

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

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

**REPLY COMMENTS OF AT&T SERVICES, INC.**

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## SUMMARY

AT&T Services, Inc., on behalf of the subsidiaries and affiliates of AT&T Inc. (collectively, “AT&T”), hereby submits the following reply to comments in response to the Federal Communications Commission’s (“Commission” or “FCC”) *C-band Notice* in the above-captioned proceeding.<sup>1</sup> AT&T commends the Commission for its rapid and decisive actions to initiate this innovative proceeding, which wisely focuses on the potential for reallocating for terrestrial flexible use a portion of the 3.7-4.2 GHz Fixed Satellite Service (“FSS”) spectrum band (“C-band”).

As discussed below, AT&T supports a rapid, voluntary repurposing of a significant portion of the C-band for terrestrial flexible use. The allocation of such mid-band spectrum is critical to maintaining U.S. leadership in mobile services as new fifth generation (“5G”) networks are deployed globally. AT&T also recognizes, however, the crucial need to avoid impairing the current FSS ecosystem in the C-band, given its unique capabilities and critical importance vis-a-vis the distribution of video and audio content, disaster recovery, and other important uses, and the need to ensure the availability of C-band satellite services for those uses in the future.

The C-Band Alliance (“CBA”)<sup>2</sup> asserts that the foregoing goals are not incompatible. According to CBA, 200 MHz of C-band spectrum could be repurposed for terrestrial flexible use

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<sup>1</sup> *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122 *et al.*, Order and Notice of Proposed Rulemaking, FCC 18-91 (rel. July 13, 2018) (“*C-band Notice*”); see 83 Fed. Reg. 42043 (Aug. 20, 2018); Order, GN Docket No. 18-122 (rel. Nov. 21, 2018) (extending deadline for reply comments).

<sup>2</sup> The CBA is a consortium of FSS providers comprising current incumbents of the C-band, including Intelsat License LLC; SES Americom, Inc.; Eutelsat S.A.; and Telesat Canada. *See, e.g.*, Comments of the C-Band Alliance, GN Docket Nos. 18-122 and 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at 1 (Oct. 29, 2018) (“CBA Comments”).

in 18 to 36 months of an FCC order, while maintaining a viable FSS ecosystem, by retrofitting earth stations and expanding space station capacity in the remaining FSS spectrum.

Assuming a fully-developed record supports this assertion, the fundamental question for the FCC to resolve is precisely how to achieve a reasonable outcome supported by the record. Each of the proposals advanced in the record so far would result in repurposing *some* FSS C-band spectrum for flexible terrestrial use. The proposals range from private bilateral contracts between CBA and individual terrestrial flexible use purchasers on a geographic market-by-market basis, to a complex, multi-stage incentive auction designed to sketch out a demand curve for C-band spectrum in advance of the actual selling process, to various Commission proposals (including an overlay auction that would depend on bilateral negotiations to “clear” satellite uses from the spectrum),<sup>3</sup> to a proposal to allocate for free and on a co-primary basis some C-band spectrum for fixed terrestrial services.<sup>4</sup> Each of these proposals might accomplish the objective of making some C-band spectrum available for terrestrial wireless use, but each of them also has serious drawbacks.

AT&T offers a new proposal below. Adoption of AT&T’s proposal would accomplish the facially conflicting objectives of repurposing a substantial portion of C-band spectrum for flexible terrestrial use, maintaining a robust FSS ecosystem in the C-band, and harnessing market incentives to make reallocation of a significantly useful amount of C-band spectrum from FSS to flexible use happen as quickly as possible.

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<sup>3</sup> *C-band Notice* at ¶¶98-102.

<sup>4</sup> Comments of the Broadband Access Coalition, GN Docket No. 18-122 at 21 (Oct. 29, 2018) (“BAC Comments”).

AT&T's proposal resembles in many respects existing proposals based primarily on private market transactions, but includes previously ignored safeguards needed to ensure openness, fairness, transparency, competition, and compliance with regulatory and statutory requirements regarding spectrum allocation. *First*, under AT&T's proposal, the C-band spectrum would be allocated in an auction run by CBA according to well-established auction rules approved by the FCC. *Second*, the CBA should be encouraged to act as the "Transition Facilitator" and thus as the drafter of a proposed Transition Plan and a proposed Auction Plan that meet the principles outlined herein. *Third*, the Commission would put CBA's proposed Transition Plan and Auction Plan out for notice and comment, and then rule on those Plans based on the resulting record. The protection of the incumbent C-band FSS ecosystem and the creation of any new C-band terrestrial 5G ecosystem are undertakings that are too complex and important to trust entirely to a limited set of private parties whose interests may not always align with the Commission's policy objectives. Instead, CBA's expertise qualifies them to take the initial pen and propose detailed Transition and Auction Plans, but then all interested parties should have the opportunity to provide input on what CBA proposes, with the FCC acting as the final arbiter of what process moves forward, based on the entire record.

The record overwhelming indicates that tapping into the C-band's virtually unmatched potential in the mid-band range to facilitate the deployment of terrestrial 5G services will yield tremendous economic and societal benefits for the American public. And there is widespread agreement among terrestrial wireless providers on how that spectrum should be regulated, if reallocated. The record further supports ensuring that incumbent users of C-band services should be held harmless and that competition in the downstream mobile market should be encouraged.

The primary remaining “tough nut to crack” is how best to get from here (500 megahertz of C-band spectrum allocated to FSS) to there (a minimum of 200 megahertz of C-band spectrum reallocated to flexible use). Some parties, such as CBA and Verizon, urge the FCC to focus almost exclusively on speed-to-market, at the expense of virtually all other public policies, stakeholder interests, and practical considerations. AT&T partially disagrees. In AT&T’s view, the FCC should adopt rules ensuring that the reallocation of C-band spectrum to flexible use occurs not only rapidly, but also lawfully, competitively, transparently, and consistently with other equally important objectives. As discussed in these Reply Comments, AT&T believes the Commission can accomplish all of these objectives.

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**I. BACKGROUND AND OVERVIEW**

As the Commission has recognized in this and other proceedings,<sup>5</sup> mid-band spectrum will be a critical component of terrestrial 5G networks and will be essential to maintain the international competitiveness of the United States.<sup>6</sup> There is, however, currently inadequate mid-band spectrum allocated for terrestrial flexible use, so AT&T has been a strong proponent of re-conceptualizing the C-band and reiterates herein its support for the Commission’s rapid and thoughtful Notice of Proposed Rulemaking in this proceeding.<sup>7</sup> But the C-band has unique value

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<sup>5</sup> See, e.g., *C-band Notice* at ¶¶3-8; *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, 32 FCC Rcd 6373, 6375-76 (Aug. 3, 2017) (“*Mid-band NOI*”).

<sup>6</sup> *C-band Notice* at ¶5 (recognizing “[m]id-band spectrum is well-suited for next generation wireless broadband services due to the combination of favorable propagation characteristics (compared to high bands) and the opportunity for additional channel re-use (as compared to low bands)”; see “The FCC’s 5G FAST Plan” (Sept. 28, 2018) (noting “[m]id-band spectrum has become a target for 5G buildout given its balanced coverage and capacity characteristics”).

<sup>7</sup> Comments of AT&T Services, Inc., GN Docket No. 18-122 (Oct. 29, 2018) (“AT&T Comments”).

for both incumbents and prospective terrestrial wireless licensees.<sup>8</sup> Therefore, AT&T is extremely interested in reaching the best balance of the objectives of this C-band proceeding—rapidly freeing C-band spectrum in a pro-competitive manner for terrestrial flexible use while ensuring that incumbent users of C-Band are held harmless.

Although this proceeding intersects a wide variety of divergent interests with seemingly incompatible goals,<sup>9</sup> the record actually demonstrates significant consensus in certain key areas.

