

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

In the Matter of)	
)	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band)	GN Docket No. 18-122
)	
Petition for Rulemaking to Amend and Modernize)	RM-11791
Parts 25 and 101 of the Commission's Rules to)	
Authorize and Facilitate the Deployment of)	
Licensed Point-to-Multipoint Fixed Wireless)	
Broadband Service in the 3.7-4.2 GHz Band)	
)	
Fixed Wireless Communications Coalition, Inc.,)	RM-11778
Request for Modified Coordination Procedures in)	
Band Shared Between the Fixed Service and the)	
Fixed Satellite Service)	

REPLY COMMENTS OF THE C-BAND ALLIANCE

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REPLY COMMENTS OF THE C-BAND ALLIANCE

I. INTRODUCTION AND SUMMARY.

The C-Band Alliance has proposed to repurpose a portion of the 3.7-4.2 GHz band (“C-Band”) by harnessing the free market to enable expedited 5G deployment and protect the ongoing delivery of high-quality video and audio programming to nearly 120 million American households. The record compiled in response to the latest Public Notice¹ confirms what has been evident from the beginning of this proceeding: “the fastest and most efficient way” to reallocate a portion of the C-Band and protect existing services is to adopt a “satellite operator-led market-based solution.”² These reply comments address three discrete areas raised in the Public Notice.

¹ See *Wireless Telecommunications Bureau, International Bureau, Office of Engineering and Technology, and Office of Economics and Analytics Seek Focused Additional Comments in 3.7-4.2 GHz Band Proceeding*, Public Notice, DA 19-678 (rel. July 19, 2019) (“Public Notice”).

² Comments of Verizon, GN Docket No. 18-122, RM-11791, RM-11778, at 17 (filed Aug. 7, 2019) (“Verizon Other Proposals PN Comments”).

First, the record confirms that the ACA Connects Coalition’s (“Coalition”) proposal to repurpose up to 370 MHz of C-Band spectrum by replacing the bulk of the U.S. content distribution architecture with fiber³ is both self-serving and ill-advised. Numerous commenters expound the significant complexities involved in transitioning from C-Band satellite to fiber—complexities the Coalition ignores. The Coalition’s lack of a serious plan to implement its proposal has, understandably, caused serious concern among content companies, broadcasters, and other parties which rely on Fixed Satellite Service (“FSS”) to reach American consumers. Moreover, the record confirms the unrealistic nature of the Coalition’s pie-in-the-sky promises concerning a quick rollout of fiber nationwide. Among other things, the comments show that the Coalition has vastly undercounted the number of Multichannel Video Programming Distributors (“MVPDs”) that would need to be fibered under its plan, and thus has greatly underestimated the necessary buildout time. Even where the Coalition does acknowledge necessary milestones, it grossly underestimates the time it will take to reach them.

Second, the record confirms that the costs associated with the proposal to introduce new point-to-multipoint (“P2MP”) operations in the C-Band⁴ far outweigh any potential benefits. P2MP would disrupt critical satellite operations and effectively prevent satellite operators from optimally clearing spectrum for terrestrial 5G services. Introducing P2MP is also unnecessary. Fixed wireless service providers have abundant access to other spectrum, and their claim that more mid-band spectrum would benefit consumers is unsupported.

³ See Letter from ACA Connects, Competitive Carriers Association, and Charter Communications Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 2, 2019).

⁴ See Letter from Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 15, 2019).

Third, the market-based approach proposed by the C-Band Alliance accommodates discrete technical issues raised in the record. To begin, coordination between new terrestrial mobile operators and FSS incumbents will not be required under the C-Band Alliance proposed rules, alleviating concerns raised by AT&T. In turn, the C-Band Alliance supports Verizon’s recommendation that the Commission establish a process for addressing any interference to incumbent content distribution operations. Next, the C-Band Alliance proposes to install current state-of-the-art 5G rejection filters, contrary to fears stoked by T-Mobile. Finally, the C-Band Alliance also proposes to ensure interference-free environments for four telemetry, tracking, and control (“TT&C”)/gateway earth station sites, ensuring that entities like Lockheed Martin can continue their mission-critical operations.

II. THE RECORD CONFIRMS THAT THE ACA CONNECTS COALITION GREATLY UNDERESTIMATES THE COMPLEXITY OF, AND AMOUNT OF TIME INVOLVED IN, REPLACING THE BULK OF THE CURRENT U.S. CONTENT DISTRIBUTION ARCHITECTURE WITH FIBER.

