July 1, 2026

FCC FACT SHEET[*]

Upper C-band (3.98–4.2 GHz); Expanding Flexible Use of the 3.7 to 4.2 GHz Band

Report and Order, Order of Proposed Modification, and Order on Reconsideration

GN Docket Nos. 25-59 and 18-122

This Report and Order, Order of Proposed Modification, and Order on Reconsideration (Order) would expand the ecosystem for next-generation wireless services in the 3.7–4.2 GHz band (C-band) by making 160 megahertz of the 3.98–4.2 GHz band (Upper C-band) available for terrestrial wireless flexible use in the contiguous United States via a system of competitive bidding. This action is in furtherance of Congress' direction in the One Big Beautiful Bill Act (OBBB Act) to "complet[e] a system of competitive bidding . . . for not less than 100 megahertz in the band between 3.98 gigahertz and 4.2 gigahertz" by July 4, 2027.

What the Order Would Do:

- The Order would reconfigure 160 megahertz of the Upper C-band in the contiguous United States for terrestrial wireless flexible use in 3.98–4.14 GHz, with a 20-megahertz guard band at 4.14–4.16 GHz. Incumbent Fixed Satellite Service (FSS) licensees would relocate out of 4.0–4.16 GHz.
- The Order would fold the Lower C-band and Upper C-band into a single 3.7 GHz Service from 3.7–4.14 GHz in the contiguous United States for terrestrial wireless flexible use and largely harmonize the licensing, operating, and technical rules across the entire band.
- The Order would promote a successful co-existence environment with adjacent band radio altimeters through the adoption of specific technical measures and a carefully coordinated timeline for the introduction of terrestrial wireless operations in the Upper C-band starting in December 2030 that aligns with forthcoming radio altimeter retrofit requirements to be issued by the Federal Aviation Administration (FAA).
- The Order would adopt competitive bidding procedures for an auction of the 3.98–4.14 GHz portion of the Upper C-band.
- The Order would:
    - Create a transition process to fairly and expeditiously relocate incumbent FSS operations out of the reconfigured portion of the Upper C-band, consistent with the Commission's longstanding *Emerging Technologies* precedent; and
    - Provide rebates to defined classes of eligible aircraft owners and operators to support compliance with the FAA's expected radio altimeter retrofit requirements.
- The Order would resolve pending petitions for reconsideration that various parties filed in response to the 2020 C-band Order.

Detailed financial information and FAA-specific data have been redacted from the public version of this document.

[*] This document is being released as part of a "permit-but-disclose" proceeding. Any presentations or views on the subject expressed to the Commission or its staff, including by email, must be filed in GN Docket Nos. 25-59 and 18-122, which may be accessed via the Electronic Comment Filing System (https://www.fcc.gov/ecfs/). Before filing, participants should familiarize themselves with the Commission's *ex parte* rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission's meeting. *See* 47 CFR § 1.1200 *et seq*.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Upper C-band (3.98–4.2 GHz)	)	GN Docket No. 25-59
	)	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band	)	GN Docket No. 18-122
	)	
	)	

REPORT AND ORDER, ORDER OF PROPOSED MODIFICATION, AND ORDER ON RECONSIDERATION*

Adopted: [] **Released: []**

By the Commission:

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Heading Paragraph #

* This document has been circulated for tentative consideration by the Commission at its July 22, 2026 Open Meeting. The issues referenced in this document and the Commission's ultimate resolution of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chair has determined that, in the interest of promoting the public's ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. The FCC's *ex parte* rules apply and presentations are subject to "permit-but-disclose" *ex parte* rules. *See, e.g.,* 47 C.F.R. §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission's meeting. *See* 47 CFR §§ 1.1200(a), 1.1203.

I. INTRODUCTION

1. Spectrum leadership has brought the United States to the global forefront of technological advancement and wireless innovation, thereby directly translating into material improvements for American consumers, their pocketbooks, and their livelihoods. Thanks to the Commission's aggressive decisions to free up nearly 600 megahertz of mid-band spectrum for commercial use between 2017 and 2020, Americans have enjoyed faster speeds, lower prices, and more choices in advanced wireless services. In the last five years, real prices for unlimited wireless plans declined 35% while real prices for prepaid wireless plans declined more than 51%.[1] The overall real cost of wireless service declined 6.6% in the last year alone.[2] Today, consumers not only pay less, but also get more from their wireless service.

[1] CTIA, More for Less: 2026 Wireless Affordability Tracker, at 4 (Apr. 29, 2026), https://api.ctia.org/wp-content/uploads/2026/04/2026-Wireless-Affordability-Tracker-Update.pdf.

[2] We calculate the real wireless prices between December 2025 and December 2026 by dividing the decline in nominal wireless service prices reported by the Bureau of Labor Statistics (BLS) by the general inflation rate. BLS, *Consumer Price Index for All Urban Consumers (CPI-U)*, https://data.bls.gov/timeseries/CUUR0000SA0?output_view=data (last visited June 29, 2026); BLS, *Consumer Price Index for All Urban Consumers (CPI-U)*, https://data.bls.gov/timeseries/CUUR0000SEED03?output_view=data (last visited June 29, 2026).

Whereas the average speed of mobile broadband ranged from 25–50 Mbps in 2020,[3] consumers regularly experience speeds exceeding 200 Mbps today.[4] Improved and growing networks—powered by mid-band spectrum—have yielded better service and new dimensions of competition. Operations in 3.7–3.98 GHz (Lower C-band) have helped drive the elevated speed and availability of wireless services in the United States. Since the initial Lower C-band deployment just a few years ago, operators have invested billions of dollars to reach hundreds of millions of Americans.[5] With massive capacity gains, mobile broadband operators have disrupted a once-static market for in-home broadband. Between 2021 and 2025, fixed wireless access accounted for 78.7% of the net growth in total fixed connections.[6]

2. Building upon our historic successes will be imperative for the United States to maintain its pole position in connectivity-based technology and innovation. Past gains, however impressive they may be, will not persist without further effort. A pipeline of mid-band spectrum remains critical to keep pace with the escalating demand for mobile capacity, especially as networks evolve towards 6G. Americans consumed a record 132.5 trillion megabytes of wireless data in 2025, and data usage has increased by roughly 35% per year for the past three years.[7] The emergence of artificial intelligence and the boom in machine-to-machine communications will require even greater wireless network capacity growth to support critical drivers of our economy. Since 2020, and the subsequent lapse of our auction authority in 2023, no new bands have been auctioned, leaving the nation ill-prepared to address tomorrow's economic and geopolitical competition. As progress stalled in recent years, our economic and geopolitical competitors opened up more spectrum for mobile broadband. To get America back on track, the Commission is running an aggressive two-pronged strategy to release more mid-band spectrum through a combination of auctions[8] and secondary market transactions.[9]

3. Today we take a major step towards securing American's wireless future and the robust economic benefits that it brings by making available through auction a 160-megahertz portion of the

[3] The range covers the averaged wireless download speed of the four major providers. Ian Fogg, Open Signal, *USA 5G User Experience Report, June 2020* (June 2020), https://insights.opensignal.com/reports/2020/06/usa/mobile-network-experience; Isla McKetta, Ookla, *U.S. Internet Speeds Increase 15.8% on Mobile and 19.6% on Fixed Broadband* (July 8, 2020), https://www.ookla.com/articles/announcing-us-market-report-q2-2020.

[4] Median U.S. wireless download speed was 205.71 Mbps from March to May 2026. Ookla, *Speedtest Global Index*, https://www.speedtest.net/global-index/united-states#mobile (last visited June 29, 2026).

[5] CTIA Comments, GN Docket Nos. 18-122 and 25-59, at 4–5 (rec. May 5, 2026) (CTIA Record Refresh Comments).

[6] Total fixed connections have increased by 11,503,000 from June 2021 to June 2025. Total fixed wireless connections have increased by 9,052,000. Fixed wireless growth therefore accounted for 78.7% = 9.052,000 / 11,503,000 of the total growth in fixed connections over this period. FCC, Internet Access Services: Status as of June 30, 2025, at 28, Figure 26 (May 2026), https://docs.fcc.gov/public/attachments/DOC-421557A1.pdf.

[7] *See* CTIA, 2025 Annual Survey Highlights, at 2 (Sept. 8, 2025), https://api.ctia.org/wp-content/uploads/2025/09/2025-Annual-Survey-Highlights.pdf.

[8] *See Auction of Advanced Wireless Services (AWS-3) Licenses; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 113; Bidding Scheduled to Begin June 2, 2026*, AU Docket No. 25-117, Public Notice, DA 25-1075 (OEA, WTB Dec. 18, 2025).

[9] *See, e.g.*, *Applications of AT&T Mobility II LLC and EchoStar Corporation for Consent to Assign Licenses*, WT Docket No. 25-303, Memorandum Opinion and Order, DA 26-470 (WTB May 12, 2026); *Applications of Spectrum Business Trust 2025-1, Space Exploration Technologies Corp., and EchoStar Corporation for Consent to Assign Spectrum and Earth Station Licenses*, GN Docket No. 25-302, Memorandum Opinion and Order, DA 26-471 (WTB, SB May 12, 2026); *Applications of New Cingular Wireless PCS, LLC and United States Cellular Corporation for Consent to Assign Licenses*, WT Docket No. 25-150, Memorandum Opinion and Order, DA 25-1006 (WTB Dec. 3, 2025); *Applications of T-Mobile US, Inc. and United States Cellular Corporation; For Consent to Transfer Control of Licenses, Authorizations, and Leases*, GN Docket No. 24-286, Memorandum Opinion and Order, 40 FCC Rcd 4776 (WTB, IB 2025).

3.98–4.2 GHz band (Upper C-band) for next-generation wireless services. In doing so, we respond to the surging demand for additional valuable mid-band spectrum for wireless services,[10] and we put America on a path towards massive gains that could result in at least $264 billion in GDP, 1.5 million new jobs, and $388 billion in consumer surplus.[11] We build on the enormous success of the Commission's prior efforts to make available 280 megahertz in the Lower C-band, which served as a springboard to power increases in the capacity of wireless networks, and further expand the ecosystem for advanced wireless services in the 3.7–4.2 GHz band (C-band).

4. Our decision to unify a gigantic swath of 440 megahertz of contiguous 5G-grade mid-band spectrum represents a milestone in fulfilling our statutory imperative in the One Big Beautiful Bill Act (OBBB Act).[12] The OBBB Act restored the Commission's general auction authority, which has been an engine for economic growth over the past three decades and, among other things, directs the Commission to complete a system of competitive bidding not later than two years after the OBBB Act's date of enactment (i.e., by July 4, 2027) for not less than 100 megahertz in the Upper C-band.[13] Today we set course to meet and significantly exceed the statutory floor set by Congress—by making 160 megahertz available on a transition schedule that will permit wireless deployments in the band faster than stakeholders anticipated.

5. The Commission's decision today successfully continues our longstanding objective—central since the start of this proceeding—to deliver for the American people *on time*, *on budget*, and *with certainty to all stakeholders*. We do so despite the enormous operational complexity and demanding deadlines attendant to repurposing the Upper C-band. As with the earlier Lower C-band transition, we set forth a framework that will fairly and expeditiously transition incumbent satellite operations out of the reconfigured portion of the Upper C-band, in keeping with our *Emerging Technologies* precedent.[14] We do so on a shorter timeline than previous Commission auctions involving transitions or relocations.[15] We

[10] *See, e.g.*, AT&T Comments at 1 ("Commenters broadly agree that freeing additional mid-band spectrum for terrestrial wireless services is necessary to help address surging demand for mobile broadband, advance our national security interests, and cement U.S. leadership in wireless."); CTIA Comments at 1 ("With this proceeding, the Commission is advancing the objectives of the Trump Administration and the 119th Congress to provide near-term access to critical mid-band frequencies."); T-Mobile Comments at 1 ("Allocating critical mid-band spectrum for mobile broadband services will position the U.S. to lead in 6G, support projected mobile data traffic in support of Artificial Intelligence ('AI') applications, generate long-term economic growth, and increase competition.").

[11] Dr. Hector Lopez, Julien Martin, National Economic Research Associates, Inc., *The Economic Impact of Each Additional 100 MHz of Mid-band Spectrum for Mobile, Prepared for CTIA* at i (Jan. 22, 2025), https://api.ctia.org/wp-content/uploads/2025/01/The-economic-impact-of-allocating-mid-band-spectrum-to-mobile.pdf.

[12] Pub. L. No. 119-21, § 40002(b)(2), 139 Stat. 72 (2025) (OBBB Act). The law, as passed, does not have an express "short title" but while under debate commonly was known as the One Big Beautiful Bill Act.

[13] *See* OBBB Act, § 40002(b)(2).

[14] The Commission has relied on the *Emerging Technologies* framework since the early 1990s to facilitate the swift transition of spectrum from one use to another. *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, ET Docket No. 92-9, First Report and Order and Third Notice of Proposed Rulemaking, 7 FCC Rcd 6886 (1992) (*Emerging Technologies Order*), clarified by Third Report and Order, 8 FCC Rcd 6589 (1993), modified on reconsideration, Memorandum Report and Order, 9 FCC Rcd 1943 (1994). In the Lower C-band transition, the framework was used to require new terrestrial wireless licensees, as a condition of their licenses, to make "all necessary relocation and accelerated relocation payments before they are allowed to deploy in the spectrum made available for flexible use." *Expanding Flexible Use of the 3.7–4.2 GHz Band*, GN Docket No. 18-122, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343, 2391, 2415–22, paras. 112, 178–92 (2020) (*2020 C-band R&O*).

[15] *See, e.g.*, *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Notice of Proposed Rulemaking, 27 FCC Rcd 12357 (2012); *Incentive Auction Closing and Channel Reassignment Public Notice*, MB Docket No. 16-306, AU Docket No. 14-252, WT Docket No. 12-269, and (continued….)

also take steps to ensure a continued successful coexistence environment between wireless operations throughout the C-band and radio altimeters in the nearby 4.2–4.4 GHz band, including the establishment of retrofit rebates to support the aviation sector in its efforts to upgrade the performance of these critical safety tools. The measures we undertake are in close coordination with complementary ones adopted by the Federal Aviation Administration (FAA) in its parallel rulemaking to update existing radio altimeter standards and greatly enhance their robustness and signal rejection capabilities.[16] Although radio altimeters operate in an adjacent band to the C-band, coordinated timing for these processes has been critical to provide certainty for all interested parties, and to ensure long-term spectral coexistence. Simply put, we accommodate relevant stakeholders equitably and position them to succeed in the future.