*First*, parties have agreed on the need for C-band spectrum for advanced terrestrial wireless services such as 5G.<sup>10</sup> *Second*, parties have agreed on the need to protect the incumbent FSS C-

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<sup>8</sup> Comments of R Street Institute, WT Docket No. 18-122 at 3-4 (Oct. 29, 2018) (“R Street Comments”); Comments of the Satellite Industry Association, GN Docket Nos. 18-122 and 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at i, iv, 1-2 (Oct. 29, 2018) (“SIA Comments”); Comments of the Content Companies, GN Docket No. 18-122 at i, 1-2, 4 (Oct. 29, 2018) (“Content Companies Comments”); Comments of Charter Communications, Inc., GN Docket No. 18-122, RM-11791, RM-11778 at 1-3 (Oct. 29, 2018) (“Charter Comments”); Comments of Speedcast Communications, Inc., GN Docket No. 18-122, RM-11791, RM-11778 at 2-4 (Oct. 29, 2018) (“Speedcast Comments”); Comments of CTIA, GN Docket No. 18-122, RM-11778, RM-11791 at 10 (Oct. 29, 2018) (“CTIA Comments”); Comments of Alaska Communications Internet, LLC, GN Docket No. 18-122, RM-11791, RM-11778 (Oct. 29, 2018) (“ACI Comments”); Comments of NCTA-The Internet & Television Association, GN Docket No. 18-122, RM-11791, RM-11778 at 17 (Oct. 29, 2018) (“NCTA Comments”); CBA Comments at 8-9.

<sup>9</sup> As AT&T has noted, this proceeding involves multiple facets of AT&T’s businesses. Not only is AT&T a leading mobile wireless carrier pioneering in 5G services, AT&T currently uses C-band FSS to provide basic interconnectivity to remote villages in Alaska; rapidly restore communications services in damaged locations, such as Puerto Rico and the U.S. Virgin Islands after Hurricanes Irma and Maria; acquire video content for end users who use DIRECTV and U-Verse; and distribute WarnerMedia content to thousands of Multichannel Video Program Distribution (“MVPD”) operations. *See* AT&T Comments at 3. Accordingly, AT&T has a unique perspective on the matters at hand and understands (perhaps more profoundly than any other party) the tremendous value the C-band offers *both* the incumbent FSS ecosystem *and* the prospective terrestrial wireless ecosystem.

<sup>10</sup> *See, e.g.*, Comments of the Telecommunications Industry Association, GN Docket No. 18-122, RM-11791, RM-11778 at 3 (Oct. 29, 2018) (“TIA Comments”); CBA Comments at 1, 7; Comments of Aviation Spectrum Resources, Inc., GN Docket Nos. 18-122 and 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at 7 (Oct. 29, 2018) (“ASRI



band users—video, audio and other backhaul service users (such as content providers, including WarnerMedia) and their customers and affiliates (*e.g.*, MVPDs, broadcasters, and radio affiliates), with many acknowledging that the record remains inadequate to ensure that need is satisfied.<sup>11</sup> *Third*, the record demonstrates the need to preserve access to viable commercial FSS use in the C-band going forward.<sup>12</sup> And *fourth*, there was strong commonality on the need to

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Comments”); Comments of T-Mobile USA, Inc., GN Docket No. 18-122, RM-11791, RM-11778 at 23-24 (Oct. 29, 2018) (“T-Mobile Comments”); Comments of United States Cellular Corp., GN Docket No. 18-122 at i, 2-3 (Oct. 29, 2018) (“USCC Comments”); R Street Comments at 3; Charter Comments at 3; Comments of Nokia, GN Docket No. 18-122, RM-11791, RM-11778 at 3-5 (Oct. 29, 2018) (“Nokia Comments”); Comments of Qualcomm Inc., GN Docket No. 18-122, RM-11791, RM-11778 at 1 (Oct. 29, 2018) (“Qualcomm Comments”); Comments of the Broadband Connects America Coalition, GN Docket No. 18-122 at 1-2 (Oct. 29, 2018) (“BCA Comments”); Comments of Frontier Communications Corp. and Windstream Services, LLC, GN Docket Nos. 18-122 and 17-183, RM-11791, RM-11778 at 3 (Oct. 29, 2018) (Frontier and Windstream Joint Comments”).

<sup>11</sup> *See, e.g.*, NCTA Comments at 7, 17-18; TIA Comments at 6; CBA Comments at 1-2, 17, 26; Comments of Verizon, GN Docket No. 18-122 at 10 (Oct. 29, 2018) (“Verizon Comments”); CTIA Comments at 10; T-Mobile Comments at 15; Comments of Comcast Corp. and NBCUniversal Media, LLC, GN Docket Nos. 18-122 and 17-183, RM-11791, RM-11778 at 11, 14-15 (Oct. 29, 2018) (“Comcast/NBC Comments”) (Recognizing that the public interest demands a particularly robust record and even more rigorous evidence-based review to support any significant restructuring of the heavily-used C-Band spectrum on which more than 100 million U.S. households rely for news and entertainment programming.); USCC Comments at 4; Charter Comments at 1-3; Speedcast Comments at 1; Comments of the Public Interest Spectrum Coalition, GN Docket No. 18-122 at 2, 12-16 (Oct. 29, 2018) (“PISC Comments”); Comments of the Broadband Access Coalition, GN Docket No. 18-122 at iii, 2, 22 (Oct. 29, 2018) (“BAC Comments”); Frontier and Windstream Joint Comments at 4-5; Comments of Alaska Communications Internet, LLC, GN Docket No. 18-122, RM-11791, RM-11778 at 4 (Oct. 29, 2018) (“Alaska Communications Comments”); BCA Comments at 2; Comments of Competitive Carriers Association, GN Docket No. 18-122, GN Docket No. 17-183, RM-11791, RM-11778 at 4 (Oct. 29, 2018) (“CCA Comments”) (Accordingly, the Commission should ensure that it has a comprehensive record regarding the cost of mitigating harmful interference, and identify the most appropriate mechanisms, or combination thereof, to best accommodate incumbent users.); AT&T Comments at 7-8 (Acknowledging that the records requires much further development to determine the balance needed to protect incumbent C-band users).

<sup>12</sup> *See, e.g.*, CBA Comments at 1; Verizon Comments at 10; SIA Comments at 2; NCTA Comments at 5; Joint Comments of Intel Corporation, Intelsat license LLC, and SES Americom,

adopt relatively familiar technical and operational rules for terrestrial flexible use licenses granted in the C-band spectrum (“MBX licenses”) and, as long as the band realignment can be done without creating ongoing coordination obligations, maximal flexibility for FSS earth station licensees.<sup>13</sup>

The proposals on the appropriate mechanisms to achieve these goals through the reallocation of C-band spectrum vary widely, however, and each proposal has significant drawbacks that, to some degree, sacrifice the accomplishment of certain objectives to ensure the achievement of others.

CBA’s proposal purports to harness economic incentives not only to rapidly repurpose FSS spectrum to flexible terrestrial use, but also to preserve the viability of the current C-band FSS ecosystem. Moreover, given that all who hold satellite authorizations in the C-band share the entire 500 MHz, a consortium like CBA would avoid hold-out problems in any plan to repurpose C-band spectrum through market-based incentives. But to allow a consortium of all incumbent domestic C-band FSS service providers to unilaterally determine who gets any C-band spectrum for 5G, how much they get, where they get it, when they get it, and at what price, presents substantial risks to competition in the wireless marketplace. And those risks not only concern competition for spectrum resources,<sup>14</sup> but given the importance of new mid-band

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Inc., GN Docket No. 18-122, GN Docket No. 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 (Oct. 29, 2018); BAC Comments.

<sup>13</sup> See, e.g., NCTA Comments at 7, 18-19; CBA Comments at 4, 20-21; Verizon Comments at 23; CTIA Comments at 20; T-Mobile Comments at 22, 31; Comcast/NBC Comments at ii, 32; USCC Comments at 3.