The record confirms what the C-Band Alliance has already explained. The complex, inchoate, and time-consuming “plan” proposed by the Coalition is not only unlawful, it lacks critical details and contains major technical flaws. These glaring deficiencies confirm that the C-Band Alliance is the only entity positioned to protect customers during any transition of C-Band spectrum from FSS to terrestrial flexible use. Indeed, the Coalition itself confirmed the speculative nature of its proposal by failing to submit supporting comments. The Coalition now says that it will “supplement” its proposal “weeks” after the comment cycle has closed.⁵ The significant time for the Coalition just to explain its proposal coherently provides further evidence that its approach

⁵ See Letter from Ross Lieberman, Senior Vice President, Government Affairs, ACA Connects, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (Aug. 6, 2019).

would inevitably result in lengthy delays, even if it were remotely viable, which it is not.⁶ The Coalition’s attempt to skirt the deliberative process through a unilateral deadline extension cannot rescue its unlawful and unworkable proposal.

A. The record reflects significant concern about the failure of the ACA Connects Coalition to articulate a satellite-to-fiber transition plan or a fiber network management plan.

The C-Band Alliance explained in its comments the significant complexities involved in transitioning video program distribution from C-Band satellite to fiber.⁷ The Coalition ignores these obstacles, pretending they do not exist. This hands-over-the-eyes approach sets the Coalition’s proposal on a collision course with reality.

Indeed, the record confirms the many complexities identified by the C-Band Alliance and amplifies the Coalition’s complete failure to “grapple with [these] substantial science and engineering questions.”⁸ The questions unanswered by the Coalition’s proposal are particularly acute for FSS customers that would be at risk of service disruption under the Coalition’s incomplete transition plan. For example, CBS Corporation, Discovery, Inc., FOX Corporation, The Walt Disney Company, Univision Communications Inc., and Viacom Inc. (collectively, the “Content Companies”) state that the “the ACA Connects Coalition proposal underestimates the complexity, timing, reliability challenges, and cost that would arise from an attempt to change the video distribution infrastructure from one based primarily on satellite to one based mostly on

⁶ The C-Band Alliance has been working on its plan for more than a year. It is inconceivable, therefore, that the ACA Connects Coalition could devise a workable approach for its exceedingly more complicated plan in a matter of weeks.

⁷ Comments of the C-Band Alliance, GN Docket No. 18-122, RM-11791, RM-11778, at 5–6 (filed Aug. 7, 2019) (“CBA Other Proposals PN Comments”).

⁸ Comments of the Content Companies, GN Docket No. 18-122, at i (filed Aug. 7, 2019) (“Content Companies Other Proposals PN Comments”).

fiber.”⁹ As these companies point out, “there would need to be hundreds of thousands of direct one-to-one fiber connections between each of the hundreds of content sources and thousands of earth stations” to satisfy reliability requirements—an inconvenient fact that the Coalition’s proposal ignores.¹⁰ Other FSS customers draw attention to the fact that the Coalition’s proposal fails to provide any transitional arrangements for transportable FSS service, a necessary component for live events programming including news, sports, and special events coverage.¹¹ ESPN, for example, relied on C-Band spectrum to receive nearly 29,000 sports feeds in 2018—several of which were from transponders not controlled by Disney or ESPN—and the company’s reliance on C-Band spectrum continues to grow.¹²

Even more fundamentally, the record confirms that the Coalition’s proposal fails to consider who would be responsible for managing the satellite-to-fiber transition. “A transition this complicated needs some entity to undertake project management and systems integration functions

⁹ *Id.*

¹⁰ *Id.* at 6; *accord* Comments of Cumulus Media Inc. and Westwood One, LLC, GN Docket No. 18-122, RM-11791, RM-11778, at 2 (filed Aug. 7, 2019) (“Cumulus and Westwood Other Proposals PN Comments”); Comments of QVC, Inc. and HSN, Inc., GN Docket No. 18-122, RM-11791, RM-11778, at 8–9 (filed Aug. 7, 2019) (“QVC and HSN Other Proposals PN Comments”).

¹¹ *See, e.g.*, Further Supplemental Comments of PSSI Global, GN Docket Nos. 17-183, 18-122, RM-11791, RM-11778, at 2 (filed Aug. 7, 2019) (“PSSI Global Other Proposals PN Comments”) (“The proposal by ACA Connects, in addition to being based upon a wholly unrealistic estimate of the time and effort to replace the C-band with fiber, would have a catastrophic impact on the video content distribution system that serves in excess of one hundred million American households by destroying the ability to provide the quality video programming that transportable companies like PSSI provide for live events coverage.”).