6. We recognize and appreciate the critical collaboration with our federal partners—including the FAA and the National Telecommunications and Information Administration (NTIA)—that has made possible commercial wireless access to the Upper C-band, an accomplishment that seemed a distant goal just a few years ago. We also thank the myriad private sector stakeholders for their attentive and proactive engagement in this proceeding. These stakeholders include many with current and prospective in-band equities, including wireless carriers, Upper C-band incumbents (e.g., Fixed Satellite Service (FSS) space and earth station operators, content providers, and other contractual customers that use FSS services), and proponents of alternative distribution technologies. Further, we recognize the concerted efforts that the wireless and aviation industries have made to better understand each other's equities and align on how best to enable new terrestrial wireless operations in the Upper C-band, harmonize them with existing Lower C-band deployments, and promote continued operation of essential aviation safety mechanisms. These collective efforts have positioned us well to meet the deadline established by Congress in the OBBB Act and to bring more and better access to advanced wireless services to the American people by holding an auction to license 160 megahertz of critical mid-band spectrum.

II. BACKGROUND

A. Current Allocation and Use of the Upper C-band and Adjacent Bands

7. *Upper C-band*. The 4.0–4.2 GHz portion of the Upper C-band is currently allocated for non-Federal use on a primary basis for FSS and Fixed Service (FS) links throughout the United States, but FS operations were sunset in the contiguous United States across the entire C-band as part of the Lower C-band transition.[17] Space station operators use 4.0–4.2 GHz nationwide to provide space-to-Earth (i.e., downlink) signals of various bandwidths to licensed transmit-receive, registered receive-only, and unregistered receive-only earth stations nationwide.[18] These signals primarily deliver programming content to television and radio broadcasters throughout the country, as well as telephone, data, and satellite communications services to customers, including federal users, on a contractual basis.[19] FS links only remain in use in 4.0–4.2 GHz outside of the contiguous United States.

(Continued from previous page)
GN Docket No. 12-268; Public Notice; 32 FCC Rcd 2786 (IATF, WTB, MB 2017) (*Broadcast Incentive Auction Closing Public Notice*).

[16] *See generally* Federal Aviation Administration, Requirements for Interference-Tolerant Radio Altimeter Systems, Notice of Proposed Rulemaking, 91 Fed. Reg. 459 (Jan. 7, 2026) (*FAA NPRM*); Federal Aviation Administration, Requirements for Interference-Tolerant Radio Altimeter Systems, Final Rule (July 2026) (*FAA Final Rule*).

[17] 47 CFR § 2.106(c)(182), (c)(457); *id.* § 101.147(a)(8), (14), (25); *id.* § 101.803(d)(1); *see also 2020 C-band R&O*, 35 FCC Rcd at 2371, 2463–66, paras. 56, 321–28. Incumbent point-to-point FS operations in the entire C-band were sunset in the contiguous United States as of Dec. 5, 2023. *See 2020 C-band R&O*, 35 FCC Rcd at 2463–66, paras. 321–28; *see also* 47 CFR § 2.106(c)(182(iii)(B)); *id.* § 101.147(a)(8), (14), (25); *id.* § 101.803(d)(1).

[18] *Upper C-band (3.98 to 4.2 GHz)*, GN Docket No. 25-59, Notice of Inquiry, 40 FCC Rcd 1807, 1808–09, para. 5 (2025) (*Upper C-band NOI*).

[19] *Upper C-band NOI,* 40 FCC Rcd at 1808–09, para. 5; *see also* NTIA Comments at 7–8.

8. The 3.98–4.0 GHz portion of the Upper C-band was reallocated as part of the Lower C-band transition in the contiguous United States, and it is reserved as a guard band to protect adjacent incumbent operations in the remainder of the Upper C-band from potential harmful interference.[20] Outside of the contiguous United States, 3.98–4.0 GHz is allocated for and used by FSS and FS services.

9. *Lower C-band*. The adjacent Lower C-band (3.7–3.98 GHz) is allocated on a primary basis for non-Federal Fixed and Mobile, except aeronautical mobile, services in addition to FS service within the contiguous United States, although as a practical matter only flexible-use terrestrial wireless operations remain, given the earlier sunset of FS uses.[21] Outside of the contiguous United States, the Lower C-band remains allocated for and used by FSS and FS.[22]

10. *4.2–4.4 GHz*. The adjacent 4.2–4.4 GHz band is allocated in the United States on a primary basis for Federal and non-Federal Aeronautical Radionavigation Services for radio altimeters, which are aeronautical safety systems primarily used at altitudes under 2500 feet above ground level to measure aircraft height above terrain and obstacles in all phases of flight.[23] The band is also allocated worldwide on a co-primary basis for wireless avionics intra-communications systems. These systems provide communications over short distances between points on a single aircraft and are not intended to provide air-to-ground communications or communications between two or more aircraft.[24]

B. Procedural History

1. Lower C-band

11. In the *2020 C-band R&O*, the Commission authorized flexible use terrestrial operations in the newly established 3.7 GHz Service in 3.7–3.98 GHz, reserved 3.98–4.0 GHz as a guard band, and migrated incumbent FSS operations into 4.0–4.2 GHz throughout the contiguous United States.[25] To effectuate this transition and clear incumbent operations in the lower portion of the band, the Commission modified the licenses and market access authorizations of incumbent FSS operators, transmit-receive earth station licensees, and FS licensees.[26] The Commission also assigned overlay licenses for the 3.7 GHz Service through an auction,[27] and adopted service rules requiring those licensees to comply with

[20] 3.98–4.0 GHz is allocated in the contiguous United States for non-Federal use on a primary basis for FS and Mobile, except aeronautical mobile, Service, but there are no service rules currently established for that portion of the band. 47 CFR § 2.106(d)(182), (d)(457); *see also 2020 C-band R&O*, 35 FCC Rcd at 2371–72, para. 58.

[21] *2020 C-band R&O*, 35 FCC Rcd at 2370–72, paras. 54, 56–58; *see also* 47 CFR § 2.106(d)(182), (d)(457).

[22] Outside of the contiguous United States, authorized FSS and FS providers were allowed to continue operating throughout the entire 3.7–4.2 GHz band. *2020 C-band R&O*, 35 FCC Rcd at 2371, para. 56.

[23] 47 CFR § 2.106(c)(261) ("The use of the band 4200–4400 MHz by the aeronautical radionavigation service is reserved exclusively for airborne radio altimeters."); *see also id.* § 2.106(b)(438) ("Use of the frequency band 4200–4400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft . . . .").

[24] 47 CFR § 2.106(b)(436); *see also 2020 C-band R&O*, 35 FCC Rcd at 2484, para. 390.

[25] *2020 C-band R&O*, 35 FCC Rcd at 2370–72, paras. 54, 56–58; *see also* 47 CFR § 2.106(d)(182), (d)(457).

[26] *2020 C-band R&O*, 35 FCC Rcd at 2394–408, 2463–66, 2488–89, paras. 124–53, 321–28, 409. The Commission also adopted a freeze on the filing of new or modified earth station applications across the 3.7–4.2 band, which, as discussed *infra*, remains in place. *Temporary Freeze on Applications for New or Modified Fixed Satellite Service Earth Stations and Fixed Microwave Stations in the 3.7–4.2 GHZ Band*, Public Notice, 33 FCC Rcd 3841 (IB, PSHSB, WTB 2018).

[27] *2020 C-band R&O*, 35 FCC Rcd at 2353–90, paras. 22–109; *see also Auction of Flexible-Use Service Licenses in the 3.7–3.98 GHz Band for Next-Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 107; Bidding in Auction 107 Scheduled to Begin December 8, 2020*, AU Docket No. 20-25, Public Notice, 35 FCC Rcd 8404 (2020); *Wireless Telecommunications Bureau Grants Auction 107 Licenses*, Public Notice, 36 FCC Rcd 10972 (WTB 2021); *Wireless*

(continued….)

certain part 27 licensing, operating, and technical rules to encourage efficient use of the spectrum and protect incumbent users both in-band and in adjacent bands.[28]

12. The *2020 C-band R&O* required Lower C-band licensees to reimburse the reasonable relocation costs of eligible FSS space station operators, incumbent FSS earth station operators, and incumbent FS licensees, with a third-party Relocation Payment Clearinghouse (Clearinghouse) overseeing the cost-related aspects of the transition.[29] The practical aspects of the FSS transition were managed by the eligible space station operators that were required to submit public transition plans and work with a Relocation Coordinator to ensure a timely and orderly process.[30] The Commission established an ultimate deadline of December 5, 2025, by which the eligible space station operators were to have completed transitioning FSS operations to the upper portion of the band, and also provided incentives for an accelerated clearing process by allowing eligible space station operators to voluntarily commit to relocate on a two-phased accelerated schedule, with a Phase I deadline of December 5, 2021, and a Phase II deadline of December 5, 2023.[31]

13. All five eligible space station operators elected accelerated relocation,[32] subsequently met the respective Phase I and II deadlines, and became eligible for the designated accelerated relocation payments.[33] As a result, the practical work of the transition was completed in 2023 and, subject to temporary, voluntary commitments on certain technical parameters that support the coexistence environment with adjacent band radio altimeters, Lower C-band licensees are now providing 5G service using these frequencies in markets throughout the contiguous United States.[34] Residual cost-related

(Continued from previous page)
Telecommunications Bureau Grants Additional Auction 107 Licenses, Public Notice, 37 FCC Rcd 4505 (WTB 2022).

[28] *2020 C-band R&O*, 35 FCC Rcd at 2376–90, 2467–86, paras. 71–109, 332–97; *see generally* 47 CFR pt. 27.

[29] *2020 C-band R&O*, 35 FCC Rcd at 2415–52, paras. 178–283; 47 CFR §§ 27.1411–22.

[30] *2020 C-band R&O*, 35 FCC Rcd at 2452–61, paras. 284–317; 47 CFR §§ 27.1411–13. As noted *supra*, incumbent point-to-point FS operations in the entire C-band were sunset in the contiguous United States as of December 5, 2023. *See 2020 C-band R&O*, 35 FCC Rcd at 2463–66, paras. 321–28; *see also* 47 CFR § 2.106(d)(182)(iii)(B)); *id.* § 101.147(a)(8), (14), (25); *id.* § 101.803(d)(1).

[31] *2020 C-band R&O*, 35 FCC Rcd at 2408, 2413–22, paras. 155, 168–192; 47 CFR § 27.1412(a), (b)(1)–(2).

[32] *Wireless Telecommunications Bureau Announces Accelerated Clearing in the 3.7–4.2 GHz Band*, GN Docket No. 18-122, Public Notice, 35 FCC Rcd 5517 (WTB 2020); 47 CFR § 27.1412(c).

[33] *See generally 2020 C-band R&O*, 35 FCC Rcd at 2415–45, paras. 178–249; 47 CFR §§ 27.1412(b), (g); *id.* § 27.1422.

[34] *See, e.g.*, Verizon Comments at 4 ("After gaining access to the full complement of Lower C-band spectrum in 2022, Verizon built it out at a breakneck pace—reaching more than 222 million people in 359 markets by August 2023—and it has continued to expand ever since."); *see also* Letter from Henry G. Hultquist, Vice President-Federal Regulatory, AT&T Services, Inc., et al., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Mar. 31, 2023) (*Voluntary Commitments Ex Parte*) (detailing voluntary commitments jointly filed by AT&T Services, Inc., T-Mobile, UScellular, and Verizon, to which the remaining Lower C-band licensees also subsequently committed). The voluntary commitments sunset on January 1, 2028, unless extended or reduced by mutual agreement.

aspects of the transition were effectively completed by June 2025,[35] and the relocation cost reimbursement program officially ended as of August 21, 2025.[36]

2. 2025 Upper C-band Notice of Inquiry

14. In February 2025, the Commission issued the *Upper C-band NOI*, which outlined the successful lower band transition, the current state of allocations and services across the C-band, and the Commission's interest in exploring the potential for new services in the Upper C-band.[37] The Commission solicited feedback on the appropriate parameters for additional opportunities for robust connectivity in the Upper C-band and asked commenters to identify how much spectrum in the Upper C-band could be repurposed for new uses.[38] The Commission also sought comment on whether and how to amend the U.S. Table of Frequency Allocations to facilitate new opportunities in the band, either by aligning the Upper C-band's allocations with those in the Lower C-band or by taking a different approach.[39] The *Upper C-band NOI* asked questions about the structure and mechanics of a potential transition to new operations in the Upper C-band, including whether to utilize some or all of the aspects of the Lower C-band transition, as a means to manage the practical and financial aspects of any new transition effort.[40] The Commission also sought input on the appropriate service and technical rules for any new operations in the Upper C-band.[41]

15. The *Upper C-band NOI* asked Upper C-band incumbents—including FSS space and earth station operators, content providers, and other contractual customers (including federal users) that rely on FSS services—about how the introduction of new services might affect their current and future operations in the band.[42] The *Upper C-band NOI* also noted the proximity and sensitivity of the radio altimeter operations in 4.2–4.4 GHz, the steps that were taken to protect those operations in the *2020 C-band R&O*, and the technical work that has been undertaken in the years since that action.[43] Recognizing the successful coexistence environment that has been fostered between the 3.7 GHz Service and radio altimeters at 4.2–4.4 GHz, the Commission requested further information regarding advancements in radio altimeter resiliency and sought comment on appropriate technical and service rules that would further promote coexistence in light of potential new operations in the Upper C-band.[44] The *Upper C-band NOI* generated a wide array of responsive comments from incumbent FSS operators, terrestrial wireless licensees in the Lower C-band, other wireless providers, content providers and other FSS customers, and aviation interests with adjacent band equities.

3. The One Big Beautiful Bill Act

16. Subsequent to the record closing in the *Upper C-band NOI* in July 2025, as part of the

[35] On June 4, 2025, the Wireless Telecommunications Bureau (WTB) granted the Clearinghouse's request to wind down and cease operations on or about June 30, 2025. *See Expanding Flexible Use of the 3.7 to 4.2 GHz Band; 3.7–4.2 GHz Band Transition Clearinghouse Dispute Referrals and Appeals*, GN Docket No. 18-122, WT Docket No. 21-333, Order, DA 25-477 (WTB June 4, 2025).