<sup>14</sup> If the FCC is to bless the formation of market power as an expedient to reallocation of spectrum, it must also provide oversight to be sure that the exercise of that market power does not harm competition. In such regard, AT&T concurs with Professor Daniel Vincent, who noted “[t]he fact that both the price of cleared spectrum and the quantity of cleared spectrum will be

spectrum to the deployment of 5G, to competition in the advanced mobile services market itself.<sup>15</sup> Similarly, requiring C-band users to transition to the remaining spectrum segment under a plan devised by a supplier consortium—and only described in generalities to date<sup>16</sup>—carries similar risks for the video, radio and other key industries that rely on C-band services. In this context, recognizing that CBA’s incentives are not entirely aligned with that of their customers (companies such as WarnerMedia purchasing video or data backhaul solutions), or their

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determined through the negotiation process yields the [Transition Facilitator] a great deal of informational and supply-side power,” and that “[t]his feature could put the potential purchasers of spectrum in a weak negotiating position.” *See* Verizon Comments at Attachment: Assessment of Proposed C-band Mechanisms, Professor Daniel R. Vincent at 4. CBA, for its part, has suggested that CBA would lack market power because there is sufficient other mid-band spectrum available that is substitutable for C-band. CBA claims, for example, that the FCC and NTIA have already identified several hundred megahertz of mid-band spectrum for terrestrial mobile operations, noting 3550-3700 MHz, 2.5 GHz, 3100-3550 MHz, and 4.9 GHz bands. CBA Comments at 35-37. None of the bands cited by CBA, however, is a true substitute for C-band spectrum for broad 5G terrestrial deployments. Indeed, many are already licensed, or have significant incumbent users that will not transition out, and others are subject to regulatory schemes that do not permit deployment of broad 5G systems.

<sup>15</sup> CBA’s proposal also would appear to violate the policies behind 47 USC Section 309(j).

<sup>16</sup> Neither CBA’s most recent *ex parte* filing nor its early-filed Reply Comments corrects this fundamental problem. The *ex parte* remains vague and sheds no new material light on any meaningful specifics of its Market-Based Proposal. Similarly, CBA’s early-filed Reply Comments provide neither enforceable commitments nor the level of specificity required to guarantee continuity of service for current FSS C-band users, particularly at the high level of reliability on which programmer users of the C-band depend. Reply Comments of the C-Band Alliance, GN Docket Nos. 18-122 and 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at 17 (Dec. 7, 2018) (“CBA Reply”). Similarly, the Reply Declaration of Jeffrey A. Eisenach, Ph.D. attached to the CBA Reply acknowledges criticisms that the CBA Market-Based Approach “would cause FSS operators’ incentives to diverge from those of other participants (e.g., earth station operators) affected by the transition,” but nowhere addresses how the Market-Based Approach resolves that tension. *See* Reply Declaration of Jeffrey A. Eisenach, Ph.D., GN Docket Nos. 18-122 and 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at 3 (Dec. 7, 2018) (filed with CBA Reply) (“Eisenach Declaration”).

customer's customers (video and audio retail distributors across the country), the Commission should ensure that user-stakeholder interests are protected.<sup>17</sup>

T-Mobile's incentive auction plan strives to maximize the amount of FSS spectrum cleared for flexible use, but fails to acknowledge or accommodate the vital importance of the unique functions the incumbent FSS C-band ecosystem currently supports and must continue to support.<sup>18</sup> Other incentive or overlay auction proposals suffer from the same issue—a failure to adequately represent the interests of the C-band end user community—while also running into problems with the non-exclusive nature of C-band FSS licenses, and the consequent problems with hold-outs and the lack of competition in reverse bidding to “exit” the band by relinquishing license rights. As a final matter, the Broadband Access Coalition (“BAC”) proposal to simply allow point-to-multipoint (“P2MP”) services into a large swath of the C-band would be inimical to terrestrial mobile services and satellite services alike.<sup>19</sup> By constraining how intensively FSS services can make use of the C-band spectrum that will remain allocated for those purposes, the BAC proposal would increase the amount of spectrum that must be retained to support FSS, thereby decreasing the spectrum reallocated for mobile broadband use.<sup>20</sup>

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<sup>17</sup> NCTA Comments at 2, 28-29; AT&T Comments at 7-8; Content Companies Comments at 5; Comcast/NBCUniversal Comments at 26

<sup>18</sup> *See generally*, T-Mobile Comments.

<sup>19</sup> BAC Comments at 22; T-Mobile Comments at 20; Comments of National Public Radio, GN Docket No. 18-122 at 13 (Oct. 29, 2018) (“NPR Comments”); Nokia Comments at 9; Content Companies Comments at 11; NCTA Comments at 2; Comments of GCI Communication Corp., GN Docket No. 18-122, GN Docket No. 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at 21 (Oct. 29, 2018) (“GCI Comments”).

<sup>20</sup> T-Mobile Comments at 20-21; TIA Comments at 8; NCTA Comments at 2; CBA Comments at iii. It also should be noted that P2MP services can be deployed on more than 650 megahertz of unlicensed mid-band spectrum, as well as almost 300 megahertz of licensed, flexible use mid-band spectrum. It also may be deployed in the 150 megahertz of CBRS spectrum, as well as the

Fortunately, with a few conditions to ensure a degree of Commission oversight, AT&T believes that the Commission can rely on market forces to ensure that a substantial portion of the C-band is repurposed rapidly while: (i) avoiding harm to C-Band incumbents and their customers and the many other important industries that depend on the incumbent FSS ecosystem and (ii) fostering competition in spectrum acquisition and in advanced wireless services. In other words, if a consortium of all U.S. C-band satellite providers needs to be created to rapidly repurpose C-band spectrum for 5G, the Commission needs to play a role to ensure that the consortium's market power is used to advance the public good, not solely for private gain. Accordingly, AT&T discusses below a different proposal that, through a private/public partnership, would achieve a reasonable and rapid mechanism for repurposing significant C-band spectrum from FSS use to terrestrial mobile use, while preserving the present and future viability of the C-band's incumbent uses.

Specifically, AT&T suggests:

- CBA, on behalf of its members, would receive from the Commission a conditional grant of partitioned spectrum authorizations for flexible terrestrial use to cover a minimum of 200 MHz (the amount could be higher if the record ultimately indicates demand for more flexible use spectrum and the ability to continue to protect the incumbent FSS ecosystem).<sup>21</sup>
- The first precondition to the conditional grant is that CBA must submit to the FCC for public notice and comment and approval a Transition Plan or Plans for the C-band. Starting at a minimum of 200 MHz and for each additional threshold that the CBA or the FCC would propose to be cleared, the Transition Plans must

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more than 200 megahertz of 3.7 MHz flexible use spectrum that this proceeding seeks to create. Given the scarcity of mid-band spectrum available for flexible, terrestrial 5G services, it makes no sense to give P2MP free authorizations (as they propose) that would diminish the utility of this band for both satellite and terrestrial mobile users, rather than simply allow P2MP uses in a flexible use band.

<sup>21</sup> The CBA has already indicated that 200 MHz can be cleared while supporting C-band demand after the transition. CBA Comments at 1, 5, notes 6, 10 & 25.

demonstrate sufficient C-band capacity after the transition to support current and reasonable projected future demand, as well as an aggregated estimated transition cost.<sup>22</sup> The plan must include a transition schedule, with each user's individual deadline, and with a final proposed deadline for the entire transition.