¹² Ex Parte Submission of the Content Companies, GN Docket No. 18-122, at 2 (filed June 7, 2019) (“ESPN has seen C-band utilization increase year over year, with an additional 1,300 feeds provided to it over the C-band in 2017-18. On one day alone last month, ESPN relied on 143 C-band feeds in the production of content.”).

associated with implementation of a vast new set of fiber connections.”¹³ But the Coalition, clearly, has not considered how to manage the massive undertaking it proposes. Nor has the Coalition explained who will finance such a costly approach, including not only fiber buildout, but the increased operating and staffing costs that the record shows will be incurred.¹⁴

Today’s FSS customers are not the only entities troubled by the lack of crucial detail in the proposal. The potential holders of tomorrow’s flexible use licenses criticize the Coalition for failing to “show its work.”¹⁵ Verizon observes, for example, that the Coalition offers “scant details” on how its proposed incentive auction would work—a clear sign that the proposal “is not ready for prime time.”¹⁶ The Coalition’s proposal also fails to define which markets would be covered by its promise that “all urban markets would be cleared in 18 months” and that “the ‘majority’ of other markets would be cleared in three years.”¹⁷ Even more disconcerting for wireless providers hoping to obtain C-Band spectrum, the Coalition’s proposal lacks any detail about “how the spectrum will be cleared.”¹⁸

¹³ Content Companies Other Proposals PN Comments at 8; *see also* QVC and HSN Other Proposals PN Comments at 8–9; Cumulus and Westwood Other Proposals PN Comments at 6.

¹⁴ *See, e.g.*, QVC and HSN Other Proposals PN Comments at 11; Content Companies Other Proposals PN Comments at 12 (observing the proposal does not “account for substantial operations, staffing, and training costs that would be incurred on both a recurring and non-recurring basis to transition to a fiber-based distribution system”); Cumulus and Westwood Other Proposals PN Comments at 7 (“It would be entirely unreasonable to require incumbent earth station operators to have to incur additional expenses, which . . . would include both hiring additional technical staff and paying for both the use of fiber and C-band for at least five (5) years.”).

¹⁵ Verizon Other Proposals PN Comments at 14.

¹⁶ *Id.* at 16.

¹⁷ *Id.* at 14.

¹⁸ *Id.* at 15.

Nor is criticism limited to those parties that oppose the Coalition’s proposal. For example, although NTCA–The Rural Broadband Association describes itself as “generally supportive” of the Coalition’s proposal,¹⁹ it is concerned that the assumptions contained in the Coalition’s proposal do not account for rural and other hard-to-reach areas where fiber deployment is extremely difficult and/or economically infeasible.²⁰

Where the Coalition omits important details, the record fills in the blanks to confirm that the Coalition does not understand the satellite/transponder environment and the basics of the transition it has dreamt up.²¹ Orbital slots are not fungible.²² Rather, as the C-Band Alliance, the Content Companies, and the National Association of Broadcasters (“NAB”) all explain, C-Band FSS service is built around a “neighborhood” model for organizing orbital slots for cable programming. Cable headends typically have C-Band antennas pointed at as many as 10 orbital locations. Because the Coalition does not understand this concept, it fails to recognize that its proposal would require cable headends to install “[s]ignificant numbers” of new antennas that would then need to be pointed to new orbital locations.²³ Moreover, FSS operators would then need to provide dual illumination for several months to transition incumbent users without disruption.²⁴ NAB represents that this “would take considerable time” and “would add

¹⁹ See Comments of NTCA–The Rural Broadband Association, GN Docket No. 18-122, RM-111778, at 2 (filed Aug. 7, 2019) (“NTCA Other Proposals PN Comments”).

²⁰ *Id.* at 3.

²¹ See CBA Other Proposals PN Comments at 7.

²² See *id.*; Content Companies Other Proposals PN Comments at 8–9; Comments of The National Association of Broadcasters, GN Docket No. 18-122, at 6–7 (filed Aug. 7, 2019) (“NAB Other Proposals PN Comments”).

²³ NAB Other Proposal PN Comments at 7; *accord* Content Companies Other Proposals PN Comments at 8–9; CBA Other Proposals PN Comments at 7.

²⁴ Content Companies Other Proposals PN Comments at 9.

considerable cost” for its members.²⁵ In addition, “many broadcasters simply will not have space to accommodate additional large dishes or will not have line of sight to all orbital slots at their current locations.”²⁶ The Coalition’s proposal offers no solution for these problems.

