that registered FSS and licensed FS incumbents will be protected from harmful interference. Unlike mobile terrestrial deployments, fixed wireless operators have the ability to coordinate the use of spectrum on a localized basis and by sector, taking advantage of various methods, including antenna directionality and terrain shielding, to avoid interference to earth stations.

The Coalition proposes two forms of database-coordinated sharing, neither of which is fairly described by the satellite interests. The BAC’s automated Part 101 coordination proposal would leverage unused spectral capacity based on geographic separation (co-channel) and frequency separation (non-co-channel). As Google stated in its comments, “[w]ith actual knowledge of FSS frequency use, frequency separation could enable P2MP broadband connectivity to as many as 120 million Americans.”<sup>7</sup> Frequency-coordinated P2MP providers can protect nearby earth stations by operating on C-band frequencies not being used at a given time and sufficiently separated from nearby earth stations (non-co-channel sharing). It is thus disingenuous for Intelsat/SES to insist that all sharing is “co-channel” simply because the outdated “full-band, full-arc” policy provides FSS operators with the ability to access all 500 megahertz of the C-band. Access to all 500 megahertz is not the same thing as actual use of all

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<sup>6</sup> Joint Comments of Intel Corporation, Intelsat License LLC, and SES Americom, Inc., *Expanding Flexible Use of the 3.7-4.2 GHz Band*, GN Docket No. 18-122, DA 18-446 (May 31, 2018), (“Intelsat/SES”), at 6.

<sup>7</sup> Comments of Google LLC at 5, citing Google/BAC Technical Presentation, *supra*, note 4.

500 megahertz. In fact, as the Coalition and other parties have repeatedly shown, most earth stations use only a fraction of the 500 megahertz at any given time. For example, the Associated Press reports having 975 earth stations tuned to a single transponder using 23 megahertz.

In addition to sharing unused spectrum, fixed P2MP providers could also operate “co-channel” on a geography-coordinated basis outside of any exclusion zone required to protect C-band downlinks. As described above, fixed wireless operators have the ability to coordinate the use of spectrum on a localized basis and by sector. As Google explained in its comments, unlike a mobile deployment, which is inherently omnidirectional and moveable, a *fixed* P2MP deployment is geographically targeted and operates on a directional, sectorized basis, and thus can ensure geographic and directional isolation from earth stations.<sup>8</sup> P2MP can coordinate use of the entire 500 megahertz in many locations, as the Google/BAC real-world deployment on the Monterey Peninsula illustrates, by taking advantage of antenna directionality and other methods to avoid interference to even nearby earth stations.<sup>9</sup> And, unlike large mobile providers that desire a wide footprint of spectrum, P2MP deployments can occur on a localized basis, particularly in rural areas where clusters of homes and FSS operations are more dispersed.<sup>10</sup>

Second, Intelsat/SES claim that “P2MP providers have not shown that they could remedy interference by switching spectrum channels quickly enough to satisfy the high reliability requirements of video customers – particularly given the impracticality of having to contact P2MP operators near thousands of receive sites in the event a video customer needed to change

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<sup>8</sup> Comments of Google LLC at 5-6.

<sup>9</sup> See Google/BAC Technical Presentation, *supra*, note 4, at slides 23-41.

<sup>10</sup> Intelsat/SES estimate that “65% of FSS receivers are located in urban/suburban locations.” Comments of Intelsat/SES at 5.

frequencies.”<sup>11</sup> The Satellite Industry Association (“SIA”) stretches this same misleading claim even further, claiming that “[e]ach of an unknown number of P2MP operators . . . would need to be contacted and would then have to determine and implement a procedure to shift to channels unused by FSS in the area.”<sup>12</sup>

The Coalition has recognized from the outset that Part 101 coordination will need to be sufficiently dynamic to accommodate registered earth stations that need to change frequencies. The Coalition’s proposal readily accommodates such changes by requiring P2MP licensees to deploy frequency agile equipment and to move their operations to different, frequency-coordinated channels as needed. Critical to this coordination and protection scheme is the inclusion in the IBFS database of accurate operating parameters for registered FSS earth stations – something that is currently lacking.<sup>13</sup> Even if an FSS operator provides only one hour notice of a need to use different frequencies, fixed wireless operators will be able to accommodate this under a database-managed, Part 101 spectrum sharing regime that relies on accurate FSS operational information. The earth station operator, or in many cases the satellite operator, would only need to notify the database coordinator, not every P2MP operator. The coordinator would then notify all affected P2MP operators that they must move to different frequencies. By definition, all P2MP access points are connected to the Internet, so a push notification can be provided. It is grossly inaccurate for Intelsat/SES and SIA to claim that an earth station needing

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<sup>11</sup> Comments of Intelsat/SES at 6.