- The second precondition to the grant is that CBA hold a single private spectrum auction pursuant to an Auction Plan employing competitive bidding rules and procedures approved by the FCC after notice and comment. The rules would be designed to comply with the policies underlying Section 309(j) of the Act.
- The C-band auction would involve the same amount of spectrum in all geographic areas nationwide. Moreover, the C-band auction would be a one-time event, subject only to some future public re-evaluation and determination by the FCC that additional C-band spectrum can/should be reallocated for flexible use.<sup>23</sup>
- Revenues from the auction would have to exceed aggregate transition costs, as reported in the Transition Plan, as well as auction costs, plus a reasonable premium, or the auction would be deemed to have failed rendering the conditional license modifications void. This establishes effectively a minimum aggregate bid for the CBA, but the premium, plus any proceeds above the aggregate revenue clearing level, would go to the CBA for distribution to its members, in a manner described in the Transition Plan.
- The FCC would adopt service and technical rules for the new flexible use band.
- CBA or its agent would administer the transition, including reimbursement of transition costs. The transition schedule would require completion within a predetermined time-frame months from the auction close.
- Flexible use licensees can commence deployment immediately, subject to protecting remaining incumbent FSS from interference during the transition period. No later than the established deadline after auction close, terrestrial use would become primary in the reallocated portion of the C-band.

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<sup>22</sup> Aggregate transition costs would be derived from individual estimates from C-band end users, both those directly contracting with CBA members and the customers of those entities, *i.e.* all earth station operators, in addition to satellite service provider estimates.

<sup>23</sup> The C-band auction should be a one-time event so that CBA does not try to mete out MBX spectrum in ongoing dribs and drabs. In that way, not only would terrestrial mobile standards-setting activities benefit, a one-time auction would best ensure spectrum is transferred to its highest value use without any externalities. In addition, FSS operators and end users would benefit from final resolution of spectrum access in the band.

In summary, AT&T supports a rapid, but measured and thoughtful, transition of C-band FSS spectrum to terrestrial flexible use. Although it may be true, as CBA argues, that an exclusively market-based approach would be the “fastest way to repurpose C-band Downlink spectrum for terrestrial mobile services,”<sup>24</sup> speed should not trump the need to address legitimate concerns of all affected stakeholders. Shortchanging the process by rushing will only result in otherwise needless delays later on. AT&T believes that sound public policy must not be sacrificed solely to make this exceptionally complex reallocation happen quickly, and therefore has proposed a process that provides some necessary regulatory oversight to ensure the Commission’s competition policy and incumbent protection goals are realized. AT&T encourages the FCC to move ahead with this proposal.

**II. AT&T PROPOSES A PROCESS FOR RE-PURPOSING C-BAND FSS SPECTRUM FOR TERRESTRIAL FLEXIBLE USE THAT BALANCES INCENTIVES FOR INCUMBENTS WITH COMPETITION POLICY OBJECTIVES AND MARKET REALITY**

**A. AT&T Proposes that CBA Distributes Repurposed FSS Spectrum, But Subject To FCC Regulations Establishing Key License Characteristics, Procedural Requirements, And Protections For FSS End Users**

AT&T’s proposal blends the best characteristics of the other proposals advanced to date—reliance on market mechanisms and fairness and transparency—while at the same time ensuring a balance of all stakeholder interests. Under AT&T’s proposal, the FCC would conditionally modify the collective license rights of CBA members in a manner permitting CBA to partition those rights to terrestrial carriers in a one-time private sale. The execution of that private transaction, however, would be subject to a number of pre-conditions, including approval by the FCC—following public notice and comment—of both a Transition Plan and an Auction

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<sup>24</sup> CBA Comments at 64.

Plan. In this manner, all parties can leverage the benefits of market-based mechanisms to incent a rapid and large scale transition of spectrum, while maintaining regulatory guardrails that ensure the process does not impair other key Commission policy goals.

The Transition Plan, which would be subject to public notice and comment and FCC approval, would have to comply with FCC minimum requirements and include:

- The amount of spectrum to be repurposed, which would minimally be 200 MHz, but could be larger depending upon what amount the record ultimately shows to be feasible, subject to the other constraints identified below.
- A capacity analysis that demonstrates FSS users will have access to sufficient capacity to adequately support expected demand post-transition (including back-up and occasional use that may be intermittent and more difficult to measure). This analysis, to the extent it relies on potential capital expenditures for additional satellites or upgrades to satellites, or the use of compression technologies and other spectrum efficient strategies, should contain appropriate commitments that such investments will occur.
- A financial plan with well-defined and fully-supported relocation/retrofitting cost estimates to achieve the transition, as well as the administrative costs for the auction itself. This financing plan should be specific to each entity that may incur relocation or retrofitting costs and enable them to understand precisely how the transition will impact their operations. The financial plan should also propose an escrow for all of the auction proceeds to ensure the transition can be fully funded and define a Transition Administrator to administer cost-reimbursements and procedures for resolving relocation/retrofitting disputes.
- A minimum required premium for CBA, and an agreed upon process for distributing that premium, as well as any surplus beyond that, to CBA members.
- An enforceable pre-established clearing schedule beyond which FSS earth stations would lose protection the portion of spectrum cleared for terrestrial flexible use, with interim benchmarks for relocation/retrofitting of existing users, but also for introduction of any upgrades necessary to meet the identified space segment capacity demands.

AT&T's proposal also involves a pre-condition requiring an Auction Plan intended to ensure the distribution of new terrestrial rights is done in a manner that accords with Commission competition policies. The Auction Plan would require CBA to define:



- A private auction design similar to the types of auctions the FCC has previously conducted, presumably an ascending clock auction with a separate assignment round. While modifications would obviously be needed to adapt the processes for use with a private auctioneer, the auction should closely model prior FCC auctions—proven implementations that have been successful in meeting Commission competition goals.
- Auction procedures that do not unreasonably or arbitrarily restrict auction participation, with upfront payment and minimum opening bids that are generally consistent with the magnitudes utilized by the FCC. While AT&T believes the bandplan (40-50 MHz channels with no spectrum aggregation caps) and market areas (Economic Area or “EA” licenses) should be defined by the FCC by rule,<sup>25</sup> the FCC should also prohibit CBA from attempting to impose any eligibility or participation limits,<sup>26</sup> or restrictions on aggregation of licenses, whether aggregation of bandwidth or geographic markets.
- Auction processes that are auditable and transparent. While there may be public policy benefits in limiting the bidder information available during the auction, CBA should be required to provide bidders during the auction with round data approximating what the FCC provides, with complete bidding data sets provided post-auction.

In simple terms, the FCC would permit CBA to partition and sell enhanced license rights, taking the surplus revenue from that sale, as long as the buyers of those rights are determined through an FCC-like, private-led auction process and CBA has designed an FCC-approved comprehensive scheme for the protection of the C-band FSS ecosystem.

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<sup>25</sup> See Section III(A), *infra*.

<sup>26</sup> To that end, the Commission should reject CBA’s vague “plans to create a block of spectrum solely for the use of smaller regional and rural carriers,” CBA Reply at 13. The FCC has never created a carve-out or set-aside for regional and rural carriers; and the FCC did not even consider set-asides as an option in its proceeding on facilitating spectrum-based services in rural areas, preferring instead mechanisms like developing appropriate block sizes and market areas. *See Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services*, 19 FCC Rcd 19078 (2004). Indeed, this proposal illustrates perfectly why CBA should not be charged with making spectrum policy decisions.

Under AT&T’s approach, once the auction ends, CBA would file applications to partition terrestrial flexible use rights covering a portion of the band to the auction high bidders. The “partitioned” rights would be defined by service regulations comparable to other terrestrial mobile services; *i.e.*, the Commission could specify a channel size of 40-50 megahertz and EA<sup>27</sup> market areas for auction with no spectrum aggregation caps and with standard license and renewal terms, and other operational and technical requirements similar to other mid-band spectrum and consistent with current Commission licenses. Other key license characteristics and rights under such flexible use licenses are discussed *infra* in Section III(A).