B. The record confirms that the ACA Connects Coalition proposal cannot be accomplished in 18 months.

The C-Band Alliance has explained in detail the many reasons why it is impossible to clear 370 MHz of spectrum in urban areas within 18 months.²⁷ Chief among them, the Coalition failed to accurately account for wireless interference into MVPDs that are located outside of, but adjacent to, urban areas. As the C-Band Alliance explained, transmissions from wireless base stations do not stop at urban boundaries.²⁸ Accordingly, potential interference in areas adjacent to urban areas must be considered if FSS transmissions to the remaining earth stations are to be protected and 5G deployment in target urban areas is not to be severely restricted.²⁹

Several FSS customers confirm the potential for interference in areas adjacent to urban areas. The Content Companies report that such interference “can impact headends as far as 100 kilometers away from an urban center.”³⁰ QVC and HSN echo concerns about interference protection, pointing out that the staggered transition proposed by the Coalition would “create[] enormous uncertainty for C-Band incumbents as they must serve both cleared and uncleared

²⁵ NAB Other Proposals PN Comments at 7.

²⁶ *Id.* See also Comments of the North American Broadcasters Association, GN Docket No. 18-122, RM-11791, RM-11778, at 3 (filed Aug. 7, 2019) (“NABA Other Proposals PN Comments”) (“The economics and the technical feasibility of such a dramatic expansion of the ground segment are impractical and certainly not considered in the ACA Proposal.”).

²⁷ CBA Other Proposals PN Comments at 9–16.

²⁸ *Id.* at 10–12.

²⁹ *Id.* at 10–13.

³⁰ Content Companies Other Proposals PN Comments at 10.

markets without any assurance of interference protection between such markets.”³¹ According to these commenters, the only way to eliminate interference in areas adjacent to urban areas is to construct fiber links to these adjacent areas—an undertaking that could not be accomplished in 18 months.³²

The record also confirms that the Coalition fails to account for the time it takes to design, test, and build a network.³³ Verizon observes that the Coalition’s rosy timelines are completely “unsupported” by any realistic inputs or assumptions.³⁴ According to the Content Companies, the transition envisioned by the Coalition would more likely take anywhere from “at least five years in a best-case scenario” to “more than a decade.”³⁵ And even that timeline may be too optimistic. The design phase alone “could take more than two years.”³⁶ Moreover, before MVPDs could even enter the design phase, they would be required to identify and contract with “a ready, willing, and

³¹ QVC and HSN Other Proposals PN Comments at 10.

³² *See, e.g.*, Content Companies Other Proposals PN Comments at 10 (“The ACA Connects Coalition proposal does not account for these additional headends, which significantly undermines the proposal’s promise to transition all urban areas to a fiber-based distribution system in 18 months.”); QVC and HSN Other Proposals PN Comments at 10 (“The only surefire solution to preventing interference between adjacent cleared and uncleared markets is to clear all areas nationwide simultaneously when all MVPD C-band services have been successfully replaced by fiber, which under the terms of the ACA Proposal would take as long as five years.”).

³³ *See, e.g.*, QVC and HSN Other Proposals PN Comments at 5; PSSI Global Other Proposals PN Comments at 7; Content Companies Other Proposals PN Comments at 2–3; NTCA Other Proposals PN Comments at 3; Comments of the Small Satellite Operators (ABS Global Ltd., Hispasat S.A., and Claro S.A., GN Docket No. 18-122, RM-11791, RM-11778, at 3–4 (filed Aug. 7, 2019) (“SSO Other Proposals PN Comments”); Supplemental Comments of Globecast America, Incorporated, GN Docket Nos. 17-183, 18-122, RM-11791, RM-11778, at 5 (filed Aug. 7, 2019) (“Globecast Other Proposals PN Comments”).

³⁴ Verizon Other Proposals PN Comments at 15.

³⁵ Content Companies Other Proposals PN Comments at 9.

³⁶ Content Companies Other Proposals PN Comments at 10.

able wireline carrier,” a process that “alone could take months.”³⁷ Only at that point could deployments begin. And of course, deployments, which must include “[o]utfitting satellite facilities, data centers, and cable headends with the additional equipment necessary to switch to fiber-based delivery,” would also require a significant amount of time.³⁸

State and local regulatory approvals are also a potential source of delay. PSSI Global—citing the failed Google Fiber Project as an example—emphasizes that fiber deployment is complex from a regulatory perspective and does not happen quickly.³⁹ Globecast America, Linkup Communications, and others report that it can take more than 18 months just to obtain the municipal permits and rights-of-way required to lay fiber to cable headends.⁴⁰ And these are just a few of the reasons why “fiber builds are notoriously difficult to complete ... on time.”⁴¹

The costs to MVPDs under the Coalition’s proposal would also be “astronomical.”⁴² Over one-hundred-thousand miles of new fiber would need to be deployed to connect over 2,500 headends to provide network connectivity on which FSS users would depend. Projected costs are

³⁷ SSO Other Proposals PN Comments at 5–7.