[36] *Wireless Telecommunications Bureau Announces Wind Down of the 3.7–4.2 GHz Relocation Payment Clearinghouse*, GN Docket No. 18-122, WT Docket No. 21-333, Public Notice, DA 25-735 (WTB Aug. 21, 2025).

[37] *Upper C-band NOI,* 40 FCC Rcd at 1807–09, paras. 1–6.

[38] *Upper C-band NOI,* 40 FCC Rcd at 1809–10, para. 8.

[39] *Upper C-band NOI,* 40 FCC Rcd at 1810, para. 9.

[40] *Upper C-band NOI,* 40 FCC Rcd at 1811–12, paras. 13–14.

[41] *Upper C-band NOI,* 40 FCC Rcd at 1812, para. 15.

[42] *Upper C-band NOI,* 40 FCC Rcd at 1810–11, para. 10.

[43] *Upper C-band NOI,* 40 FCC Rcd at 1811, paras. 11–12.

[44] *Upper C-band NOI,* 40 FCC Rcd at 1811, para. 12.

OBBB Act, Congress reinstituted the Commission's general authority to grant licenses through systems of competitive bidding through September 2034 and established a path forward for the eventual repurposing of 800 megahertz to be licensed through competitive bidding, including at least 500 megahertz for full-power commercial licensed use cases.[45] The OBBB Act also specifically directed the Commission to "grant licenses through systems of competitive bidding, before the expiration of the general auction authority[,] . . . for not less than 300 megahertz, including by completing a system of competitive bidding not later than 2 years after the date of enactment of this Act for not less than 100 megahertz in the band between 3.98 gigahertz and 4.2 gigahertz."[46]

4. The Upper C-band Notice of Proposed Rulemaking

17. In November 2025, the Commission issued the *Upper C-band NPRM* to fulfill the directive in the OBBB Act to auction licenses for terrestrial wireless flexible use of not less than 100 megahertz of the Upper C-band.[47] Specifically, the Commission sought comment on options for reconfiguring some portion of the Upper C-band in the contiguous United States, ranging from 180 megahertz (3.98–4.16 GHz) to the congressionally mandated minimum of 100 megahertz (3.98–4.08 GHz) for terrestrial wireless use.[48]

18. In doing so, the Commission noted that the maximum amount of spectrum to be reconfigured will depend on a number of factors, including how much Upper C-band spectrum could be repurposed by incumbent FSS space station operators; the economic benefits and costs of repurposing spectrum for terrestrial wireless; how that value could be affected by the amount of spectrum that is ultimately repurposed; the spectrum clearing timeline; and the capabilities of adjacent band radio altimeters that are expected to undergo upgrades to further enhance their signal rejection capabilities and bolster the existing successful spectral co-existence environment.[49]

19. The *Upper C-band NPRM* indicated that, under any of the reconfiguration options, the baseline proposition is that the Commission would apply the existing Lower C-band rules to any newly authorized terrestrial wireless operations in Upper C-band. Any other rules and requirements, including those relating to the Upper C-band transition process, would be modeled to the greatest extent possible on those that applied to the Lower C-band transition.[50] The Commission recognized, however, that certain modifications may be necessary in light of our experiences with the Lower C-band transition, along with the unique parameters of the Upper C-band and the band reconfiguration option that is ultimately adopted.[51] The Commission sought comment on reconfiguration options generally, and specifically on a range of issues associated with repurposing some portion of the Upper C-band, including: (1) reallocation of the 4.0–4.2 GHz band;[52] (2) competitive bidding procedures for an eventual auction;[53] (3) licensing, operating, and technical rules for any new terrestrial wireless services;[54] (4) the mechanism and process for transitioning incumbent FSS operations, including the use of an independent, third-party

[45] *See* OBBB Act, § 40002(b)–(c); *see also* 47 U.S.C. § 309(j)(11).

[46] OBBB Act, § 40002(b)(2).

[47] *Upper C-band (3.98–4.2 GHz)*, GN Docket No. 25-59, Notice of Proposed Rulemaking, FCC 25-78, 40 FCC Rcd 9462, 9468–69, paras. 14–17 (2025) (*Upper C-band NPRM*).

[48] *Upper C-band NPRM,* 40 FCC Rcd at 9468, para. 15.

[49] *Upper C-band NPRM,* 40 FCC Rcd at 9468–69, 9506–09, paras. 16, 117–23.

[50] *Upper C-band NPRM,* 40 FCC Rcd at 9469, para. 17.

[51] *Upper C-band NPRM,* 40 FCC Rcd at 9469, para. 17.

[52] *Upper C-band NPRM,* 40 FCC Rcd at 9469–71, paras. 18–21.

[53] *Upper C-band NPRM,* 40 FCC Rcd at 9471–73, paras. 22–25.

[54] *Upper C-band NPRM,* 40 FCC Rcd at 9473–90, paras. 26–78.

clearinghouse and a Relocation Coordinator;[55] and (5) promoting co-existence with adjacent band radio altimeters.[56]

20. In response to the *Upper C-band NPRM*, the Commission received 58 comments and 48 reply comments.[57] As issues raised in responsive filings to the *Upper C-band NPRM* also implicated certain pending petitions for reconsideration of the *2020 C-band R&O*, the Wireless Telecommunications Bureau (WTB) subsequently sought to refresh the record for those petitions in light of the related Upper C-band submissions.[58] Seven comments were received in response to the *Record Refresh PN*.

III. REPORT AND ORDER AND ORDER OF PROPOSED MODIFICATION

21. We conclude that auctioning licenses for 160 megahertz of the Upper C-band in 3.98–4.14 GHz for terrestrial wireless use in the contiguous United States best serves our congressional mandate under the OBBB Act, the public interest, and our policy goals. The OBBB Act reflects Congress' intent that we repurpose and clear "not less" than a minimum of 100 megahertz while potentially repurposing and clearing more.[59] The record in this proceeding establishes that: (1) mid-band spectrum can help meet increasing demand for wireless data as well as support U.S. leadership in wireless connectivity;[60] and, (2) as discussed in detail *infra*, incumbent FSS operators can clear more than 100 megahertz of the Upper C-band as part of an appropriately structured transition while maintaining substantially the same service.[61] We agree. Given our continued belief that licensing C-band spectrum for terrestrial flexible use will lead to substantial economic gains,[62] we will auction licenses for 160 megahertz in the Upper C-band, exceeding the OBBB Act's required minimum.

22. To introduce terrestrial wireless use in the Upper C-band, we add a primary non-Federal mobile, except aeronautical mobile, allocation to the 4.0–4.16 GHz band nationwide and remove the band's FSS allocation within the contiguous United States. We also adopt appropriate licensing and technical rules to govern these new terrestrial wireless operations, which will generally align the Lower and Upper C-bands and fold them into a single 3.7 GHz Service. Additionally, we establish a framework to relocate impacted incumbent FSS operations within the contiguous United States and, similar to the *2020 C-band R&O*, rely on the Commission's *Emerging Technologies* framework to require that Upper C-band licensees reimburse eligible FSS incumbents' reasonable and necessary transition costs and incentivize a timely FSS-operator led transition that corresponds with adjacent band radio altimeter

[55] *Upper C-band NPRM,* 40 FCC Rcd at 9490–506, paras. 79–116.

[56] *Upper C-band NPRM,* 40 FCC Rcd at 9506–09, paras. 117–23.

[57] Comments and reply comments in response to the *Upper C-band NPRM* were originally due on January 5, 2026, and February 3, 2026, respectively. *See* Federal Communications Commission, In the Matter of Upper C-band (3.98–4.2 GHz), 90 Fed. Reg. 56076 (Dec. 5, 2025). On December 19, 2025, in response to various requests, WTB granted a fifteen-day extension, which made comments and reply comments due on January 20, 2026, and February 18, 2026, respectively. *Upper C-band (3.98 to 4.2 GHz)*, GN Docket No. 25-59, Order Granting Extension of Time, DA 25-1087 (WTB Dec. 19, 2025).

[58] *Wireless Telecommunications Bureau Refreshes Record on Lower C-band Petitions for Reconsideration*, GN Docket Nos. 18-122 and 25-59, Public Notice, DA 26-341 2026 WL 1078972 (WTB Apr. 10, 2026) (*Record Refresh PN*).

[59] OBBB Act, § 40002(b)(2).

[60] *See* AT&T Comments at 1–2; CTIA Comments at 1–2; DPI Comments at 1–2; Ericsson Comments at 1.

[61] The Commission has historically used this phrase with the understanding that it means the same as the "essentially the same" standard used by the U.S. Court of Appeals for the D.C. Circuit. *See, e.g.*, *PSSI Glob. Servs., L.L.C. v. FCC*, 983 F.3d 1, 8–12 (D.C. Cir. 2020).

[62] *2020 C-band R&O*, 35 FCC Rcd at 2353, para. 20.

retrofits required by FAA.[63] Finally, in furtherance of FAA's radio altimeter retrofit requirement, and to ensure that new Upper C-band licensees may deploy on a predictable timeline, we establish rebates to support defined classes of eligible aircraft owners and operators with retrofitting their existing radio altimeters.

A. Reconfiguration and Allocation of the Upper C-band

23. In the *Upper C-band NPRM*, the Commission sought comment on a range of options for reconfiguring a portion of the Upper C-band for terrestrial wireless services in the contiguous United States pursuant to our statutory remit under the OBBB Act.[64] Those options ranged from the congressionally mandated minimum of 100 megahertz up to 180 megahertz, inclusive of all amounts in between.[65] Some commenters ask specifically that we reconfigure 180 megahertz of spectrum;[66] others encourage us to reconfigure as much as is technologically feasible.[67] The incumbent space station operators that represent the vast majority of existing FSS C-band operations endorse the feasibility of reconfiguring 160 megahertz.[68] Specifically, SES contends that reconfiguring no more than 160 megahertz is in the public interest by simplifying the transition, reducing the number of satellites required and services that need to be relocated, and enabling continued support for some C-band satellite downlink services.[69] Eutelsat similarly notes it can support more fulsome repurposing options and still meet the needs of its customers.[70] Others argue that we should reconfigure substantially less spectrum,[71] in some cases asking that we auction licenses for no more than the statutory minimum of 100 megahertz, in deference to ongoing use of the Upper C-band by FSS customers, particularly for video content distribution.[72]

24. Upon review of the record, we find that reconfiguring 160 megahertz of Upper C-band spectrum for terrestrial wireless uses in 3.98–4.14 GHz, plus a 20-megahertz guard band in 4.14–4.16 GHz, best serves our congressional mandate, the public interest, and our policy goals. Specifically, we

[63] *See generally 2020 C-band R&O*, 35 FCC Rcd at 2391–462, paras. 101–320 (transitioning FSS operations).

[64] *Upper C-band NPRM,* 40 FCC Rcd at 9468–69, paras. 15–17.

[65] *Upper C-band NPRM,* 40 FCC Rcd at 9468, para. 15; *see also* OBBB Act, § 40002(b)(2).

[66] *See* DPI Comments at 11; ITI Comments at 2; Qualcomm Comments at 1; WIA Reply at 1.

[67] *See* AT&T Reply at 4; CTIA Comments at 6–7; Ericsson Comments at 5; Ericsson Reply at 2–4; Ghosh Comments at 1–2; Nokia Comments at 2–3; NTIA Comments at 2–3; Samsung Comments at 1–2; T-Mobile Comments at 3; UBBA Reply at 3–4; Verizon Comments at 4; Verizon Reply at 4; WISPA Comments at 1–2; WISPA Reply at 1–2; *see also* Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 1 (filed May 26, 2026).

[68] SES and Eutelsat collectively are responsible for nearly all existing FSS C-band satellite operations and were together responsible for transitioning more than 99% of non-lump sum electing incumbent earth stations in the Lower C-band transition. Letter from Andrew C. Ely, Principal, RSM US LLP, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, at Exh. G (Aug. 16, 2023) (*Lower C-band Relocation Coordinator Final Report*). The only remaining incumbent FSS space station operator with existing C-band customers is Telesat, which has not participated in this proceeding and thus not raised concerns with any of the Commission's proposed reconfiguration options.

[69] SES Comments at 16–17 (noting that retention of at least 40 megahertz of FSS downlink C-band spectrum would enable SES to provide substantially the same service to its customers with two fewer Ku-band satellites).

[70] Eutelsat Reply at 10–12 (indicating it could repurpose more than 130 megahertz and that, with appropriate structures and incentives in place, it could "deliver a successful and timely transition that meets the Commission's objectives while continuing to meet the needs of its customers").

[71] *See* Lockheed Martin Comments at 3, 17; NPR Comments at 3–4.

[72] *See* ARCTEK Comments at 1; Affiliates Associations Reply at 3–4; NAB Comments at 2–4; NAB Reply at 2–4; PSSI Comments at 10; SBE Comments at 2; Spectrum Alliance Comments at 2.

find that reconfiguring this amount of spectrum strikes an effective balance between Congress' mandate that we auction licenses for no less than 100 megahertz of the Upper C-band[73] with requests that we reserve sufficient C-band spectrum for incumbent FSS operations. As noted above, SES submits that reserving at least 40 megahertz in the Upper C-band for FSS downlink operations will serve the public interest by ensuring that meaningful C-band satellite services can continue to be provided, and Eutelsat believes that it can repurpose a similar amount of spectrum while continuing to meet its customers' needs.[74] We discuss in greater detail *infra* the anticipated impacts that this reconfiguration will have on incumbent FSS C-band services and how, pursuant to our *Emerging Technologies* framework, we establish a transition process that will enable the continued provision of "substantially the same service" whether those services are further repacked within the Upper C-band or, as the largest eligible space station operators have proposed, certain services or links are migrated in whole or in part to other spectrum, such as the Ku-band.[75] Our reconfiguration approach is also sensitive to the importance of coexistence between advanced wireless services in the Upper C-band and nearby radio altimeters operating in the 4.2–4.4 GHz band by providing meaningful spectral separation between those operations.[76] We therefore find that maintaining 60 megahertz of separation between new terrestrial wireless operations and the radio altimeter band will promote the efficient and predictable use of spectrum by supporting coexistence after the radio altimeter retrofit process is complete. This approach—along with other technical measures we adopt herein—will thus enable the rapid deployment of terrestrial wireless services in the Upper C-band.[77] In this context we emphasize that making more mid-band spectrum available for advanced wireless services serves the public interest, all things being equal. Given our statutory mandate under the OBBB Act to make no less than 300 megahertz of non-federal spectrum available through competitive bidding by July 2034, we must be as aggressive as possible to meet that goal in a timely manner.[78] We also recognize the synergistic value of aligning the Lower and Upper C-bands into a larger 3.7 GHz Service, which through channel aggregation will further amplify the value of every megahertz that we repurpose. In sum, we find that making an additional 160 megahertz of Upper C-band spectrum available for terrestrial wireless use in the contiguous United States will satisfy our congressional mandate, uphold the public interest, and meet our policy goals for the efficient use of spectrum.