This proposal combines the best elements of the proposals tendered to date. CBA receives sufficient autonomy to determine relocation parameters and to leverage a reasonable analogue to the speed and incentives of private, market-based transactions. At the same time, minimally intrusive regulatory guardrails ensure that any private transaction does not undermine any of the public policy considerations, or disadvantage any of the varied interest holders, in this proceeding. Importantly, the regulatory oversight does not come with any undue timing penalty—the Transition Plan only asks CBA to commit in public and specific terms representations to which it has already committed in general;<sup>28</sup> the Auction Plan should

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<sup>27</sup> As Ericsson and others have noted, large contiguous blocks (80-100 MHz per operator) would be optimal for 5G in this band. *See* Comments of Ericsson, GN Docket No. 18-122, RM-11791, RM-11778 at 10, 17-18 (Oct. 29, 2018) (“Ericsson Comments”). Moreover, “the 3GPP standards . . . support 40 megahertz or 50 megahertz blocks.” *Id.* at 18. Moreover, EAs will facilitate broad coverage areas, which would avoid relegating deployments to highly localized areas, as will likely be the case with CBRS, where power limits are more appropriate for very small cell deployments.

<sup>28</sup> CBA has repeatedly stated that their goals include commitment to continue serving their customers and that post-transition C-band service prices would not increase, CBA Comments at ii, 27, but CBA has been remarkably vague about how such goals would be accomplished.

presumptively meet FCC approval requirements to the extent it parallels existing, well-known FCC procedures.

**B. AT&T's Proposal Addresses Key C-Band Restructuring Objectives In A Manner Consistent With Commission Policy Goals And Legal Requirements**

AT&T's proposal creates an open and transparent process by subjecting the Transition Plan and Auction Plan to public notice and comment, which will ensure all interested parties have an opportunity to weigh-in and achieve comfort—based on a specific, concrete and tangible proposal beyond the generalities already on the record—that they will not be adversely affected by the transition.<sup>29</sup> Additionally, AT&T's plan ensures competition in license distribution and the reallocation of a sufficient amount of spectrum to support the breadth and depth necessary for 5G deployment. And, the entire plan is built around market-based processes creating incentives to maximize reallocation, while at the same time unburdening the process from administrative procedures that could delay spectrum availability.

- ***AT&T's Proposal Relies on Market Forces to Govern a Reallocation.*** The FCC should require partitioning rights to be distributed based on certain parameters—block sizes of 40-50 megahertz and EA license areas. To ensure current C-band users are unharmed and competition in both the FSS and wireless markets is enhanced, the FCC should ultimately approve the amount of spectrum to be offered in a private transaction based on the evidence in the record and taking into special account whatever exceptional expertise CBA chooses to demonstrate concretely and comprehensively on the record. In this manner, AT&T's public/private partnership provides incentives to CBA to clear the maximum amount of C-band spectrum consistent with preserving C-band end user rights. As long as regulatory guardrails are in place to protect existing C-band services—and CBA is likely to have highly valuable input regarding how to accomplish that—market mechanisms should incent CBA to reallocate as much spectrum as possible. CBA is uniquely situated to evaluate strategies for transitioning users to alternative media, increasing capacity through satellite fleet densification and/or efficiency enhancements, and/or by employing other strategies, and AT&T's proposal creates financial incentives for CBA to do so.

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<sup>29</sup> CBA's Reply does virtually nothing to add much-needed specificity to the record.

- ***AT&T’s Proposal Relies on Proven Auction Designs to Ensure a Distribution of Licenses Consistent with Commission Competition Policy Objectives.*** By relying on proven FCC auction designs,<sup>30</sup> AT&T’s proposal will ensure that the distribution of licenses occurs in a manner that is fully consistent with Commission policy objectives. In other words, when the FCC creates new spectrum allocations or transitions spectrum use in a band, the distribution of new licenses is driven by competition policy—ensuring a multiplicity of licenses and market areas that will allow reasonable opportunities for competitors to secure spectrum.<sup>31</sup> This, in turn, helps ensure a competitive downstream market and highlights the importance of a reallocation/transition mechanism that ensures transparency, fairness, and an opportunity for robust competition for the acquisitions. CBA’s suggestion that it “plans to create a block of spectrum solely for the use of smaller regional and rural carriers” perfectly illustrates why public policy regarding spectrum distribution should not be privatized—the FCC itself does not utilize set-asides for rural and regional carriers for commercial wireless spectrum and prior attempts to define preferential license assignment policies based on applicant stature have been fraught with fraud and years of litigation.<sup>32</sup> For this reason, the AT&T proposal, like T-Mobile’s incentive auction proposal,

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<sup>30</sup> See, e.g., USCC Comments at 5 (stating “in a report to Congress evaluating the efficacy of its auctions program, the Commission noted that its competitive bidding procedures ‘provided significant benefits’ as compared to the mechanisms the Commission previously had used to award spectrum licenses, explaining that its auctions program had ‘demonstrated the ability to award licenses to productive users, to encourage the emergence of innovative firms and technologies, to generate valuable market information, and to raise revenues for the public,’” citing *FCC Report to Congress on Spectrum Auctions*, Report, 13 FCC Rcd 9601, 9604 (1997)); PISC Comments at 31 (stating “[w]ithout full transparency and close FCC supervision, a private sale is far more likely than a FCC-administered auction to distort competition in the mobile market, because it will make spectrum available to potential bidders based only on maximizing the incumbent licensees’ profit rather than the broader public interest”).

<sup>31</sup> See, e.g., *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988 (Nov. 22, 2017); see also *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (Jul. 14, 2016).

<sup>32</sup> CBA Reply at 13. See n.23, supra. See also Labaton, Stephen, “NextWave Pact With F.C.C. Ends Airwaves Dispute, New York Times (Apr. 21, 2004) (noting the end of an 8 year “fierce legal, regulatory and political battle”); available at: <https://www.nytimes.com/2004/04/21/business/nextwave-pact-with-fcc-ends-airwave-dispute.html> (last visited Dec. 10, 2018). Some C-Block related bankruptcy appeals continue to this day, see *GLH Communications, Inc. v. Fed. Comm. Comm’n*, CA No. 18-1176 (D.C. Cir).

relies on mechanisms that have been fine-tuned over many years, are familiar to potential participants, and transfer spectrum to its highest valued use.

- ***AT&T's Proposal Ensures the Protection of FSS End Users and the Completion of the Transition without Harm to End Users.*** Because the Transition Plan will be specific and subject to public notice and comment, only AT&T has defined a process that will be transparent and allow all entities in the C-band ecosystem to address and precisely understand how the transition will affect them. In contrast, a purely private transaction may not serve all end user needs because many of those end users may not even be in privity of contract with FSS operators,<sup>33</sup> and an incentive auction appears to disenfranchise the FSS end user community entirely.<sup>34</sup> Under AT&T's proposal, while some C-band users might elect to migrate to alternative distribution modes, the plan recognizes that there are a number of use cases (such as video programming production and distribution) and locations where there are no comparable alternatives to C-band services, and no C-band user should be forced to alternative transmission systems or bands.<sup>35</sup> AT&T's proposal is the only one that prescribes a concrete process to ensure continued efficient use of the C-band for *all* current users and ensures that users remain in control of their own destiny.<sup>36</sup>
- ***AT&T's Proposal Is Structured To Overcome Practical Issues with the Non-Exclusive, Overlapping Nature of FSS Operator Licenses.*** AT&T's proposal

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<sup>33</sup> FSS users, such as WarnerMedia, buy C-band FSS backhaul services and also have earth station licenses in the band, but do not participate in CBA and will not share in any upside from the reallocation of FSS spectrum. The customers of WarnerMedia hold or operate under C-band earth station licenses, but have interests that are even further attenuated, since they typically don't participate in the contractual decisions between FSS operators and content providers. And, the incentives of CBA members, for better or worse, are to limit transition-related expenditures that might decrease the net profit realized from an auction of a portion of the band. *See also* NCTA Comments at 28 (noting the incentives of the satellite operators may not line-up with the interests of their customers).