³⁸ Content Companies Other Proposals PN Comments at 9.

³⁹ PSSI Global Other Proposals PN Comments at 8 (observing that Google Fiber “paused” deployment “notwithstanding that Google Fiber obtained major ‘administrative efficiencies’ in its final list of target cities, ‘including a single master contract, a sole point of contact in city government, streamlined procedures for permits to install equipment on city-owned property, and permission to dig up city streets to lay conduit.’”). *See also* Globecast Other Proposals PN Comments at 6–7.

⁴⁰ *See* Globecast Other Proposals PN Comments at 5; Comments of LinkUp Communications Corporation, GN Docket No. 18-122, at 1-2 (filed Aug. 3, 2019); Comments of Riverfront Broadcasting, LLC, GN Docket No. 18-122, at 1 (filed Aug. 5, 2019).

⁴¹ SSO Other Proposals PN Comments at 3–4.

⁴² Cumulus and Westwood Other Proposals PN Comments at 3. *See also* Content Companies Other Proposal PN Comments at 3 (“Even in a best-case scenario, the shift to a primarily fiber-based video delivery system would . . . cost far more than the estimated \$6 to \$7 billion.”).

even greater in rural and hard-to-reach areas.⁴³ And fiber builds are rarely “on budget.”⁴⁴ Beyond direct costs, MVPDs would also incur considerable indirect costs, including “substantial operations, staffing, and training costs” as well as “costs associated with operating both C-Band and fiber based distribution networks” during the transition period.⁴⁵

C. Commenters agree that the ACA Connects Coalition proposal is unlawful.

The C-Band Alliance explained how adoption of the Coalition proposal would run afoul of the U.S. Constitution and the Communications Act.⁴⁶ Other parties have likewise exposed the many legal shortcomings of the Coalition’s proposal.⁴⁷

The Coalition’s failure to support its own proposal leaves its allies holding the bag. U.S. Cellular Corporation repeats several flawed arguments concerning the scope of the FCC’s modification authority.⁴⁸ But the C-Band Alliance has already explained how these arguments are

⁴³ See Comments of Alaska Telecom Association, GN Docket Nos. 17-183, 18-122, RM-11791, RM-11778, at 3 (filed Aug. 7, 2019) (“Construction of fiber transport facilities to endpoints closer to existing earth stations, as proposed in the ACA Connects Plan, would be prohibitively expensive in Alaska.”).

⁴⁴ SSO Other Proposals PN Comments at 3–4.

⁴⁵ Content Companies Other Proposals PN Comments at 12.

⁴⁶ CBA Other Proposals PN Comments at 17–19.

⁴⁷ See, e.g., Verizon Other Proposals PN Comments at 16 (explaining how the “ACA/CCA/Charter fail to overcome these legal hurdles”); SSO Other Proposals PN Comments at 11–13 (“[T]here are significant unanswered questions regarding whether the Commission would have legal authority to carry out the auctions that the ACA Connects Coalition Proposal relies on to clear the band.”); Comments of the Wireless Internet Service Providers Association, GN Docket No. 18-122, at 4 (filed Aug. 7, 2019) (“WISPA Other Proposals PN Comments”) (observing that “[t]he ACA Connects Coalition makes no effort to explain” how its proposal “could possibly be defended on appeal”).

⁴⁸ See Comments of United States Cellular Corporation, GN Docket No. 18-122, at 13–14 (filed Aug. 7, 2019).

directly contradicted by controlling Supreme Court and D.C. Circuit precedent,⁴⁹ and no party has rebutted that careful legal analysis.

Nor has any party advanced a credible legal basis on which the FCC could conduct an incentive auction in the C-Band, “where licensed satellite operators ‘make non-exclusive, non-rivalrous use’ of C-Band spectrum.”⁵⁰ NTCA makes the unremarkable point that the FCC may “provide incentives to clear spectrum” in some circumstances.⁵¹ But that shallow observation ignores that the appropriate circumstances—which are clearly delineated in 47 U.S.C. § 309(j)(8)(G)—are not present here.⁵² The lack of any other statutory basis for the incentive auction proposed by the Coalition is damning.⁵³

III. THE RECORD CONFIRMS THAT INTRODUCTION OF POINT-TO-MULTIPOINT SERVICES IN THE C-BAND WOULD UNNECESSARILY COMPLICATE REPURPOSING THE BAND FOR TERRESTRIAL MOBILE.