25. Some commenters ask that we also reconfigure and auction Upper C-band spectrum outside of the contiguous United States.[79] We decline to do so at this time, for reasons similar to those offered by commenting parties that oppose such expansion.[80] Namely, as the Commission observed in the Lower C-band proceeding, "[l]ocations outside of the contiguous United States have a greater need for C-band services, particularly for the provision of services necessary for the protection of life and

[73] OBBB Act, § 40002(b)(2).

[74] SES Comments at 16–17; Eutelsat Reply at 10–12.

[75] The Ku-band, also known as the "conventional" Ku-band, refers to the 11.7–12.2 GHz (space-to-Earth) and 14.0–14.5 GHz (Earth-to-space) bands. The extended Ku-band refers to the 10.95–11.2 GHz (space-to-Earth), 11.45–11.7 GHz (space-to-Earth), and 13.75–14.0 GHz (Earth-to-space) bands. 47 CFR § 25.103.

[76] *See* A4A Comments at 2; ALPA Comments at 4–6; Joint Aviation Comments at 7–9.

[77] *See* Joint Aviation Reply at 9, 11; Thales Comments at 4; SES Comments at 17.

[78] OBBB Act, § 40002(b)(2).

[79] *See* AT&T Comments at 4; Ericsson Reply at 10; Verizon Comments at 6–7.

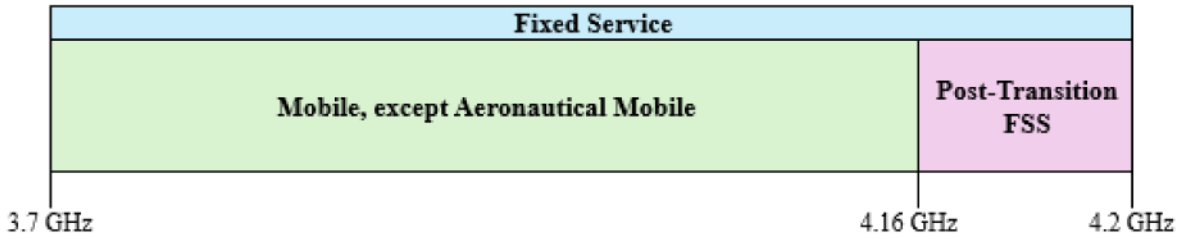
[80] *See* CCA Comments at 6–7; GCI Reply at 2–3; SES Reply at 31–32.

property—including telehealth, E911, and education services."[81] In light of the record, we find that this earlier determination remains true.[82]

26. Due to the complexity of the Upper C-band transition, at this time we defer consideration of proposals to add further advanced satellite operations to the C-band.[83] We find that deferring consideration is prudent, in the public interest, and best serves our objective to swiftly enable a stable ecosystem of advanced wireless services across a wider swath of the C-band.[84]

27. To implement our planned reconfiguration of the Upper C-band, we adopt rules that will enable terrestrial wireless operations in the contiguous United States throughout 3.98–4.14 GHz. Specifically, we add a primary non-Federal mobile, except aeronautical mobile, allocation to the 4.0–4.16 GHz band nationwide and remove the FSS allocation within the contiguous United States.[85] We designate a 20-megahertz guard band at 4.14–4.16 GHz to foster coexistence with FSS operations that are repacked and remain in 4.16–4.2 GHz; this is in lieu of the guard band that previously occupied 3.98–4.0 GHz.[86] The rules that we adopt today preserve the status quo outside of the contiguous United States.[87] Figures 1 and 2 below demonstrate the post-transition allocations throughout the entire C-band in the contiguous United States and the rest of the United States, respectively.[88]

Figure 1: Post-Transition 3.7–4.2 GHz Band Allocations in the Contiguous United States



[81] *2020 C-band R&O,* 35 FCC Rcd at 2371, para. 56; *see also Upper C-band NPRM,* 40 FCC Rcd at 9470, para. 20.

[82] We nonetheless recognize the disparity in mid-band spectrum available for terrestrial wireless services in the contiguous United States and outside of the contiguous United States, and we will continue to assess opportunities to address this gap after the Upper C-band auction.

[83] *See* SES Comments at 30–31 (proposing adding an Inter-Satellite Service (ISS) allocation); SES Reply at 25–26 (proposing ISS); Planet Labs Comments at 1–4 (proposing ISS); SpaceX Comments at 1–4 (proposing adding various services and a Mobile Satellite Service (MSS) allocation); OTI Comments at 18–25 (proposing MSS); OQ Technology Comments at 1–2 (proposing MSS); OQ Technology Reply at 1–4 (proposing MSS).

[84] *See* AT&T Reply at 5–6, 13–14; CTIA Reply at 12; T-Mobile Reply at 6–7; SES Reply at 24–25 (opposing MSS).

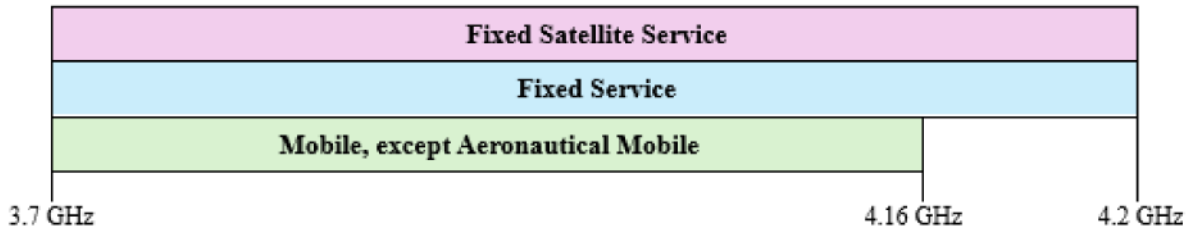
[85] *Upper C-band NPRM,* 40 FCC Rcd at 9469, para. 18.

[86] *See 2020 C-band R&O,* 35 FCC Rcd at 2371–72, para. 58. While 4.14–4.16 GHz is now allocated to mobile services, except aeronautical, for flexible use, we decline to establish service rules in favor of its function as a guard band. We also decline to add a mobile allocation to the 4.16–4.2 GHz band reserved for primary FSS use at this time. *Id.*

[87] *Upper C-band NPRM,* 40 FCC Rcd at 9470, para. 20.

[88] The contiguous United States consists of the contiguous states and the District of Columbia (PEAs 1–41, 43–211, 213–63, 265–97, 299–359, and 361–411). In this context, the rest of the United States consists of Honolulu, Anchorage, Kodiak, Fairbanks, Juneau, Puerto Rico, Guam-Northern Mariana Islands, U.S. Virgin Islands, American Samoa, and the Gulf of Mexico (PEAs 42, 212, 264, 298, 360, and 412–16).

Figure 2: Post-Transition 3.7–4.2 GHz Band Allocations Outside the Contiguous United States



28. As the Commission did in the *2020 C-band R&O*, we also modify footnote NG457A of the U.S. Table of Frequency Allocations, which describes the status of earth stations on vessels (ESVs) in the entire C-band, in order keep it consistent with our new band plan.[89] NG457A will now limit the band where ESVs may be coordinated for up to 180 days to 4.16–4.2 GHz, rather than 4.0–4.2 GHz, because FSS will no longer have primary status below 4.16 GHz. As before, the addition of mobile services to and the deletion of FSS from 4.0–4.16 GHz in the contiguous United States make this update necessary.[90]

B. Auction of Upper C-band Spectrum for Flexible Use

29. Similar to the *2020 C-band R&O*, we will hold an auction of licenses for 160 megahertz of the Upper C-band.[91] Given the OBBB Act's requirement that we complete competitive bidding to grant licenses for spectrum in the Upper C-band by July 4, 2027,[92] we find it appropriate to rely on established Commission auction rules and mechanisms to assign mid-band spectrum to the applicant that values it most highly to encourage the highest-value use of the spectrum, pursuant to statutory criteria that promote competition and other public interest goals.

1. Competitive Bidding Procedures

30. The Communications Act of 1934, as amended (Act) requires that we resolve any mutually exclusive applications for new flexible-use licenses in the Upper C-band through a system of competitive bidding.[93] Given our experience successfully conducting auctions pursuant to the general competitive bidding rules set forth in part 1, subpart Q, of the Commission's rules,[94] the *Upper C-band*

[89] *2020 C-band R&O,* 35 FCC Rcd at 2371, para. 57; *see also* 47 CFR § 2.106(d)(457).

[90] *2020 C-band R&O,* 35 FCC Rcd at 2371, para. 57.

[91] *2020 C-band R&O*, 35 FCC Rcd at 2353, para. 22.

[92] OBBB Act, § 40002(b)(2).

[93] *See* 47 U.S.C. § 309(j)(1); *see also* OBBB Act, § 40002(b)(2) (mandating that the Commission grant licenses in the 3.98–4.2 GHz band through a system of competitive bidding, and to complete competitive bidding for such licenses "not later than 2 years after the date of enactment" of the OBBB Act).

[94] *See, e.g.*, *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Report and Order, 34 FCC Rcd 5446, 5477, para. 87 (2019) (*2.5 GHz Report and Order)* ("These rules have proven successful in numerous spectrum auctions and establish an auction process that promotes 'efficient and intensive use' of this spectrum and the 'development and rapid deployment of new technologies, products, and services for the benefit of the public, including those residing in rural areas,' and that 'recover[s] for the public . . . a portion of the value of the public spectrum resource made available for commercial use.'"); *Enhancing National Security Through the Auction of AWS-3 Spectrum Licenses, et al*., GN Docket Nos. 25-70, 25-71, and 13-185, Report and Order and Second Report and Order, 40 FCC Rcd 5544, 5551, para. 22 (2025) (*2025 AWS-3 Report and Order*) ("The Commission has repeatedly found that application of its part 1 competitive bidding rules . . . to individual services serves the public interest."); *see also 2020 C-band Report and Order*, 35 FCC Rcd at 2372–76, paras. 59–70; *Facilitating Shared Use in the 3100–3550 MHz Band*, WT Docket No. 19-348, Second Report and Order, Order on Reconsideration, and Order of Proposed Modification, 36 FCC Rcd 5987, 6036–40, paras. 138–48 (2021) (*3.45 GHz Band 2d Report and Order*).

NPRM proposed to conduct an auction for licenses in this band in conformity with those rules.[95] The commenters that address this issue generally support the proposal,[96] and we adopt it now.[97] Specifically, we will use the part 1 rules governing competitive bidding design, designated entity preferences, unjust enrichment, application and certification procedures, payment procedures, reporting requirements, and the prohibition on certain communications between auction applicants.[98] These rules provide a framework for the auction process and allow for the subsequent determination of specific auction procedures in the pre-auction process.[99] Should the Commission subsequently modify its part 1 general competitive bidding rules, the modifications would apply here as well.[100]

31. *Designated Entity Provisions*. In the *Upper C-band NPRM*, the Commission sought comment on whether to offer bidding credits to designated entities (DEs)—i.e., small businesses and rural service providers—in any auction of licenses in the Upper C-band.[101] Congress mandated that the Commission consider a number of objectives when adopting competitive bidding rules and ensure that DEs have the opportunity to participate in the provision of spectrum-based services, in part by considering the use of bidding preferences, such as bidding credits.[102] Based on the Commission's prior experience using bidding credits in spectrum license auctions, we find that they are an effective tool to further this statutory objective.[103]

32. We are not persuaded by arguments made by some commenters that the Commission's use of bidding credits in previous spectrum license auctions has been ineffective in achieving this

[95] *See Upper C-band NPRM,* 40 FCC Rcd at 9471, para. 22.

[96] *See* AT&T Comments at 5; CTIA Comments at 31 & n.89; RWA Comments at 2–3; Verizon Reply at 26.

[97] Because the 3.7 GHz Service now encompasses both the Upper and Lower C-bands, section 27.1401 of the Commission's rules concerning competitive bidding for licenses in the 3.7 GHz Service applies to Upper C-band licenses without revision. *See* 47 CFR § 27.1401; *see also infra* Appx. A (modifying the definition and scope of "3.7 GHz Service" in sections 27.4 and 27.5 of the Commission's rules, respectively, to incorporate the 3700–4140 MHz frequencies).

[98] *See* 47 CFR §§ 1.2101–1.2114.

[99] The pre-auction process will be initiated by the release of an auction Comment Public Notice, which will solicit public input on final auction procedures, including specific proposals for auction components, such as minimum opening bids and bidding credit caps. Thereafter, an auction Procedures Public Notice will specify final procedures, including dates, deadlines, and other details of the application and bidding processes. Accordingly, issues involving bidding procedures, like those raised by some commenters regarding bidding credit caps and license assignments, will be addressed at that time. *See, e.g.*, CCA Reply at 3 and WISPA Comments at 1, 5 (both urging the Commission to account for inflation and/or changing market conditions when setting bidding credit caps); Pioneer, FTC, Horry Reply at 3–4 (proposing the Commission adopt a rule or mechanism dictating that if a bidder wins licenses in a PEA where it already owns the C4 block (3960–3980 GHz band), those newly-won licenses would automatically be assigned to that bidder in a manner that makes all of its holdings spectrally adjacent).

[100] *See 2020 C-band Report and Order*, 35 FCC Rcd at 2373, para. 61; *2025 AWS-3 Report and Order*, 40 FCC Rcd at 5555, para. 27; *Upper C-band NPRM,* 40 FCC Rcd at 9471, para. 22.