<sup>34</sup> In the case of the 600 MHz incentive auction, a relocation fund was created—by Congress through legislation, *see* Spectrum Act, § 6403(d)(1)—that authorized the FCC to use auction funds to compensate non-participating broadcasters and, in subsequent legislation, other licensees and hold them harmless from the relocation and retrofitting expenses from the reallocation. 47 U.S.C. § 1452(d). No such authorization exists for C-band end users.

<sup>35</sup> The choice to continue to use C-band services or to migrate to fiber or Ku-band should be preserved, and the choice must rest with the customers, not CBA members.

<sup>36</sup> As noted in the comments, CBA's proposal lacks detail on the protections to be afforded to existing end users in the C-band, and the CBA Reply does very little to address that significant omission. TIA Comments at 5-6; NCTA Comments at 28; Comcast/NBC Comments at ii.

eliminates pragmatic issues associated with the non-exclusive, overlapping nature of FSS licenses.<sup>37</sup> Because all current licenses effectively confer a right to the whole band, both private sales and incentive auctions raise a “hold-out” problem. CBA’s ability to deliver exclusive terrestrial licenses is dependent upon participation of all of the C-band operators, because any continuing license would presumably permit FSS operation in the terrestrial portion of the band. And participation in an incentive auction is voluntary—and dependent upon competition among surrendering licensees—so that model is difficult to reconcile practically with today’s C-band FSS licenses. Under AT&T’s proposal, the transparent nature of the financial distribution could be structured to minimize the incentive to hold-out, or the Commission could implement a system to “drag along” FSS operators who are seeking to leverage their position for disproportionate gains within the FSS community.<sup>38</sup> The FCC has permitted private party transactions for partitioning in radio services, and the payments to FSS licensees would therefore have a sound legal foundation.<sup>39</sup>

- ***AT&T’s Proposal Offers Clarity and Certainty Needed by Terrestrial Wireless Broadband Operators, Which Will Also Maximize the Value of the Repurposed Spectrum.*** With its one-time spectrum sale through a private auction, AT&T’s proposal is also structured to achieve key certainty and transparency goals that are essential to the mobile broadband industry “valuing” the spectrum appropriately. First, the repurposing of spectrum would be a single market transaction<sup>40</sup> to occur as rapidly as possible, maximizing competition for the spectrum. Second, the repurposing would be subject to a defined date certain for clearing, which provides terrestrial users an absolute, predictable right to operate free of earth

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<sup>37</sup> Space station licensees in the C-band are authorized to use all 500 megahertz, with exclusivity existing only with respect to their orbital slot. *C-band Notice* at ¶10.

<sup>38</sup> For example, the FCC could adopt rules providing that the consummation of a public/private auction would trigger a broader spectrum reallocation (or license modifications) that would constrict the operating band of non-participating FSS licensees—thus “dragging along” any FSS hold-outs—as long as the participating FSS licensees reach some threshold percentage of the industry overall.

<sup>39</sup> See, e.g., *Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Service Licensees*, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 21831 (1996).

<sup>40</sup> FSS licensees should be able to engage in follow-up transactions to convey any licenses not sold at auction, or to convey licenses where a bidder defaults or does not meet the legal requirements for FCC licensing. But the FSS operators should not be permitted to dribble spectrum out in small increments, *seriatim*.

station encumbrances.<sup>41</sup> Third, the plan requires CBA to repurpose a consistent band across the country, which is key for standardization of terrestrial end user devices. Finally, the plan would separate MBX and FSS operations and permit operation by MBX licensees under technical rules appropriate for 5G networks and without continuing coordination obligations to protect FSS users.

In sum, AT&T's proposal addresses both the need for rapid regulatory action and the imperative to get it right the first time. Rapid repurposing of C-band spectrum to allow flexible terrestrial use is essential for deployment of nationwide 5G; it is equally important, however, to strike the right balance of all stakeholder interests. AT&T's proposal balances the need to rapidly relocate spectrum for terrestrial 5G mobile services while addressing legitimate concerns of all impacted stakeholders. Shortchanging the process by rushing will only result in otherwise needless delays later on.

### **III. THERE IS SUBSTANTIAL RECORD AGREEMENT ON SERVICE RULES FOR BOTH THE FSS AND MBX SUBSETS OF THE FUTURE C-BAND**

As long as the FSS and MBX subsets of the C-band can be strictly defined, with inter-service interference protection regulated exclusively through a designated guard band in the FSS segment of the band, AT&T believes there is strong record agreement on how each portion of the band should be regulated going forward. And, AT&T believes there are compelling public policy benefits from avoiding complex dynamic sharing regimes like the CBA's most recent proposal.<sup>42</sup> The chief public benefit of reallocating C-band spectrum for terrestrial flexibility is the potential to use this mid-band spectrum for the deployment of 5G systems. The starting

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<sup>41</sup> After an established transition timeframe, any satellite operations in the repurposed portion of the C-band would enjoy no protection from interference (and would have to protect any terrestrial operations from harmful interference). AT&T notes, however, that the FSS operators should be able to establish priorities within the overall clearing schedule (*e.g.*, urban areas first), as long as after a date-certain, no earth stations remain in the repurposed portion of the C-band.

<sup>42</sup> CBA Reply at Technical Annex.

point, therefore, should be a set of rules for MBX operation that are based on international 5G standards and offer realistic deployment opportunities for carriers. Although protection is obviously needed for FSS operations in the band, that protection should be defined by creating a guard band within the FSS spectrum that does not require terrestrial operators to adjust the nominal operating parameters for 5G, whether dynamically or otherwise.

**A. The Regulations Adopted For The Modified FSS Portion Of The C-Band Should Maximize FSS Licensee Flexibility Given The Smaller Operating Range**

Importantly, there appears to be substantial record agreement that, for the portion of the post-transition C-band that will remain available for FSS, the regulatory scheme should maximize intensive use of the band by FSS licensees and avoid unnecessary regulatory burdens.<sup>43</sup> For example, although accurate data regarding protected operations is necessary to implement a repurposing of spectrum (because that will be a foundation for the cost estimates by CBA), there is no continuing need for enhanced reporting following the transition. Many of the types of data sought in the enhanced reporting process were formulated at a time when potential co-channel sharing was being considered.<sup>44</sup> Under AT&T's approach calling for a consistent band across the country, providing terrestrial users an absolute, predictable right to operate free of earth station encumbrances and coordination obligations, adjacent channel sharing would no longer be relevant, which eliminates the need for requiring onerous reporting on the part of earth station licensees.

For the same reasons and given the assumption that terrestrial rights would be free from earth station encumbrances or coordination obligations, the FCC should lift the freeze on the

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<sup>43</sup> See NCTA Comments at 17.

<sup>44</sup> *C-band Notice*, Appendix B, Section D; NCTA Comments at 33-37.



filing of new or modified C-band earth station and space station applications. As CBA notes, “[a] freeze would arbitrarily limit the ability of the FSS ecosystem to evolve in response to customer demands”; and “[b]y contrast, permitting FSS networks to fully utilize the downlink spectrum that will remain available to them following clearing is the best way to promote efficient use of that spectrum and accommodate the natural development of the businesses that depend on the unique benefits of C-band satellite coverage and reliability.”<sup>45</sup> There should be no regulatory impediments to the most efficient and intensive use of the remaining FSS spectrum.

As long as there are no continuing coordination requirements, the FCC should also permit full band, full arc licensing for the post-transition C-band where FSS operations remain. CBA notes, in fact, that “the removal of full-band, full-arc earth station protections, upon which any such sharing proposal depends, would take away the critical flexibility required by the satellite operators to provide uninterrupted distribution of their product.”<sup>46</sup> Indeed, removal of full-band, full-arc licensing and the consequent loss of flexibility would ultimately mean that FSS use is less efficient and therefore less capable of being compressed into the smallest allocation possible. The direct consequence of a larger FSS allocation is less spectrum being made available for terrestrial services.