The C-Band Alliance and other parties have repeatedly explained that the costs of introducing new P2MP operations in the C-Band far outweigh any potential benefits.⁵⁴ The latest

⁴⁹ Reply Comments of the C-Band Alliance at 3–7 (filed July 18, 2019); *see also* Comments of the C-Band Alliance, at 15–29, 33–34 (filed July 3, 2019).

⁵⁰ CBA Other Proposals PN Comments at 18 (quoting *In re Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Order & NPRM, 33 FCC Rcd 6915 ¶ 61 (rel. July 13, 2018) (FCC 18-91)).

⁵¹ NTCA Other Proposals PN Comments at 4.

⁵² *See* CBA Other Proposals PN Comments at 17–19.

⁵³ *See La. Pub. Serv. Comm’n v. FCC*, 476 U.S. 355, 374 (1986) (“[The FCC] literally has no power to act ... unless ... Congress confers power upon it.”); *see also* Brett M. Kavanaugh, *Fixing Statutory Interpretation*, 129 Harv. L. Rev. 2118, 2151 (2016) (explaining “agencies . . . pursue policy at the expense of law” when they “think they can take a particular action unless it is *clearly forbidden*”).

⁵⁴ *See* Comments of the C-Band Alliance at 39–51 (filed Oct. 29, 2018) (“CBA NPRM Comments”); *see also* CBA Other Proposals PN Comments at 19–21 (collecting comments filed by other parties).

comments yet again confirm that P2MP would disrupt critical satellite services and effectively prevent satellite operators from optimally clearing spectrum for terrestrial 5G services.

The Public Notice sought comment on the Reed Study proffered by the Wireless Internet Service Providers Association (“WISPA”), Google, and Microsoft in support of their claim that P2MP could potentially coexist with FSS in the C-Band.⁵⁵ The C-Band Alliance has explained that from a technical perspective the Reed Study is flawed, and other commenters agree.⁵⁶ The Satellite Industry Association (“SIA”) shows that the Reed Study fails to account for aggregate interference to earth stations from all terrestrial sources—that is, interference from both terrestrial mobile and P2MP service.⁵⁷ Moreover, both SIA and CTIA agree that the Reed Study misuses the 3GPP 38.901 Rural Macro non-line-of-sight propagation model; not only was the 3GPP mobile service propagation model designed “for an entirely different purpose,”⁵⁸ the Reed Study “rel[ies] on parameters that are inconsistent with the 3GPP model’s range of inputs” and “fails to consider the [line-of-sight] portion of the model.”⁵⁹ The Reed Study also does not substantiate its decision to rely on the 3GPP model, which is a departure from prior studies put forward by Google and the Broadband Access Coalition that relied on the National Telecommunications and Information

⁵⁵ Prof. Jeffrey H. Reed, et al., *3.7-4.2 GHz FSS and Fixed Wireless Access Co-channel Coexistence Study*, Reed Engineering (“Reed Study”), filed as attachment to Letter from Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 15, 2019).

⁵⁶ CBA Other Proposals PN Comments at 20–21.

⁵⁷ Comments of the Satellite Industry Association, GN Docket No. 18-122, RM-11791, RM-11778, at 7–8 (filed Aug. 7, 2019) (“SIA Other Proposals PN Comments”); *see also* CBA Other Proposals PN Comments at 21.

⁵⁸ Comments of CTIA, GN Docket No. 18-122, RM-11778, RM-11791, at 13–14 (filed Aug. 7, 2019) (“CTIA Other Proposals PN Comments”); *see* SIA Other Proposals PN Comments at 6–8.

⁵⁹ CTIA Other Proposals PN Comments at 13–15.

Administration's Irregular Terrain Model.⁶⁰ And the insufficiencies do not end there. SIA separately highlights the many faulty assumptions underlying the Reed Study, such as the assumption that the typical P2MP base station will be 35 meters high.⁶¹ In short, the record confirms that the Reed Study is unreliable.