[101] *Upper C-band NPRM,* 40 FCC Rcd at 9471–72, paras. 23–24. DEs are eligible for auction bidding credits, represented as percentage discounts from their winning bids.

[102] Section 309(j)(3) of the Act requires the Commission to design its competitive bidding systems to promote various objectives and purposes, leaving the Commission the discretion to achieve a balance among them. 47 U.S.C. § 309(j)(3). Section 309(j)(4) of the Act specifies methods to be considered in the regulations for such systems to help achieve these objectives and purposes. *See* 47 U.S.C. § 309(j)(4)(D); 47 CFR § 1.2110.

[103] *See* RWA Comments at 3 ("Providing these bidding credits to eligible rural service providers and small businesses will promote the public interest, satisfy the Commission's statutory requirements, and ensure these already disadvantaged entities have a fair opportunity to obtain this valuable spectrum.").

mandate.[104] Publicly available auction results from the past 10 years demonstrate that the Commission's DE rules offer *bona fide* DEs opportunities to participate in auctions, and therefore provide the opportunity for such entities to provide spectrum-based services. Specifically, in every spectrum license auction conducted since the Commission modified its generally applicable part 1 competitive bidding rules in 2015,[105] the percentage of applicants qualifying to bid that were DEs has approached or exceeded 50%.[106] The same is true for the percentage of winning bidders that were DEs.[107] Notably, in three of those

[104] *See, e.g.*, CCA Reply at 2–3; CRWC Comments at 2–3; RWA Comments at 3; WISPA Reply at 3; Letter from David A. LaFuria, Counsel, Coalition of Rural Wireless Carriers, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 1–2 (filed Apr. 24, 2026).

[105] *See generally Updating Part 1 Competitive Bidding Rules, et al.*, WT Docket Nos. 14-170 and 05-211, GN Docket No. 12-268, and RM-11395, Report and Order, Order on Reconsideration of the First Report and Order, Third Order on Reconsideration of the Second Report and Order; Third Report and Order, 30 FCC Rcd 7493 (2015) (*Updating Part 1 Report and Order*) (modified by Erratum, 30 FCC Rcd 8518 (WTB 2015)).

[106] Different auctions inevitably involve different participants, including DEs, but comparing the performance of those different participants still provides a relative measure of the effectiveness of the applicable DE rules. *See 62 Applicants Qualified to Bid in the Forward Auction (Auction 1002) of the Broadcast Incentive Auction*, AU Docket No. 14-252, Public Notice, 31 FCC Rcd 7628, 7642–45, Attach. A (IATF-WTB 2016) (*Auction 1002 Qualified Bidders Public Notice*) (76% of qualified bidders (47 of 62) claimed eligibility for a DE bidding credit—20 small businesses and 27 rural service providers); *Auction of 28 GHz Upper Microwave Flexible Use Service Licenses for Next Generation Wireless Services*, AU Docket No. 18-85, Public Notice, 33 FCC Rcd 10968, 10981–83, Attach. A (WTB-OEA 2018) (60% of qualified bidders (24 of 40) claimed eligibility for a DE bidding credit—8 small businesses and 16 rural service providers); *Auction of 24 GHz Upper Microwave Flexible Use Service Licenses for Next-Generation Wireless Services*, AU Docket No. 18-85, Public Notice, 34 FCC Rcd 933, 947–48, Attach. A (WTB-OEA 2019) (45% of qualified bidders (17 of 38) claimed eligibility for a DE bidding credit—7 small businesses and 10 rural service providers); *Incentive Auction of Upper Microwave Flexible Use Service Licenses in the Upper 37 GHz, 39 GHz, and 47 GHz Bands for Next-Generation Wireless Services*, AU Docket No. 19-59, Public Notice, 34 FCC Rcd 9626, 9640–41, Attach. A (WTB-OEA 2019) (49% of qualified bidders (17 of 35) claimed eligibility for a DE bidding credit—7 small businesses and 10 rural service providers); *Auction of Priority Access Licenses for the 3550–3650 MHz Band; 271 Applicants Qualified to Bid in Auction 105*, AU Docket No. 19-244, Public Notice, 35 FCC Rcd 6672, 6685–99, Attach. A (WTB-OEA 2020) (78% of qualified bidders (211 of 271) claimed eligibility for a DE bidding credit—136 small businesses and 75 rural service providers); *Auction of Flexible Use Service Licenses in the 3.7–3.98 GHz Band; 57 Applicants Qualified to Bid in Auction 107*, AU Docket No. 20-25, Public Notice, 35 FCC Rcd 12829, 12843–45, Attach. A (WTB-OEA 2020) (70% of qualified bidders (40 of 57) claimed eligibility for a DE bidding credit—18 small businesses and 22 rural service providers); *Auction of Flexible-Use Licenses in the 2.5 GHz Band for Next Generation Wireless Services; 82 Applicants Qualified to Bid in Auction 108*, AU Docket No. 20-429, Public Notice, 37 FCC Rcd 7862, 7876–80, Attach. A (WTB-OEA 2022) (76% of qualified bidders (62 of 82) claimed eligibility for a DE bidding credit—27 small businesses and 35 rural service providers); *Auction of Flexible-Use Service Licenses in the 3.45–3.55 GHz Band for Next-Generation Wireless Services; 33 Applicants Qualified to Bid in Auction 110*, AU Docket No. 21-62, Public Notice, 36 FCC Rcd 13638, 13652–53, Attach. A (WTB-OEA 2021) (67% of qualified bidders (22 of 33) claimed eligibility for a DE bidding credit—8 small businesses and 14 rural service providers). Note that the *Auction 1002 Qualified Bidders Public Notice* identified 48 qualified bidders claiming eligibility for a DE bidding credit, including 28 rural service providers. As explained in the *Broadcast Incentive Auction Closing Public Notice*, it was subsequently determined that one of those qualified bidders was not eligible for a rural service provider bidding credit. *See Broadcast Incentive Auction Closing Public Notice*, 32 FCC Rcd at 2794, para. 17 & n.24.

[107] In each of these auctions, winning bidders that were DEs received a discount of either 15% or 25% on final spectrum license prices. *See Broadcast Incentive Auction Closing Public Notice*, 32 FCC Rcd at Attach. B (76% of winning bidders (38 of 50) claimed eligibility for a DE bidding credit—15 small businesses and 23 rural service providers); *Winning Bidders Announced for Auction of 28 GHz Upper Microwave Flexible Use Service Licenses (Auction 101)*, AU Docket No. 18-85, Public Notice, 34 FCC Rcd 4279, 4283–85, Attach. A (WTB-OEA 2019) (64% of winning bidders (21 of 33) claimed eligibility for a DE bidding credit—6 small businesses and 15 rural service providers); *Auction of 24 GHz Upper Microwave Flexible Use Service Licenses Closes; Winning Bidders Announced for Auction 102*, AU Docket No. 18-85, Public Notice, 34 FCC Rcd 4294, 4306–08, Attach. A (WTB-

(continued….)

auctions, Auctions 1002, 105, and 108, the percentage of DEs among winning bidders approached 80%.[108] These data demonstrate that, consistent with the Commission's statutory mandate, the Commission's use of bidding credits effectively ensures that small businesses and rural service providers are given the opportunity to participate in the provision of spectrum-based services.[109] The opportunity these levels of participation demonstrate is not refuted by the number or price of the licenses won by small businesses and rural service providers. The bidding credit program seeks to ensure that the Commission promotes opportunities for such applicants, not to guarantee auction results for them.

33. *Small Businesses.* In the *Competitive Bidding Second Memorandum Opinion and Order*, the Commission stated that it would define eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold.[110] The Commission later reaffirmed this approach in the *Part 1 Third Report and Order* and again in the *Updating Part 1 Report and Order*.[111]

34. Consistent with the decision to consolidate the Upper and Lower C-bands into a single 3.7 GHz Service, we will apply section 27.1402(a) of the Commission's rules to any auction of Upper C-band licenses and use the same small business size standards and bidding credit percentages adopted for the Lower C-band.[112] As such, for purposes of bidding credit eligibility in an auction of Upper C-band licenses: (1) a small business is defined as an entity that, together with its affiliates, its controlling

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OEA 2019) (52% of winning bidders (15 of 29) claimed eligibility for a DE bidding credit—6 small businesses and 9 rural service providers); *Incentive Auction of Upper Microwave Flexible Use Service Licenses in the Upper 37 GHz, 39 GHz, and 47 GHz Bands for Next-Generation Wireless Services Closes; Winning Bidders Announced for Auction 103*, AU Docket No. 19-59, Public Notice, 35 FCC Rcd 2015, 2032–34, Attach. B (WTB-OEA 2020) (46% of winning bidders (13 of 28) claimed eligibility for a DE bidding credit—5 small businesses and 8 rural service providers); *Auction of Priority Access Licenses in the 3550–3650 MHz Band Closes; Winning Bidders Announced for Auction 105*, AU Docket No. 19-244, Public Notice, 35 FCC Rcd 9287, 9299–317, Attach. A (WTB-OEA 2020) (79% of winning bidders (181 of 228) claimed eligibility for a DE bidding credit—113 small businesses and 68 rural service providers); *Auction of Flexible-Use Service Licenses in the 3.7–3.98 GHz Band Closes; Winning Bidders Announced for Auction 107*, AU Docket No. 20-25, Public Notice, 36 FCC Rcd 4318, 4329–32 (WTB-OEA 2021) (52% of winning bidders (11 of 21) claimed eligibility for a DE bidding credit—2 small businesses and 9 rural service providers); *Auction of Flexible-Use Licenses in the 2.5 GHz Band Closes; Winning Bidders Announced for Auction 108*, AU Docket No. 20-429, Public Notice, 37 FCC Rcd 10117, 10128–33, Attach. A (WTB-OEA 2022) (78% of winning bidders (49 of 63) claimed eligibility for a DE bidding credit—22 small businesses and 27 rural service providers); *Auction of Flexible-Use Service Licenses in the 3.45–3.55 GHz Band Closes; Winning Bidders Announced for Auction 110*, AU Docket No. 21-62, Public Notice, 37 FCC Rcd 308, 320–22, Attach. A (WTB-OEA 2022) (57% of winning bidders (13 of 23) claimed eligibility for a DE bidding credit—6 small businesses and 7 rural service providers).

[108] *See supra* note 107.

[109] *See* 47 U.S.C. § 309(j)(4)(D). Given this success, we also decline to eliminate bidding credits as suggested by ICLE. *See* ICLE Reply at 7 (suggesting the Commission eliminate bidding credits to avoid regulatory value judgments).

[110] *Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, PP Docket No. 93-253, Second Memorandum Opinion and Order, 9 FCC Rcd 7245, 7269, para. 145 (1994) (*Competitive Bidding Second Memorandum Opinion and Order*); *see also* 47 CFR § 1.2110(c)(1).

[111] *Updating Part 1 Report and Order*, 30 FCC Rcd at 7521, para. 65; *Amendment of Part 1 of the Commission's Rules — Competitive Bidding Procedures, et al.*, WT Docket No. 97-82 and ET Docket No. 94-32, Third Report and Order and Second Further Notice of Proposed Rule Making, 13 FCC Rcd 374, 388, para. 18 (1997) (*Part 1 Third Report and Order*); 47 CFR § 1.2110(c)(1).

[112] *See* 47 CFR § 27.1402(a) (rules concerning small business bidding credits); *see also infra* Appx. A (modifying the definition and scope of "3.7 GHz Service" in sections 27.4 and 27.5 of the Commission's rules, respectively, to incorporate the 3700–4140 MHz frequencies).

interests and the affiliates of its controlling interests, has average gross revenues that are not more than $55 million for the preceding five years; and (2) a very small business is defined as an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than $20 million for the preceding five years.[113]

35. Two commenters urge the Commission to adjust the gross revenue thresholds to account for inflation since their adoption in 2015.[114] Those commenters do not provide a data-driven justification for why auctions of licenses for Upper C-band spectrum should be treated differently from other auctions for licenses likely to be used to provide 5G services.[115] Based on the Commission's prior experience with bidding credits in spectrum auctions and the lack of sufficient justification in the record for using any proposed alternative approach, we are not persuaded that we should adopt small business size standards for Upper C-band spectrum that differ from those used in auctions for other 5G-ready services.

36. We will similarly apply the same bidding credit amounts that were used for the Lower C-band, providing qualifying "small businesses" with a bidding credit of 15% and qualifying "very small businesses" with a bidding credit of 25%,[116] consistent with the standardized schedule in part 1 of our rules.[117] This proposal, supported by RWA and WISPA,[118] was modeled on the small business size standards and associated bidding credits that the Commission adopted for the Lower C-band and a range of other services.[119] We believe that this two-tiered approach, which has been successful in the past, will

[113] The Commission sought U.S. Small Business Administration consultation on these proposed size standards, as required by the Small Business Act, 15 U.S.C. § 632(a)(2)(c), and 13 CFR §§ 121.901–903. *See* Letter from Gary D. Michaels, Deputy Chief, Auctions Division, Office of Economics and Analytics, FCC, to Khem R. Sharma, Chief, Office of Size Standards, U.S. Small Business Administration (Nov. 7, 2025). The SBA indicated that the proposed size standards appeared reasonable and that it had no specific comments. *See* Letter from Khem R. Sharma, Chief, Office of Size Standards, U.S. Small Business Administration, to Gary D. Michaels, Deputy Chief, Auctions Division, Office of Economics and Analytics, FCC (Jan. 22, 2026).

[114] WISPA Comments at 4–5; CCA Reply at 3.

[115] *See* WISPA Reply at 5 (providing no data to support its speculative assertion that "the expected capital requirements associated with licenses in this band will very likely be higher than those for other bands."); CCA Reply at 3 (cautioning that "if the Commission relies on outdated credit structures that do not reflect present-day conditions, rural carriers will face even greater difficulty competing for highly valued mid-band spectrum.").