<sup>12</sup> Comments of SIA at 9.

<sup>13</sup> See, e.g., Comments of AT&T at 2-3; Comments of Motorola Solutions at 2; Comments of Google LLC at 2-3. The BAC has repeatedly noted that an analysis of the opportunities for sharing the C-band requires that the Commission improve the International Bureau Filing System database so that it contains up-to-date, accurate and targeted data regarding the operation of earth stations receiving in the 3.7-4.2 GHz band. See Broadband Access Coalition, *Ex Parte* Letter, Proposal to Update the International Bureau Filing System, GN Docket 17-183 and RM-11791 (Jan. 24, 2018); Petition at 21-25.

access to a different transponder (and frequency) would be required, as SIA asserts, to contact “an unknown number of P2MP operators” who “would then have to determine and implement a procedure to shift to channels unused by FSS in the area.”<sup>14</sup>

Similarly, it is inaccurate for GCI to assert that “identifying the source of the interference [to a C-Band earth station], particularly if the operation is intermittent or time-of-day specific, could take days or weeks, and requires expensive, complex triangulation systems.”<sup>15</sup> While it is possible to imagine rogue sources of interference that could be difficult to identify (as is the case with any licensed service), the Coalition’s proposal for coordination and ongoing authorization from a database along with public access to the Commission’s ULS database reporting the precise location and operating parameters of every authorized P2MP station and FSS earth station would ensure that if harmful interference ever occurs, no FSS user would need to spend “days or weeks” triangulating signals to know the cause and cure it.

Third, Intelsat/SES claim that P2MP sharing in the band “is incompatible with expanded terrestrial mobile 5G use of the band.”<sup>16</sup> In fact, the Coalition has stated repeatedly that it “supports a win-win-win solution” that includes “providing access to the 3700-3800 MHz band to mobile 5G providers to serve densely populated urban areas.”<sup>17</sup> Intelsat/SES is essentially asserting that a few satellite companies should be able to block frequency-coordinated, flexible use access to the entire 3.7-4.2 GHz band – including wide swaths of rural America where FSS

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<sup>14</sup> *Id.* Notably absent from these alleged hypothetical claims are any estimate by the satellite industry of how quickly a P2MP licensee would need to migrate its service to different frequencies or any justification for the proposition that “a series of time-consuming steps” would be required “before the customer could regain access to interference-free capacity.” Comments of SIA at 9.

<sup>15</sup> Comments of GCI at 10. GCI is also critical of “an untested method” of C-band sharing. *Id.* at 12.

<sup>16</sup> Comments of Intelsat/SES at 6.

<sup>17</sup> Broadband Access Coalition, *Ex Parte* Letter, GN Docket No. 17-183, RM-11791 (March 19, 2018).

receivers do not use most and sometimes none of the 500 megahertz. Intelsat/SES's failure to acknowledge the feasibility and benefits of spectrum sharing leads to the inevitable conclusion that they want to preserve for themselves the speculative right to sell more than 100 megahertz of spectrum for terrestrial mobile use sometime down the road. Notably, C-band operator Eutelsat seriously questions whether more than 100 megahertz of spectrum might be made available for such services in major cities.<sup>18</sup> Even if the Commission authorizes compensation as an incentive for FSS operators to clear a portion of the band, FSS licensees should not continue to be permitted to warehouse unused spectrum capacity that could be harnessed to address the rural broadband gap and enhance competition and broadband speeds in underserved areas more broadly.

Fourth, both Intelsat/SES and SIA conflate the challenges involved in authorizing *mobile* broadband sharing on a co-channel basis with the far more feasible and straightforward coordination of *localized and fixed* P2MP deployments. The record shows widespread consensus among the parties that *mobile* sharing with FSS – at least on a co-channel basis – is extremely challenging for reasons that are unrelated to *fixed* P2MP sharing.<sup>19</sup> The National Association of Broadcasters, for example, states that “[m]obile operations in particular cannot be authorized in the same frequency band as existing C-band operations because there is no reliable means of geofencing mobile users or mobile handsets from operation in exclusion zones.”<sup>20</sup> By contrast, as the Coalition has repeatedly emphasized, sharing among FSS incumbents and *fixed*

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<sup>18</sup> See Comments of Eutelsat S.A. at 6.

<sup>19</sup> See, e.g., Comments of Ericsson; Comments of CTIA.