The record also confirms that introducing new P2MP service in the C-Band would disrupt FSS service and hinder deployment of terrestrial mobile services in the band. The Content Companies explain that a “repacked C-band could not, as a matter of physics, accommodate” P2MP because “[p]oint-to-multipoint transmissions necessarily emit high-powered signals in many directions, which greatly increases the difficulty of frequency coordination and the potential for harmful interference to existing C-band usage.”⁶² In addition, eliminating the Commission's full-band, full-arc policy to accommodate P2MP would undermine “critical public interest objectives” that “ensure service continuity,” guarantee “the competitiveness of the FSS ecosystem,” and enable the operating flexibility necessary for effective “coverage of breaking news, live sports, and other special events.”⁶³ Deployment of terrestrial mobile services would

⁶⁰ SIA Other Proposals PN Comments at 6 (citing Letter from Steve Coran, Counsel, WISPA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 17-183 and RM-11791, Attachment at 5, 11 (filed Mar. 29, 2018)).

⁶¹ SIA Other Proposals PN Comments at 7 (explaining that P2MP base station heights in fact vary between 10 and 90 meters).

⁶² Content Companies Other Proposals PN Comments at 14.

⁶³ SIA Other Proposals PN Comments at 5–6. *Accord* Comments of GCI Communication Corp., GN Docket No. 18-122, RM-11791, RM-11778, at 6 (filed Aug. 7, 2019) (“Eliminating the full-band, full-arc coordination policy ignores the very-real fact that changes in frequency are an integral part of the day-to-day operations of FSS operators.”); NAB Other Proposals PN Comments at 9–10; PSSI Global Other Proposals PN Comments at 1–2; Comments of the Church of Jesus Christ of Latter-Day Saints, GN Docket No. 18-122, RM-11791, RM-11778, at 4–5 (filed Aug. 7, 2019).

also be encumbered because P2MP would create uncertainty about interference rights that “negat[es] the business case” for acquiring an overlay license.⁶⁴

Finally, the record confirms that the benefits of introducing new P2MP operations in the C-Band are overstated. Not only do fixed wireless service providers already have access to 650 megahertz of unlicensed spectrum, additional spectrum is available in the 2.5 GHz and 3.5 GHz bands.⁶⁵ Moreover, as CTIA credibly explains, there is no basis for WISPA’s lofty claim that introducing P2MP in C-Band spectrum will make broadband available to more than 80 million Americans.⁶⁶ The risks associated with introducing P2MP in the C-Band thus far outweigh any prospective benefit.

IV. THE C-BAND ALLIANCE’S PROPOSAL ACCOMMODATES DISCRETE TECHNICAL CONCERNS IDENTIFIED IN THE RECORD.

The C-Band Alliance’s proposal is the fastest, most efficient approach to reallocate a portion of the C-Band while also protecting incumbent users that collectively serve approximately 120 million American households. It also provides the greatest clearing certainty. Unlike the Coalition’s proposal, implementation is assured given the C-Band Alliance’s clearing and cost recovery commitments, which are also minimally disruptive to the current content distribution ecosystem and provide flexibility for future flexible use license holders.

⁶⁴ Verizon Other Proposals PN Comments at 20.

⁶⁵ Comments of AT&T, GN Docket No. 18-122, RM-11791, RM-11778, at 13 (filed Aug. 7, 2019) (“AT&T Other Proposals PN Comments”); *see also* Comments of T-Mobile USA, Inc., GN Docket No. 18-122, RM-11791, RM-11778, at 21 (filed Aug. 7, 2019) (“T-Mobile Other Proposals PN Comments”) (highlighting that the 2.5 GHz, 3.5 GHz, 4.9 GHz, and 6 GHz bands, as well as TV white spaces, are “well suited for P2MP services”); Verizon Other Proposals PN Comments at 18 (“There are, of course, multiple opportunities for point-to-multipoint deployments that would not disrupt repurposing 3.7-4.2 GHz spectrum.”).

⁶⁶ CTIA Other Proposals PN Comments at 13, 15 (“The Commission should reject the WISPA Study as not grounded in technical reality and deny the P2MP proposal.”).

The discrete technical concerns raised in the latest round of comment are easily accommodated under the C-Band Alliance’s market-based approach. *First*, the C-Band Alliance’s proposal would not require flexible use licensees to coordinate operations with FSS incumbents provided the former comply with proposed aggregate emissions levels. *Second*, the C-Band Alliance supports Verizon’s recommendation that the Commission establish a process for reporting and promptly addressing any interference to incumbent content distribution operations. *Third*, the C-Band Alliance will provide technologically advanced filters that will protect earth station operators while maximizing flexibility for 5G deployment. *Finally*, the C-Band Alliance proposal allows for continuation of mission-critical operations in the C-Band in limited geographic locations.

A. The C-Band Alliance’s proposed earth station protection rules will provide the freedom of largely unrestricted licensing while ensuring protection for FSS incumbents.