In sum, lifting the freeze on new/modified earth station and space station applications and preserving full band, full arc licensing for the post-transition C-band spectrum where FSS operations are allowed to remain would benefit not only the FSS ecosystem in the continuing FSS portion of the C-band, but also the wireless ecosystem in the new flexible use portion of the C-band. That is because those actions would allow more intensive FSS use of its portion, which

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<sup>45</sup> CBA Comments at iii.

<sup>46</sup> *Id.*

would allow the FSS portion to be smaller than it otherwise would be, which in turn would allow the flexible use portion to be larger than it otherwise would be.

**B. Parties Have Coalesced Around Terrestrial Operating Rules That Generally Parallel The Flexible Use Allocations Previously Adopted By The FCC**

There was also substantial record accord on a broad range of technical issues related to how MBX use of the C-band should be regulated post-transition. For example, parties were generally in agreement that a block size of 40-50 MHz was warranted, as long as aggregation permitting operation over larger channels was authorized.<sup>47</sup> Parties also agreed that the blocks should be licensed in an unpaired configuration, much like the Upper Microwave Flexible Use Service (“UMFUS”) licenses in the millimeter wave bands.<sup>48</sup> Commenters further suggested correctly that the use of EA licensing will facilitate broad 5G deployments, in conjunction with partitioning and disaggregation rules used with most other flexible use allocations.<sup>49</sup>

With respect to the operational rules for the band, AT&T agrees with commenters that suggest including the band in Mobile Spectrum Holdings calculations, but with adjustments to add one-third of the total spectrum reallocated (and therefore added to the input spectrum

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<sup>47</sup> *See, e.g.*, BAC Comments at 26; Ericsson Comments at 17-18.

<sup>48</sup> Comments of Motorola Solutions, Inc., GN Docket Nos. 18-122 and 17-183 (Inquiry Terminated as to 3.7-4.2 GHz), RM-11791, RM-11778 at 5 (Oct. 29, 2018) (but asking for 20 MHz blocks); Nokia Comments at 11 (but asking for 20 MHz blocks); Qualcomm Comments at 8 (not suggesting any specific block size); CTIA Comments at 21 (not suggesting any specific block size); BAC Comments at 23; Verizon Comments at 18 (but suggesting 100 MHz blocks); T-Mobile Comments at 24 (but asking for 20 MHz blocks); USCC Comments at 14 (but asking for 20 MHz blocks).

<sup>49</sup> Qualcomm Comments at 4-5; Verizon Comments at 19.

market).<sup>50</sup> Similarly, the record supports 15 year license terms with renewal expectancy,<sup>51</sup> with 10 year renewal terms, based on the potential for initial use to be delayed by the transition.<sup>52</sup> AT&T agrees with CTIA that the appropriate coverage percentage should be 40 percent for the interim benchmark and 75 percent for the final benchmark.<sup>53</sup> Moreover, because spectrum availability will not be immediate in many areas, it would be appropriate to delay the interim benchmark, applying that benchmark in year 8 instead of year 6.<sup>54</sup> Furthermore, the appropriate penalty for failure to meet the interim performance requirement should be reduction in time to meet final requirement by two years (and shortening the license term by 2 years); but full license cancellation for failure to meet the final benchmark is a draconian measure that would harm consumers. Instead, AT&T suggests a “keep what you use” approach to allow service to continue in the portion of their market that is served.<sup>55</sup> As the Commission has suggested, and

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<sup>50</sup> *See, e.g.*, USCC Comments at 19-20.

<sup>51</sup> Nokia Comments at 11; Qualcomm Comments at 8; CTIA Comments at 21; Verizon Comments at 21; USCC Comments at 15-16.

<sup>52</sup> 15-year initial license terms were also adopted, for example, for AWS-1, where the availability of the spectrum was delayed due to an extended timetable for U.S. Government relocation to occur. *See Service Rules for Advanced Wireless Service in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, 25177 (2003) (“AWS-1 R&O”).

<sup>53</sup> CTIA Comments at 22-23.

<sup>54</sup> In AWS-1, for example, where spectrum availability was delayed because of Federal incumbent relocation issues, the FCC declined to adopt an interim requirement and relied solely on the end of term construction requirement, which came after 15 years. AWS-1 R&O, 18 FCC Rcd at 25192.

<sup>55</sup> 47 C.F.R. § 27.14(h). WCS licensees with REAG authorizations in Block C and Block C2 must meet construction requirements for each EA within the REAG. Authorization terminates automatically at the end of the license term for any EA in which the licensee has not met the construction requirements.

the record supports, documentation of build-out requirements and renewal term performance requirements should be consistent with the *WRS Renewal Reform* proceeding.<sup>56</sup>

AT&T also believes there is strong accord on many of the technical rules, and suggests that the FCC must ensure that C-band licenses support realistic deployment of standards-based 5G networks. AT&T agrees, for example, that base station power in non-rural areas of 1640 W EIRP for emission bandwidths less than one megahertz and 1640 W/MHz EIRP for emission bandwidths greater than one megahertz, with double those limits (3280 W EIRP or 3280 W/MHz) in rural areas, would be appropriate.<sup>57</sup> AT&T concurs with Ericsson and CTIA, however, that “[t]he Commission . . . should refrain from imposing a 75 dBm EIRP limit on the total power of a base station, summed over all antenna elements, for fixed and base stations” and instead rely solely on the power density limit of 62 dBm/MHz.<sup>58</sup> AT&T accordingly opposed CBA’s prior proposal to limit the power available to MBX licensees to 66 dBm/100 MHz (*i.e.*, 46 dBm/MHz),<sup>59</sup> because the utility of this band for 5G services will depend upon the ability of MBX licensees to deploy high-capacity systems on a cost-effective basis, which will require higher power operation. AT&T also concurs that the power limit for mobiles and portables should be 1 Watt (30 dBm).<sup>60</sup> AT&T also supports a power flux density limit at the service area boundary of -76 dBm/m<sup>2</sup>/MHz, as used in UMFUS rules, absent an agreement with the adjacent

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<sup>56</sup> *C-band Notice* at ¶152; *see* CTIA Comments at 22.

<sup>57</sup> *C-band Notice* at ¶164; *see* T-Mobile Comments at 31-32; Verizon Comments at 23; CTIA Comments at 23; Nokia Comments at 11-12.

<sup>58</sup> Ericsson Comments at 19; CTIA Comments at 23-24.

<sup>59</sup> CBA Comments at 9.

<sup>60</sup> *C-band Notice* at ¶167; *see* Verizon Comments at 24; Nokia Comments at 12.

licensee otherwise.<sup>61</sup> And AT&T further agrees that flexible antenna height rules that apply to AWS-1 and AWS-3 should generally also apply to MBX spectrum.<sup>62</sup> The out-of-band-emission (“OOBE”) limit should be -13 dBm/MHz at the authorized channel edge as measured at the antenna terminals.<sup>63</sup> Moreover, the -13 dBm/MHz OOBE limit—and other MBX technical parameters—should equally apply both at the lower edge of the band, where the allocation would be adjacent to the Citizen’s Broadband Radio Service (“CBRS”) band, and the upper end of the band, where the allocation would be adjacent to continued FSS uses.

In this regard, CBA’s originally proposed technical limits on MBX operations were derived by starting from a 20 MHz guard band—CBA assumed the guard band size and then reverse-engineered OOBE, power, and other technical limitations on terrestrial use to achieve the necessary degree of FSS protection. Ironically, CBA then averred that it was reallocating 200 MHz of spectrum for terrestrial service even though that figure includes its gerrymandered 20 MHz guard band.<sup>64</sup> But CBA’s analysis is exactly the opposite of how an interference analysis should be performed for this band—CBA should take the technical parameters anticipated for 5G services and determine the appropriate spectrum separation, guard band, or technical parameters needed to protect FSS services, not the other way around. This way the FCC would ensure both that the reallocation of spectrum for 5G serves the intended goal, and the creation of fungible licenses that would simplify any auction.