<sup>20</sup> Comments of the National Association of Broadcasters at 2-3. See also Comments of National Public Radio at 11 (“There is no panacea for the interference created by wireless mobile devices, whose roaming, dynamic signals cannot be coordinated with the fixed, low-power downlinks on which public radio stations depend.”).



P2MP providers is readily achievable on both a co-channel basis (in certain geographies) and on a non-co-channel basis (with appropriate frequency and/or geographic separation). Both of these sharing methods can be managed accurately, rapidly and at low-cost under the Commission's Part 101 coordination rules using an automated database.

Fifth, SIA falsely claims that because P2MP deployments coordinated under Part 101 are “*unlicensed*” devices, the Commission has no control over where the transmitters are placed or how many are deployed and therefore cannot ensure that the thousands of receive earth stations that rely on C-band FSS would be protected from unacceptable interference.”<sup>21</sup> SIA does not seem to understand the difference between Part 101 and Part 15. As the Coalition explicitly proposed in its Petition, and in a half-dozen subsequent pleadings, its proposal is to coordinate *licensed* access to available capacity under the Part 101 rules, as the co-primary FS does currently, both ensuring no interference to FSS operations and conferring first-in-time rights vis-à-vis subsequent P2MP operators *if* stringent build-out requirements are met.

### **III. Mobile Interests Ignore the Benefits of P2MP to Rural and Underserved Communities**

The mobile industry similarly relies on mischaracterizations to support a “mobile-only” band-clearing plan that would, if adopted, foreclose shared use of the band for fixed P2MP. As stark evidence of this objective, Verizon unashamedly and without support argues that “there is no reason to expand terrestrial fixed use of the band as the Broadband Access Coalition has recommended” because “the highest and best use of the 3.7-4.2 GHz band . . . is mobile broadband.”<sup>22</sup> Other commenters from the mobile industry are more subtle in their approach, choosing to ignore the benefits of the Coalition's proposal altogether and instead focus solely on

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<sup>21</sup> Comments of SIA at 10 (emphasis added).

<sup>22</sup> Comments of Verizon at 2.

the undisputed challenges inherent in sharing among FSS and terrestrial mobile services.<sup>23</sup> In any event, no party has justified the need to clear FSS incumbents off the entire 500 megahertz of spectrum, or whether that is even feasible (or even desirable from a policy perspective).

The BAC does not oppose clearing a portion of the 3.7-4.2 GHz band for exclusive terrestrial licensing on a nationwide basis for 5G or other mobile services that require “clean” spectrum. But that does not and should not preclude enabling P2MP deployments in the remainder of the band, on a shared basis with FSS earth stations.

The “race for 5G” may be an important federal objective, but it does not exist in a vacuum. Connecting 23 million Americans that lack broadband access in their homes is also a national priority – indeed, “closing the digital divide [is Chairman Pai’s] top policy priority as FCC Chairman.”<sup>24</sup> The Commission has an opportunity in the upcoming rulemaking proceeding to consider how it can best balance its policy objectives while ensuring that FSS receivers are protected from harmful interference. With 500 megahertz of spectrum on the table and little more mid-band spectrum in the short-term pipeline, ceding the entire band for 5G services and excluding the myriad consumer benefits of P2MP would be a wasted opportunity.

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<sup>23</sup> See, e.g., Comments of Ericsson; Comments of CTIA; Comments of AT&T; Comments of T-Mobile.

<sup>24</sup> Remarks of FCC Chairman Ajit Pai at the Fourth Meeting of the Federal Communications Commission’s Broadband Deployment Advisory Committee, Jan. 23, 2018, at 1. See also Remarks of FCC Chairman Ajit Pai at the Farm Foundation/U.S. Department of Agriculture Summit, April 18, 2018, at 1 (“On my first day as FCC Chairman in January 2017, I said that my number one priority was closing the digital divide and bringing the benefits of the Internet age to all Americans.”).

#### IV. Conclusion

For the reasons set forth above, the Broadband Access Coalition reiterates that it is entirely feasible for commercial fixed P2MP wireless broadband services to share use of the 3.7-4.2 GHz band with incumbent FSS and FS users, while causing no harmful interference to band incumbents and improving broadband connectivity in rural and other underserved areas. The Coalition's proposal for coordinated access to unused frequencies and/or geographies for fixed, high-capacity broadband in underserved areas is complementary to any of the mobile band-clearing proposals and represents a potential "win-win-win" for rural Americans and the public interest overall.

Respectfully submitted,

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