[116] *Upper C-band NPRM,* 40 FCC Rcd at 9471–72, para. 23. Section 1.2110(f)(2)(i) sets out a standardized schedule of bidding credits that includes three size definitions that may be used in specific services: Businesses with average annual gross revenues for the preceding five years not exceeding $4 million would be eligible for a 35% bidding credit, businesses with average annual gross revenues for the preceding five years not exceeding $20 million would be eligible for a 25% bidding credit, and businesses with average annual gross revenues for the preceding five years not exceeding $55 million would be eligible for a 15% bidding credit. 47 CFR § 1.2110(f)(2)(i); *see also Updating Part 1 Report and Order*, 30 FCC Rcd at 7524–25, para. 74.

[117] *See* 47 CFR § 1.2110(f)(2)(i)(B), (C). In the *Updating Part 1 Report and Order*, the Commission adopted a process for establishing a reasonable monetary limit or cap on the amount of bidding credits that an eligible small business or rural service provider may be awarded in any particular auction. *See Updating Part 1 Report and Order*, 30 FCC Rcd at 7541, para. 114 (establishing the parameters to implement a bidding credit cap for future auctions on an auction-by-auction basis). As part of the pre-auction process, the Office of Economics and Analytics and WTB will solicit public input on the appropriate amount of the bidding credit caps and subsequently establish the caps that will apply for that auction, based on an evaluation of the expected capital requirements presented by the particular spectrum being auctioned and the inventory of licenses to be auctioned. *Id.* at 7541, para. 114. Accordingly, comments concerning bidding credit caps will be addressed at that time. *See supra* note 99.

[118] *See* RWA Comments at 3; WISPA Comments at 3–4 (supporting 15%, 25%, and 35% small business bidding credits).

[119] *See, e.g.*, *2025 AWS-3 Report and Order*, 40 FCC Rcd at 5555–58, paras. 28–34; *3.45 GHz Band 2d Report and Order*, 36 FCC Rcd at 6039–40, para. 146; *2020 C-band Report and Order*, 35 FCC Rcd at 2374–76, paras. 65–68; *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, Report and Order and (continued….)

provide small businesses with a simple, consistent, and predictable avenue for facilitating access to capital, thereby increasing participation and competition in an Upper C-band auction. Furthermore, this approach is consistent with our decision to align the Upper and Lower C-bands and consolidate them within a single, cohesive 3.7 GHz Service.

37. Finally, we decline to include the 35% bidding credit from our part 1 standardized schedule of bidding credits for entities with not more than $4 million in average annual gross revenues for the preceding five years.[120] When determining the amount of bidding credits and who should be eligible for them, we take care to avoid "expanding the scope of DE benefits to a level that may incentivize gamesmanship."[121] The Commission's consistent use of the two largest DE business size standards and associated bidding credits outlined in its part 1 rules has facilitated the successful participation of many eligible small businesses in Commission auctions over the last decade, and has provided uniformity and predictability for DEs and other bidders as well.[122] We are not persuaded by the limited record before us that Upper C-band spectrum is different in a way that warrants deviating from the rule frameworks that have governed previous auctions.

38. In all auctions of licenses likely to be used to provide 5G services in a variety of bands since the part 1 schedule of bidding credits was updated in 2015,[123] the Commission has consistently used the small business size standards that we adopt today.[124] The results from these auctions demonstrate that using the two larger size standards to assign bidding credits has provided a real opportunity for bidders claiming eligibility as small businesses to win licenses at auction to provide spectrum-based services.[125] By adopting average annual gross revenue thresholds that are not too high, and thus not overly inclusive, we preserve the effectiveness of DE benefits for the *bona fide* small businesses that are intended to benefit from our DE rules.

39. *Rural Service Providers*. In the *Upper C-band NPRM*, the Commission also sought comment on a proposal to offer a bidding credit for rural service providers.[126] The rural service provider bidding credit awards a 15% bidding credit to those that service predominantly rural areas and that have fewer than 250,000 combined wireless, wireline, broadband and cable subscribers.[127]

40. Consistent with the Commission's findings in the *Updating Part 1 Report and Order* and its approach in the Lower C-band and other bands where spectrum is likely to be used to provide 5G

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Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8099–8100, paras. 249–50 (2016) (adopting small business size standards for auctions of licenses in the Upper Microwave Flexible Use Service).

[120] WISPA Comments at 3–4; *see also* 47 CFR § 1.2110(f)(2)(i)(A).

[121] *Updating Part 1 Report and Order*, 30 FCC Rcd at 7527, para. 80 (declining to adopt increases to the bidding credit percentages).

[122] *See supra* notes 106–07.

[123] *See Updating Part 1 Report and Order*, 30 FCC Rcd at 7529, para. 85 (continuing practice of evaluating the definition of a small business on a service-by-service basis); 47 CFR § 1.2110(f)(1).

[124] That is, the Commission has used the two larger average gross revenue thresholds and associated bidding credits in the part 1 schedule of bidding credits. *See* 47 CFR § 1.2110(f)(2)(i)(B)–(C); *see also* 47 CFR § 27.1301(a), (c)(1) (600 MHz Service); *id*. § 27.1601(a) (3.45 GHz Service); *id.* § 27.1402(a) (3.7 GHz Service); *id.* § 27.1219(a)–(b) (Educational Broadband Service); *id.* § 30.302(a–b) (Upper Microwave Flexible Use Service); *id.* § 96.30(a), (c)(1) (Citizens Broadband Radio Service); *id.* § 27.1006(a)–(b) (1695–1710 MHz, 1755–1780 MHz, and 2155–2180 MHz bands).

[125] *See* 47 U.S.C. § 309(j)(4)(D) (bidding preferences for small businesses used to create opportunities to participate in the provision of spectrum-based services); *see also supra* note 107.

[126] *Upper C-band NPRM,* 40 FCC Rcd at 9472, para. 24.

[127] *Updating Part 1 Report and Order*, 30 FCC Rcd at 7530, para. 88.

services,[128] we adopt our proposal to offer a 15% bidding credit to a rural service provider, as defined in section 1.2110(f)(4)(i) of the Commission's rules and subject to the bidding credit cap defined in section 1.2110(f)(4)(ii) of the Commission's rules.[129] Those commenters that addressed this proposal generally supported extending bidding credits to rural service providers in an auction for licenses in the Upper C-band.[130] Permitting bidders to claim a rural service provider bidding credit in an auction in this band will allow a wide range of service providers to compete more effectively for spectrum licenses in rural areas, and in doing so, will potentially increase the availability of 5G service in rural areas. Moreover, by offering a rural service provider bidding credit in the Upper C-band auction, we ensure that bidders across the entire 3.7 GHz Service are treated consistently, promoting equitable participation opportunities throughout both the Upper and Lower C-bands.[131]

41. Some commenters propose increasing the bidding credit percentage for rural service providers, with one proponent specifically suggesting a 50% bidding credit.[132] Another commenter proposes that instead of relying on bidding credits, the Commission should conduct a "reserve auction" for rural counties.[133] These commenters assert that recent Commission auctions have failed to assign spectrum licenses to rural service providers in a manner that satisfies the Commission's statutory mandate,[134] and they argue that a 15% bidding credit does not provide rural service providers a meaningful opportunity to compete against nationwide wireless carriers with greater financial resources for high value mid-band spectrum.[135]

42. We are not persuaded by these arguments. The Commission consistently has determined that section 309(j) of the Act does not require it to provide entities with generalized economic assistance

[128] *See* 47 CFR § 27.1402(b) (3.7 GHz Service); *see also id*. § 27.1301(b), (c)(2) (600 MHz Service); *id*. § 27.1601(b) (3.45 GHz Service);*id.* § 27.1219(c) (Educational Broadband Service); *id.* § 30.302(c) (Upper Microwave Flexible Use Service); *id.* § 96.30(b), (c)(2) (Citizens Broadband Radio Service); *id.* § 27.1106(c) (1695–1710 MHz, 1755–1780 MHz, and 2155–2180 MHz bands).

[129] *Upper C-band NPRM,* 40 FCC Rcd at 9472, para. 24. The rural service provider bidding credit is available to qualifying providers that have not claimed a small business bidding credit. 47 CFR § 1.2110(f)(4)(i).

[130] *See* CCA Comments at 3–4; Pioneer, FTC, Horry Reply at 2–4; RWA Comments at 3; WISPA Comments at 4. *But see* CRWC Comments at 4 ("Rather than rely on bidding credits, CRWC proposes a spectrum reserve to encourage small rural carriers to participate in the auction.").

[131] *See* 47 CFR § 27.1402(b). Accordingly, section 27.1402(b) will now apply to auctions of licenses in the Upper C-band.

[132] *See* CCA Comments at 3–4; Pioneer, FTC, Horry Reply at 2–4; RWA Comments at 4, 6 (proposing increasing the rural service provider bidding credit to 50%); WISPA Reply at 4.

[133] *See* CRWC Comments at 3–4, 16–20 (proposing a "reserve auction" consisting of 40% of all auctioned spectrum in counties with a population density of 100 persons per square mile or fewer, or counties where a rural service provider currently provides facilities-based services); Letter from David A. LaFuria, Counsel for Coalition of Rural Wireless Carriers, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2, Exh. B at 12–13 (filed Apr. 1, 2026) (*CRWC April 1, 2026 Ex Parte*); *see also* CCA Reply at 5 (urging the Commission to evaluate whether a rural-focused reserve auction would be a more effective mechanism to fulfill its statutory mandate); RWA Reply at 2 & n.7 (supporting a "reserve auction" if the Commission denies RWA's request to increase the rural service provider bidding credit to at least 50%); Letter from Brighid Riordan, Chief Executive Officer, Northeast Communications of Wisconsin, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 et al., at 1 (filed May 8, 2026) (expressing support for CRWC's comments, particularly the need for a spectrum reserve for small rural service providers). *But see* Verizon Reply at 26; CTIA Reply at 50 & n.167.

[134] *See* CCA Reply at 2–3; CRWC Comments at 5–11; RWA Comments at 3–5; RWA Reply at 2; WISPA Reply at 3.

[135] *See* CCA Comments at 4; CCA Reply at 2; RWA Comments at 3, 6; WISPA Reply at 4; *see also* Pioneer, FTC, Horry Reply at 4 (supporting CCA's initial comments regarding rural provider bidding).

or a path to assured success, but rather with the responsibility and the discretion to provide opportunities for small businesses and rural service providers, while preventing the unjust enrichment of ineligible entities.[136] Accordingly, we find that the data provided by some commenters concerning the number of licenses rural service providers won in prior auctions is not indicative of whether the Commission is providing DEs with genuine opportunities to provide spectrum-based services.[137] The statutory goal that requires the Commission to promote economic opportunity and competition by a wide dissemination of licenses cited by some commenters is "subject to a variety of reasonable interpretations,"[138] and must be balanced against a number of competing statutory objectives, including the efficient and intensive use of spectrum.[139] In striking that balance, the Commission must decide how much weight to grant particular policies when several are implicated in a single decision.[140]

43. Following adoption of the rural service provider bidding credit in 2015,[141] the Commission has uniformly offered it in all auctions of spectrum licenses likely to be used to provide 5G services. Significantly, the results from these auctions indicate that the bidding credit helps give rural service providers opportunities to participate in the provision of spectrum-based services.[142] Moreover, the commenters advocating for an increase in the bidding credit percentage for rural service providers fail to demonstrate that the specific circumstances and characteristics of licenses in the Upper C-band warrant

[136] *See Updating Part 1 Report and Order*, 30 FCC Rcd at 7543, para. 119; *Implementation of the Commercial Spectrum Enhancement Act and Modernization of the Commission's Competitive Bidding Rules and Procedures*, WT Docket No. 05-211, Order on Reconsideration of the Second Report and Order, 21 FCC Rcd 6703, 6718, para. 40 (2006); *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, WT Docket No. 00-230, Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking, 19 FCC Rcd 17503, 17538, para. 70 (2004); *see also Council Tree Invs., Inc. v. FCC*, 863 F.3d 237, 242 (3d Cir. 2017) (holding that section 309(j) does not require the Commission to maximize competition against large carriers).

[137] Two commenters point to data regarding the percentage of licenses won by rural service providers as evidence of a shortcoming in the bidding credit program. *See* CRWC Comments at 6–11; *CRWC April 1, 2026 Ex Parte*, Exh. B at 6–7; RWA Comments at 4–5; *see also* CCA Reply at 2; WISPA Reply at 3.

[138] *Melcher v. FCC*, 134 F.3d 1143, 1154 (D.C. Cir. 1998).

[139] *Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, Second Report and Order, 9 FCC Rcd 2348, 2361, para. 74 (1994) (*Competitive Bidding Second Report and Order*) ("[T]he development of a diverse and competitive marketplace is only one of the several goals that the Congress required the Commission to consider in designing systems of competitive bidding. That objective must be balanced with other objectives of the Act, such as § 309(j)(3)(D)'s requirement that we promote efficient and intensive use of the spectrum."), *recon. Competitive Bidding Second Memorandum Opinion and Order*. The Commission's rules presume that the entity that bids the most for a license in an auction is generally the entity that places the highest value on the use of the spectrum, i.e., the entity that is best able to put the spectrum to its most efficient and effective use. *See Morris Communications, Inc., Request for Waiver of Installment Payment Rules and Reinstatement of 900 MHz SMR Licenses*, Memorandum Opinion and Order, 23 FCC Rcd 3179, 3194, para. 34 (2008); *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2350, para. 5 ("In general, competitive bidding is a licensing scheme that should place licenses in the hands of the parties able to use them most efficiently."). Therefore, we are not persuaded by comments suggesting that the Commission should increase the 15% rural service provider bidding credit due to the financial disparity between nationwide providers and rural service providers, nor because nationwide providers may be capable of bidding high enough to offset the bidding credit. *See, e.g.*, CRWC Comments at 11–12; RWA Comments at 6; *see also* ICLE Reply at 2–3 (arguing that the Commission should avoid "auction design choices—such as expanded bidding credits—that substitute regulatory preferences for market-based price discovery.").

[140] *Melcher*, 134 F.3d at 1154 (citing *MobileTel, Inc. v. FCC*, 107 F.3d 888, 895 (D.C. Cir. 1997)).

[141] *See Updating Part 1 Report and Order*, 30 FCC Rcd at 7530, para. 88.