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<sup>61</sup> 47 C.F.R. § 30.204(a); *see C-band Notice* at ¶¶184-85.

<sup>62</sup> *C-band Notice* at ¶186.

<sup>63</sup> *C-band Notice* at ¶¶168-71; *see CBA Comments* at 9; *T-Mobile Comments* at 32; *Verizon Comments* at 24; *CTIA Comments* at 24; *Qualcomm Comments* at 8.

<sup>64</sup> *See, e.g., CBA Comments* at 5.

This defect in CBA’s technical analysis is not cured in the CBA Reply. CBA has suggested that it concurs with a -3 dBm/MHz OOB recently suggested by Nokia, and then proceeds to argue that protection thresholds should be established around FSS earth station locations—a proposal that would vastly complicate terrestrial use of C-band spectrum for 5G offerings by seemingly requiring some form of Spectrum Access System (“SAS”).<sup>65</sup> Additionally and importantly, such proposal would significantly delay reallocation of the C-band spectrum pending development of such a SAS-like coordination mechanism.

Given the limited information about this proposal currently on the record, AT&T has not had the opportunity to fully evaluate it. Yet, based on the information available, AT&T concludes that this new proposal appears to: (i) deviate from the -13 dBm/MHz OOB emissions that are commonplace in other 5G bands, and (ii) by requiring a SAS coordination mechanism, encumber terrestrial licenses with requirements to coordinate with existing FSS earth stations. Such a coordination regime could potentially require lower power levels of the 5G base stations within 40 km of the existing 17,000+ registered FSS earth stations and any additional C-band earth stations licensed in the future.<sup>66</sup> Under such a cumbersome dynamic sharing framework, growth of the FSS ecosystem via new earth stations and continuation of the full arc, full band regime in the remaining FSS band would require extensive and ongoing reporting from earth station owners and imply additional burden on terrestrial licensees possibly

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<sup>65</sup> CBA Reply, Technical Annex, “5G In-Band and Out-Of-Band Limits and Protection of FSS Earth Stations.” *See also* Letter from Brian Hendricks, Nokia, to Marlene H. Dortch, GN Docket No. 18-122, RM-11791 and RM-11778 (Dated Dec. 3, 2018) (Correcting Technical Proposal, Comments of Nokia).

<sup>66</sup> CBA Reply at 10.

ultimately rendering the proposed transition unsustainable. As such, AT&T urges the Commission to reject the CBA's latest proposal.

Instead, AT&T believes CBA should consider realistic operating parameters for 5G systems, including the power limits and standard OOB attenuation described in 5G standards, and then calculate the appropriate guard band that is required to ensure protection of C-band earth stations. CBA's analysis should also take into consideration the spectrum usage of the standard satellite transponders, and how and where filters should be applied to minimize the guard band while adequately protecting against interference. At the end of the process, CBA should identify a viable MBX allocation and an FSS allocation, with the FSS allocation incorporating any required guard band between MBX and FSS.

#### **IV. THE FCC SHOULD NOT AUTHORIZE POINT-TO-MULTIPOINT SERVICES ON A SHARED BASIS WITH FSS IN THE MODIFIED C-BAND**

The record demonstrates broad and reasoned consensus that authorizing P2MP services on a shared basis in the C-band would be harmful.<sup>67</sup> AT&T previously voiced concerns, which have now been echoed in the record, about authorizing co-primary P2MP services within the portion of the C-band to be retained for FSS use.<sup>68</sup> As AT&T has previously noted, the goal of concentrating FSS usage to the smallest possible subset of the C-band, while preserving optionality and utility for C-band users, compels the conclusion that any post-transition spectrum in the C-band should be optimized specifically for FSS use. As CBA notes, “[t]he BAC Proposal would disrupt critical incumbent satellite operations and effectively prevent satellite operators

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<sup>67</sup> T-Mobile Comments at 20-21; TIA Comments at 8; NCTA Comments at 2; CBA Comments at iii.

<sup>68</sup> *Id.*, see AT&T Comments at 11-15.

from clearing spectrum for terrestrial 5G services.”<sup>69</sup> Any action that impairs the ability of FSS earth stations to use the remaining FSS spectrum has a tangible cost for the transition and the amount of spectrum that can be repurposed. There is no sound policy basis for allowing some P2MP providers to squat in the portion of the C Band used for satellite, imposing the costs of their spectrum use on others, while other P2MP providers<sup>70</sup> are expected to purchase C-band frequencies for that purpose.

As AT&T and others have noted, the terrestrial spectrum cleared in the C-band, while envisioned for 5G use, would be licensed as terrestrial flexible use spectrum. Consequently, the cleared spectrum would—by definition—accommodate fixed use, and those who plan fixed rather than mobile deployments would be eligible to bid for the spectrum at auction (whether the auction is run by the FCC or a private entity). Yet, advocates for P2MP use in the C-band appear unwilling to take advantage of that auction process, or the follow-on secondary market mechanisms that have been so successful in other contexts in creating rural and special use opportunities. Because they do not seek to gain access to C-band spectrum on an economically rational basis, they should not be permitted to affect the market re-balancing of FSS and terrestrial use—as they would if they were permitted to impose themselves as an obstacle to full FSS use of the remaining portion of the C-band.<sup>71</sup>

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<sup>69</sup> CBA Comments at 5.

<sup>70</sup> Many providers of fixed wireless broadband use licensed spectrum for that purpose, in addition to, or in lieu of, unlicensed spectrum. And, as AT&T has previously noted, there is already a gigahertz or more of mid-band spectrum already available for P2MP on an unlicensed and licensed basis, *see supra*, n.13.

<sup>71</sup> *See* T-Mobile Comments at 4 (stating if providers of P2MP services wish to secure use of the band, they can participate in the auction); *See also*, CBA Comments at iii (stating that the removal of full-band, full-arc earth station protections, would take away the critical flexibility required by the satellite operators to provide uninterrupted distribution of their product.).



And in this case, it should be self-evident that deployment of P2MP systems could affect the capacity available to individual earth station operators. If “full-band, full arc” rights were not strictly maintained, the earth station operator—and therefore the C-band ecosystem as a whole—would not be able to rely on a key necessary condition to enable customers to switch satellites vendors, spacecraft and/or transponders. As NCTA notes, “the rules adopted in this proceeding should account for the need of fixed, temporary, and transportable earth station operators for flexibility to quickly repoint their antennas and/or switch frequencies when operational issues arise.”<sup>72</sup> Indeed, the loss of C-band earth station operator’s “full band, full arc” rights in the remaining FSS C-band would stifle the C-band services market and render it unsustainable.

## **V. CONCLUSION**

AT&T commends the Commission for undertaking this complex proceeding, which intersects a wide variety of spectrum users, many with compelling use cases supporting key industries and social needs. As discussed herein, AT&T believes it has advanced a proposal for achieving goals that appear universally supported—the critical need for mid-band spectrum supporting 5G deployment and consequent broader U.S. economic interests, as well as the requirement to protect the viability of FSS uses that support connectivity to rural areas, vital restoration activities, and the transmission of massive amounts of content and programming information—in a unique way that leverages the best of all of the proposals tendered to date. AT&T’s proposal harnesses the speed and incentives of market-based private transactions, but couples that with the proven competitive benefits of auction-based license distribution and the added security of regulatory-backed assurances that FSS users will remain whole. AT&T urges

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<sup>72</sup> NCTA Comments at 24.

the FCC and industry to consider this proposal favorably, permitting a rapid and optimized transfer of spectrum from FSS to terrestrial mobile use in the C-band.

Respectfully submitted,

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