AT&T expressed concern that the technical rules proposed by the C-Band Alliance might impose “unnecessary coordination obligations” on flexible use licensees.⁶⁷ In fact, the C-Band Alliance does not propose to require flexible use licensees to coordinate directly with earth station operators in the design and deployment of their networks so long as they stay within proposed aggregate emissions levels. Nor does the C-Band Alliance suggest that flexible use licensees must submit a technical showing or certify that their networks meet aggregate emission levels. The C-Band Alliance thus believes that its modified proposed rules⁶⁸ will give terrestrial wireless

⁶⁷ AT&T Other Proposals PN Comments at 6 (“One key finding from AT&T’s analysis [of the CBA proposal] was that the CBA plan created unnecessary coordination obligations impairing the flexible use spectrum and allowed too much spectrum to remain fallow.”).

⁶⁸ See CBA Other Proposals PN Comments at Attachment A – Proposed Technical Rules.

operators the “largely unrestricted” flexibility AT&T envisions—free from “the need to engage in pre-deployment coordination with incumbent FSS licensees in the band.”⁶⁹

B. The C-Band Alliance supports recommendations to establish a reporting process to resolve interference concerns.

The C-Band Alliance agrees with Verizon that the Commission, while requiring flexible use licensees to operate on a non-interference basis vis-à-vis adjacent-band FSS operations, should establish “a 24/7/365 process to report and remediate any harmful interference to C-Band earth stations.”⁷⁰ The C-Band Alliance shares Verizon’s view that flexible use operators should be responsible for earth station interference protection and that a unified call center in contact with all C-Band licensee’s network operations centers could work alongside wireless carriers to promptly resolve any issues.⁷¹ In addition, the C-Band Alliance notes that, with its revised user equipment aggregate out-of-band emissions specification at the earth station low noise block downconverter input, a real-time 5G operator-led interference detection and mitigation process can easily work hand-in-hand with the C-Band Alliance’s earth station protection approach.

C. The C-Band Alliance’s proposed filter mask is backed by state-of-the-art technology.

The C-Band Alliance-designed filter will afford 5G operators greater flexibility in base station deployments while providing much needed protection for earth station operators. T-Mobile suggests that the C-Band Alliance earth station filter “may not be ‘state-of-the-art.’”⁷² In fact, the opposite is true. The C-Band Alliance has worked closely with filter manufacturers for over 12 months to develop a 5G rejection filter that provides performance well beyond that specified in

⁶⁹ See AT&T Other Proposals PN Comments at 6 n.2.

⁷⁰ Verizon Other Proposals PN Comments at 11.

⁷¹ *Id.* at 12.

⁷² T-Mobile Other Proposals PN Comments at 19.

the FCC's rules for the Citizens Broadband Radio Service.⁷³ As an added bonus, manufacturers designed the C-Band Alliance filter to reject altimeter radar signals above 4200 MHz, thereby avoiding the need to "stack" filters on antennas located in areas where altimeter radar interference is prevalent.

D. The C-Band Alliance's proposed protection for grandfathered TT&C/gateway earth stations will enable the satellite industry to continue providing mission-critical services.

Lockheed Martin expresses concern regarding future use of its Carpentersville, New Jersey earth station for mission-critical satellite TT&C in portions of the C-Band spectrum where flexible use licensees will be operating.⁷⁴ Under the C-Band Alliance's proposal, up to four grandfathered TT&C/gateway locations will receive band-wide protection from 5G emissions.⁷⁵ Entities requiring TT&C service may utilize these grandfathered locations in an interference-free environment. Specifically, entities like Lockheed Martin will have the option to relocate required radio frequency equipment, including antennas, to one of these protected locations and terrestrially interconnect equipment to home operation centers. The C-Band Alliance's plan thus will protect mission-critical satellite services throughout the entire 3.7-4.2 GHz band.

⁷³ See CBA Other Proposals PN Comments at Section V.B.4.

⁷⁴ See Comments of Lockheed Martin Corporation, GN Docket No. 18-122, RM-11791, RM-11778, at 4–7 (filed Aug. 7, 2019).

⁷⁵ See CBA Other Proposals PN Comments at Section V.B.3.

VI. CONCLUSION.

The C-Band Alliance has proposed an approach to repurposing a portion of the C-Band for terrestrial 5G operations that represents “the whole package,” enabling expedited 5G deployment while protecting ongoing delivery of high-quality video and audio programming. For the reasons discussed above, the proposals put forth by the ACA Connects Coalition, WISPA and others, all fall short. The Commission should adopt the market-based approach advanced by the C-Band Alliance and reject the other proposals.

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