[142] In five of these eight auctions, more than 80% of the rural service providers that qualified to bid were winning bidders. *See supra* notes 106–07.

increasing the 15% bidding credit.[143] Therefore, we are not persuaded by the sparse data in the record that Upper C-band services warrant a larger rural service provider bidding credit.[144]

44. For the same reasons, we similarly decline to conduct CRWC's proposed rural "reserve auction" in lieu of just offering bidding credits.[145] As discussed above, the Commission's experience demonstrates that offering the rural service provider bidding credit is a proven and efficient means of promoting rural participation in spectrum license auctions and enabling genuine competition while maintaining the integrity of the auction process.[146] In contrast, CRWC's proposed "reserve auction" would introduce significant complexity and risk delay in the assignment of valuable mid-band spectrum.[147] Moreover, offering a bidding credit enables rural service providers to compete fairly with all other participants, fostering competition in the auction and ensuring that spectrum is awarded to those who value it most,[148] rather than conferring an exclusive advantage or guaranteed outcome to any class of bidder.[149] Additionally, conducting a rural "reserve auction" would reduce the efficiency of the auction and could lead to fragmented, non-contiguous license areas that would complicate network deployment, increase coordination costs, and may conflict with the Commission's band plan and technical rules for the expanded 3.7 GHz Service.[150] We are not persuaded by the record that conducting a "reserve auction" would benefit the public interest in any way that merits assuming the foregoing associated risks, especially given historical data demonstrating that the bidding credit enables rural service providers to effectively compete for spectrum licenses.[151] Thus, we will apply the part 1 rural service provider bidding credit standard for the auction of licenses of Upper C-band spectrum as proposed in the *Upper C-band NPRM*.[152]

45. *Tribal Licensing Window.* Recognizing our legislative remit under the OBBB Act to assign licenses in the Upper C-band through a system of competitive bidding by July 2027, and mindful of our baseline proposition to mirror the Lower C-band transition to the greatest extent possible, we nonetheless sought comment on the viability of a pre-auction or concurrent Tribal licensing window in

[143] *See Upper C-band NPRM*, 40 FCC Rcd at 9472, para. 24 ("Commenters addressing this proposal should consider what details of licenses in the band may affect whether rural service providers will apply for them. Those advocating for any alternatives should provide data-driven arguments in support of their proposals.").

[144] *See supra* notes 134–35.

[145] *See* CRWC Comments at 4.

[146] *See supra* notes 106–07.

[147] *See* Verizon Reply at 26 (arguing that CRWC's proposal would: (1) "seriously complicate" the Upper C-Band auction and risk delay in meeting the auction's July 2027 statutory deadline; (2) undermine the benefits of harmonization with Lower C-band spectrum; and (3) "generally undercut the FCC's successful market-based spectrum allocation procedures by dramatically and artificially limiting the ability of entities to participate in and acquire spectrum in an auction."); *see also* CTIA Reply at 50 & n.167 (urging the Commission to deny CRWC's proposal).

[148] *See* 47 U.S.C. § 309(j)(3)(D) (mandating the Commission promote, *inter alia*, the "efficient and intensive use of the electromagnetic spectrum" when designing a system of competitive bidding).

[149] In contrast, if a portion of rural spectrum was reserved exclusively for rural service providers, those providers would be the only eligible bidders—eliminating competition and potentially conferring an unfair advantage.

[150] This risk is heightened if, as CRWC suggests, county-level licenses that receive no bids in the initial "reserve auction" round are subsequently returned to the general auction inventory of PEA-based licenses. *See* CRWC Comments at 19.

[151] *See supra* notes 106–07.

[152] *See Upper C-band NPRM,* 40 FCC Rcd at 9472, para. 24.

the *Upper C-band NPRM*.[153] In so doing, we specifically noted key differences between the Upper C-band context and that in the 2.5 GHz band, where an earlier Tribal licensing window was held.[154] For example, in the 2.5 GHz proceeding there was unassigned spectrum available in Alaska and Hawaii, and a pre-existing, mature equipment ecosystem to facilitate Tribal licensee deployments and use of that spectrum in the near term, neither of which exists in the Upper C-band.[155]

46. In response, comments by the Navajo Nation and non-profit groups point to the 2.5 GHz band as a model for how a Tribal licensing window could be conducted concurrently with an auction and suggest that it would minimally affect an Upper C-band auction while at the same time allowing Tribes to deploy quickly.[156] While we remain committed to exploring opportunities that promote connectivity in historically unserved or underserved areas including Tribal lands, we ultimately do not find that a Tribal licensing window is viable in the instant context as it differs from the 2.5 GHz band in several key respects.

47. First, in the 2.5 GHz proceeding there was no statutory mandate requiring the issuance of licenses through a system of competitive bidding, nor was there a set deadline for completing an auction.[157] This flexibility afforded substantial time—specifically, 14 months—to prepare for and fully complete a Tribal licensing window pre-auction in the 2.5 GHz band, which was essential to finalize the scope of inventory available for competitive bidding and identify any potential encumbrances for potential bidders.[158] In contrast, the OBBB Act requires us to issue licenses in the Upper C-band through a competitive bidding process, which a Tribal licensing window would largely not entail.[159] Further, based on the Commission's experience in the 2.5 GHz proceeding, sufficient time does not exist here to enable completion of both a pre-auction Tribal licensing window and a system of competitive bidding by the July 4, 2027, statutory deadline, neither of which can commence until the instant rulemaking process is concluded. We also note that, because available spectrum inventory and potential encumbrances must be clearly established pre-auction to provide bidders with notice, and cannot fluctuate while the auction is underway, a Tribal licensing window that runs concurrently with a system of competitive bidding is not achievable in any context.

48. Another critical distinction between the 2.5 GHz and Upper C-band contexts involves our use here of the *Emerging Technologies* framework to facilitate the transition of incumbent FSS

[153] *Upper C-band NPRM,* 40 FCC Rcd at 9472–73, para. 25 & n.69 ("The Lower C-band transition did not include a Tribal licensing window.").

[154] *See Upper C-band NPRM,* 40 FCC Rcd at 9472–73, para. 25; *see generally 2.5 GHz Report and Order*.

[155] *Upper C-band NPRM,* 40 FCC Rcd at 9472–73, para. 25.

[156] Navajo Nation Comments at 1–3; Navajo Nation Telecommunications Regulatory Commission Comments at 1–7 (NNTRC); Public Knowledge Comments at 2–5; Internet Society and Indigenous Connectivity Institute Reply at 1–6; *see also* Letter from Harold Feld, Senior Vice President, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2–3 (filed May 11, 2026).

[157] *See generally 2.5 GHz Report and Order.*

[158] The *2.5 GHz Report and Order* was adopted in July 2019, and following an extensive Tribal outreach process, the application window in 2.5 GHz ran from February to September 2020. *See 2.5 GHz Report and Order; In the Matter of Transforming the 2.5 GHz Band,* WT Docket No. 18-120, Memorandum Opinion and Order, 35 FCC Rcd 8112 (WTB 2020) (extending the six month application window an additional 30 days).

[159] *See* CTIA Reply at 46–47 (noting that an auction would "ensure that the licenses are awarded consistent with the goals of Section 309(j)(3)"). The only scenario in which competitive bidding could be required in connection with a Tribal licensing window would be to resolve mutually exclusive applications. *See Wireless Telecommunications Bureau Announces Procedures for 2.5 GHz Rural Tribal Priority Window*, GN Docket No. 18-120, Public Notice, 35 FCC Rcd 308, 315, para. 26 (WTB 2020).

operations.[160] This framework is predicated on incoming licensees paying for the reasonable and necessary transition costs of the incumbent services required to clear the relevant spectrum band, a requirement that we imposed in the Lower C-band transition as license conditions on new terrestrial wireless licensees based on each licensee's *pro rata* share of gross winning bids in the underlying auction.[161] Modernization of the 2.5 GHz band did not require a similar clearing or cost allocation—the incumbents retained their existing licenses and the only spectrum available for the rural Tribal licensing window and eventual auction was that which was unassigned at the time.[162] As set forth *infra*, pursuant to the *Emerging Technologies* framework and our prior Lower C-band transition precedent, we are once again requiring new Upper C-band terrestrial wireless licensees to cover their *pro rata* share of in-band transition costs, including on a PEA basis for incumbent earth stations.[163] Were we to also adopt a Tribal licensing window for the Upper C-band, we note that it would present novel and complex questions on how to equitably allocate incumbent transition costs for PEAs where some or all of the service area was licensed to an entity that did not participate in the forthcoming auction. Those issues would be further compounded by the radio altimeter retrofit rebates that we also adopt *infra* in connection with the Upper C-band transition.

49. In addition to facing these challenges, the potential benefits of a Tribal licensing window in the Upper C-band would also differ significantly from, and be more modest than, the 2.5 GHz band. As noted in the *Upper C-band NPRM*, due to the importance of continued FSS satellite operations in Alaska and Hawaii, the exclusion of those areas from our Upper C-band reconfiguration to terrestrial wireless services would mean that unassigned spectrum over Tribal lands in those states would not be part of any Tribal licensing window, as was the case in the 2.5 GHz band. The exclusion of these areas—particularly Alaska, where nearly 50% of federally recognized Tribes are located—would greatly reduce the scope, scale, and number of potential participants in any such opportunity in the Upper C-band. Further, while Public Knowledge suggests that Tribal lands would represent a small amount of the PEAs to be ultimately auctioned, we note that federally recognized Tribes have approximately 326 reservations across 25 states in the contiguous United States, in addition to numerous trust lands, many of which involve checkerboard and other non-contiguous land areas that can vary greatly in size.[164] Excluding those land areas from the PEAs available at auction would create significant operational complications and potential encumbrances for both Tribal licensees and auction winners in terms of coordinating their operations. In states with significant Tribal land areas, such as Oklahoma, it could potentially exclude certain PEAs from the auction in their entirety. In contrast, the 2.5 GHz band was already highly fragmented due to historic licensing policies and incumbencies, making a pre-auction Tribal licensing window less impactful for the overlay licenses available in Auction 108 which were already significantly encumbered.[165]

50. We similarly recognize that an important consideration in favor of a Tribal licensing window in the 2.5 GHz band was the existence of a pre-existing, mature equipment ecosystem that eased the cost and difficulty of Tribal licensee deployments and enabled their use of the spectrum in the near

[160] *See infra* Section III.C.

[161] *2020 C-band R&O*, 35 FCC Rcd at 2415–22, 2445–46, paras. 178–92, 250–54; 47 CFR §§ 27.1418, 27.1420.

[162] *2.5 GHz Report and Order*, 34 FCC Rcd at 5459, 5463, 5472, paras. 36, 46, 75.

[163] *See infra* Section III.C.4.

[164] *See* United States Census Bureau, My Tribal Area, www.census.gov/tribal/ (last visited June 29, 2026).

[165] *Auction of Flexible-Use Licenses in the 2.5 GHz Band for Next-Generation Wireless Services*, AU Docket No. 20-429, Public Notice, 37 FCC Rcd 4370, 4380, para. 19 (2022) ("In addition to the typical due diligence considerations that we encourage of bidders in all auctions, we call particular attention in Auction 108 to potential encumbrances due to existing licenses and pending applications. We note in particular that there will be a substantial number of licenses in the inventory where the amount of unassigned area or unassigned spectrum is very small.").

term.[166] That type of equipment ecosystem does not exist in the Upper C-band, and given the transition of incumbent FSS services and adjacent band radio altimeter retrofits, all terrestrial wireless deployments in the Upper C-band will be subject to a meaningful transition period post-auction before any service can commence. Once commercial wireless deployments start, additional time would be needed for the equipment ecosystem to sufficiently mature for use of the spectrum by Tribal licensees to become feasible and cost effective, resulting in a substantial delay before any potential benefits from a Tribal licensing window could be realized.

51. In sum, while the 2.5 GHz band Tribal licensing window reflected a novel approach to further expand Tribal access to licensed wireless spectrum,[167] it was largely predicated on the unique circumstances present in that band at the time. The same confluence of circumstances does not exist in the Upper C-band, and is unlikely to be replicated in future candidate bands for auction which tend to have significant Federal and non-Federal incumbencies that must be addressed.[168] In light of these distinguishing factors, as well as the statutory deadline and licensing requirements in the OBBB Act, we thus decline to adopt a Tribal licensing window in the Upper C-band. We nonetheless remain committed to exploring options and alternatives for increasing connectivity to Tribal and other unserved or underserved lands.

2. Licensing and Operating Rules

52. As proposed in the *Upper C-band NPRM*, we adopt licensing and operating rules that largely align new licenses in the Upper C-band with existing ones in the Lower C-band, which are already governed by part 27 of the Commission's rules.[169] We find that this approach will harmonize terrestrial wireless operations across the entire C-band to create a single 3.7 GHz Service and help to facilitate rapid deployment of advanced wireless services nationwide. Commenters generally support this approach.[170] As discussed *infra*, we generally extend rules that are applicable to part 27 services to the Upper C-band, including those relating to the assignment of licenses by competitive bidding, flexible use, regulatory status, foreign ownership reporting, compliance with construction notification requirements, renewal criteria, permanent discontinuance of operations, partitioning and disaggregation, and spectrum leasing.[171] We likewise generally extend service-specific rules that already apply to terrestrial wireless operations in the Lower C-band, including eligibility, license term, and other licensing and operating rules, to the Upper C-band.[172] With respect to performance requirements, we adopt a more forward-leaning approach in keeping with the accelerated timelines for all stakeholders involved in the Upper C-band transition.

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[166] *Upper C-band NPRM,* 40 FCC Rcd at 9472–73, para. 25; *2.5 GHz Report and Order*, 34 FCC Rcd at 5486, para. 108.

[167] FCC staff research reflects that 509 of the 574 or 88.6% of federally recognized Tribes currently hold more than 2,000 FCC wireless spectrum licenses across 35 different services, either directly by the Tribe or through Tribally owned and controlled entities.

[168] *See* OBBB Act, § 40002(f)(1) (requiring NTIA conduct spectrum analyses of the 2.7–2.9 GHz, 4.4–4.9 GHz, and 7.25–7.4 GHz bands).

[169] *Upper C-band NPRM,* 40 FCC Rcd at 9473, para. 26.

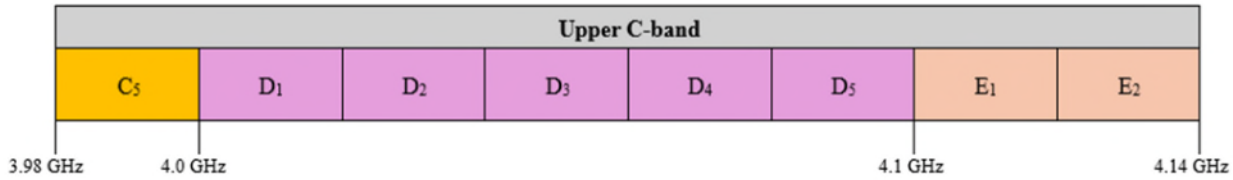
[170] *See* AT&T Reply at 10; CTIA Comments at 4, 30; CTIA Reply at 39–44; Ericsson Comments at 2; ICLE Reply at 2; Verizon Comments at 22; Verizon Reply at 21–25; WIA Reply at 3–4; Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2 (filed Apr. 30, 2026).

[171] 47 U.S.C. §§ 303(y), 309(j), 310; 47 CFR §§ 1.949, 1.950, 1.953, 1.2101–1.2114, 1.9001 *et seq*., 27.2, 27.10, 27.12, 27.14(k).

[172] 47 CFR §§ 1.949, 27.12, 27.13, 27.14; *Upper C-band NPRM,* 40 FCC Rcd at 9474, para. 28.

a. Band Plan

53. *Block Size.* Consistent with our proposal in the *Upper C-band NPRM*, we adopt a block size of 20 megahertz.[173] The record reflects broad support for 20-megahertz blocks.[174] In particular, commenters note that a block size of 20 megahertz will match the Lower C-band's block size,[175] thereby enhancing licensees' flexibility to tailor deployments across the entire C-band and supporting the broader equipment ecosystem.[176] We agree and therefore decline to adopt a mix of block sizes, as some commenters propose.[177] Accordingly, we will license eight 20-megahertz blocks—for a total of 160 megahertz—in 3.98–4.14 GHz based on the following channel plan:



54. *Spectrum Block Configuration.* We adopt our proposal for an unpaired spectrum block configuration based on record support as it will ensure continuity, spectral efficiency, and maximum flexibility for licensees across the entire C-band.[178] It also is technology-neutral, enabling Time-Division Duplex (TDD) operations that have become increasingly prevalent in deployments of digital broadband networks.[179] We therefore will auction licenses for the Upper C-band spectrum as unpaired 20-megahertz blocks, consistent with the band plan *supra*.

55. *Use of Geographic Licensing.* As we have previously stated, geographic-area licensing provides flexibility to licensees, promotes efficient spectrum use, and facilitates the rapid assignment of licenses, utilizing competitive bidding when necessary.[180] Many commenters expressly support the use of exclusive, geographic-area licensing in the instant context.[181] Others broadly support harmonizing the licensing approach across the entire C-band, which by extension would include the use of exclusive, geographic-area licensing.[182] We therefore will auction licenses for the Upper C-band spectrum using exclusive, geographic-area licenses.

56. *Geographic License Area.* Consistent with our proposal in the *Upper C-band NPRM*, we adopt Partial Economic Areas (PEAs) as the geographic license area for new Upper C-band licenses and will issue such licenses in the contiguous United States and District of Columbia.[183] Many commenters

[173] *Upper C-band NPRM*, 40 FCC Rcd at 9474, para. 29.

[174] AT&T Reply at 10; Cisco Comments at 10; CTIA Comments at 30; Ericsson Reply at 10; Nokia Comments at 4; Samsung Comments at 3; T-Mobile Comments at 3–4; Verizon Comments at 21; Verizon Reply at 22–23.

[175] Cisco Comments at 10; CTIA Comments at 30; Nokia Comments at 4; Samsung Comments at 3.

[176] *See* Cisco Comments at 10–11; CTIA Comments at 30; CTIA Reply at 39; Ericsson Reply at 9–10; Nokia Comments at 4.

[177] *See* OTI Comments at 15–16; WISPA Comments at 5–6.

[178] *Upper C-band NPRM*, 40 FCC Rcd at 9475, para. 31; *see also* AT&T Reply at 10; CTIA Comments at 31; Ericsson Reply at 9; T-Mobile Comments at 4; Verizon Comments at 21.

[179] *2020 C-band R&O*, 35 FCC Rcd at 2379, para. 75; *see also* Verizon Comments at 21.

[180] *Upper C-band NPRM*, 40 FCC Rcd at 9475, para. 32; *2020 C-band R&O*, 35 FCC Rcd at 2379, para. 76.

[181] AT&T Reply at 10; CTIA Comments at 30; T-Mobile Comments at 4; Verizon Comments at 21–22.

[182] *See generally* Ericsson Reply at 9; Nokia Comments at 4; Samsung Comments at 3.

[183] *Upper C-band NPRM*, 40 FCC Rcd at 9475–76, para. 33.

agree that licensing by PEA will increase spectrum aggregation opportunities for advanced wireless services through a harmonized approach across the entire C-band.[184] We agree, and decline to adopt smaller geographic license areas for the Upper C-band (or portions thereof) suggested by some commenters.[185] Instead, consistent with the *2020 C-band R&O*, we continue to find that PEAs appropriately balance licensees' ability to provide service on a smaller, more localized basis or on a much larger geographic scale.[186] The record supports this finding.[187] Finally, while some commenters support licensing the Upper C-band in areas outside of the contiguous United States and District of Columbia,[188] for the reasons explained *supra*, we decline to issue licenses outside of the contiguous United States.[189] Therefore, we will license the Upper C-band only within the contiguous United States and the District of Columbia, consistent with our approach in the Lower C-band.[190]

b. Application Requirements and Eligibility

57. Licensees in the Upper C-band must comply with the Commission's general application requirements.[191] As proposed in the *Upper C-band NPRM*, we also adopt an open eligibility standard for licenses in the Upper C-band.[192] CTIA contends that this approach will help "encourage auction participation to support 5G and beyond."[193] We agree, and find—as in the Lower C-band and other services—that open eligibility appropriately relies on market forces and will help to ensure efficient use of this spectrum.[194] The open eligibility standard that we adopt does not affect citizenship, character, or other generally applicable qualifications that, under our rules, may apply to licenses for flexible use of the Upper C-band. Further, any person who has been, for reasons of national security, barred by any agency of the federal government from bidding on a contract, participating in an auction, or receiving a grant is ineligible to hold a license in the Upper C-band.[195]

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[184] CTIA Comments at 31; CTIA Reply at 39–40; Samsung Comments at 3; T-Mobile Comments at 4; Verizon Comments at 21–22; Verizon Reply at 23–24; *see also Upper C-band NPRM*, 40 FCC Rcd at 9475–76, para. 33.

[185] These commenters contend that smaller license areas would permit more flexible rural deployment and may increase auction participation. *See* CCA Comments at 4–5; CCA Reply at 4–5; CRWC Comments at 17–18; OTI Comments at 15–16; RWA Comments at 7–8; WISPA Comments at 5–8; WISPA Reply at 5–6.

[186] *2020 C-band R&O*, 35 FCC Rcd at 2380, para. 79.

[187] *See* CTIA Reply at 40; Samsung Comments at 3.

[188] *See, e.g.*, AT&T Comments at 4; Ericsson Reply at 10; Verizon Comments at 7.

[189] *See supra* Section III.A.

[190] *2020 C-band R&O*, 35 FCC Rcd at 2380, paras. 79–80.

[191] *See* 47 CFR §§ 1.901–1.959. To grant a license application, the Commission must determine that the public convenience, interest, or necessity will be served thereby under section 307 of the Communications Act. *See* 47 U.S.C. § 307; *see also id*. §§ 309(a), 310(a), (b).

[192] *Upper C-band NPRM*, 40 FCC Rcd at 9476, para. 35.

[193] CTIA Comments at 31.

[194] The Commission has determined in a number of services that eligibility restrictions on licenses may be imposed only when open eligibility would pose a significant likelihood of substantial harm to competition in specific markets, and when an eligibility restriction would be effective in eliminating that harm. *See, e.g.*, *2020 C-band R&O*, 35 FCC Rcd at 2380–81, paras. 81–82; *Service Rules for Advance Wireless Services in the 2000–2020 MHz and 2180–2200 MHz Bands*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16193, paras. 241–42 (2012); *Service Rules for the 698–746, 747–762 and 777–792 MHz Bands*, Second Report and Order, 22 FCC Rcd 15289, 15381–82, 15383–84, paras. 253, 256 (2007); *Allocations and Service Rules for the 71–76 GHz, 81–86 GHz and 92–95 GHz Bands*, Report and Order, 18 FCC Rcd 23318, 23346–47, para. 70 (2003).

[195] *See* 47 CFR § 27.12(b) (citing 47 U.S.C. § 1404(c)).

c. Mobile Spectrum Holdings

58. Consistent with our proposal in the *Upper C-band NPRM*, we will incorporate the 160 megahertz of spectrum that we make available in the 3.98–4.14 GHz range into our spectrum screen for case-by-case review of spectrum aggregation in secondary market transactions and post-auction license applications.[196] We will add this 160 megahertz of spectrum to the screen once the Upper C-band auction closes.

59. In making this determination, we find that this spectrum is both suitable and available in the near term for mobile services.[197] As discussed above, we are modifying the U.S. Table of Frequency Allocations so that mobile services will be permitted throughout this spectrum, and we find that this spectrum will be critical for the deployment of mobile and other advanced services. With respect to availability in the near term, while we acknowledge that licensees must clear incumbents from the band following the auction, we find it is "fairly certain" that the spectrum "will meet the criteria for suitable spectrum in the near term" once the auction closes given our transition schedule.[198]

60. We decline to adopt a pre-auction spectrum aggregation limit for this band.[199] Although OTI, Public Knowledge, and WISPA advocate for the adoption of such a limit based on prior Commission action in the 3.45 GHz band and the CBRS band, as well as general competitive concerns,[200] we find, similar to the Commission's approach in the *2020 C-band R&O*, that, "[g]enerally, bright-line, pre-auction limits may restrict unnecessarily the ability of entities to participate in and acquire spectrum in an auction, and we are not inclined to adopt such limits on auction participation absent a clear indication that they are necessary to address a specific competitive concern."[201] OTI, Public Knowledge, and WISPA have not adequately raised a specific competitive concern to justify the imposition of pre-

[196] *Upper C-band NPRM,* 40 FCC Rcd at 9477, para. 36.

[197] *See, e.g.*, *Policies Regarding Mobile Spectrum Holdings Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions*, WT Docket No. 12-269, Report and Order, 29 FCC Rcd at 6169, para. 71 (2014) (*Mobile Spectrum Holdings Report and Order*). Whether spectrum is "suitable," for purposes of the spectrum screen, "is determined by whether the spectrum is capable of supporting mobile service given its physical properties and the state of equipment technology, whether the spectrum is licensed with a mobile allocation and corresponding service rules, and whether the spectrum is committed to another use that effectively precludes its use for mobile telephony/broadband services." *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time*, WT Docket No. 18-197, Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification, 34 FCC Rcd 10578, 10608, para. 72 (2019) (*T-Mobile-Sprint Order*); *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, para. 71.

[198] Spectrum is "available" if it is "fairly certain that it will meet the criteria for suitable spectrum in the near term." *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, para. 71; *see also T-Mobile-Sprint Order*, 34 FCC Rcd at 10608, para. 72 & n.227.

[199] CCA Comments at 6 (arguing that pre-auction aggregation limits risk reducing auction revenues, discouraging participation, and distorting bidding behavior, all without providing meaningful competitive benefits beyond those already addressed through post-auction review); AT&T Comments at 5 (contending that pre-auction limits unnecessarily restrict auction participation and harm competition); Verizon Comments at 22–23 (asserting that band-specific caps unnecessarily restrict the ability of entities to participate in and acquire licenses for spectrum at auction); Verizon Reply at 25–26.

[200] OTI and Public Knowledge Comments at 3, 17–18 (asserting that the Commission should adopt band specific aggregation limits); Letter from Michael Calabrese, Director, Wireless Future, OTI, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 at 2 (filed Apr. 14, 2026); *see also* WISPA Reply at 8 (arguing for pre-auction limits to facilitate multiple winning bidders, thus avoiding excessive concentration of license for the spectrum).

[201] *2020 C-band R&O*, 35 FCC Rcd at 2382, para. 85; *see also Upper C-band NPRM,* 40 FCC Rcd at 9477, para. 36.

auction limits for this band. We agree with commenters that a post-auction, case-by-case approach will allow the Commission to review any spectrum aggregation concerns without unnecessarily restricting entities from acquiring spectrum to deploy advanced wireless services.[202] Indeed, this case-by-case approach will allow the Commission to evaluate competitive effects based on actual auction outcomes rather than speculative assumptions.[203] We also agree with commenters that harmonizing the regulatory framework for the entire C-band may facilitate the rapid commercialization and deployment of this spectrum.[204]

61. We will perform case-by-case review of the long form applications of the Upper C-band spectrum following the auction. We will use the same case-by-case review as we do for secondary market transactions, updated to account for the additional Upper C-band spectrum.[205] We find that this review will create sufficient bidder certainty for the auction, consistent with section 309(j)(3)(E) of the Act.[206]

d. License Term

62. As proposed in the *Upper C-band NPRM*, we adopt a 15-year license term from the date of issuance or renewal.[207] Commenters that addressed this proposal support it, noting that a 15-year license term would promote consistency between the Lower and Upper C-band.[208] We agree and, consistent with the *2020 C-band R&O* and *Upper C-band NPRM*, find that a 15-year license term will promote investment in the Upper C-band, given the clearing and relocation that must occur before terrestrial wireless operations can commence.[209]

e. Performance Requirements; Renewal

63. Performance requirements play a critical role in ensuring that licensed spectrum does not lie fallow, and they are required for licenses that are issued through competitive bidding.[210] The performance requirements that we adopt for the Upper C-band, as described *infra*, align with the overall rapid transition process we establish herein for this band and will ensure that licensees begin providing service to consumers in a timely manner. Given mid-band spectrum's critical role in today's spectral environment, we find that our approach will promote the public interest through an efficient deployment of new terrestrial wireless services in the Upper C-band.

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[202] *See, e.g.*, CCA Comments at 6; Verizon Comments at 22–23; Verizon Reply at 24–25.

[203] CCA Comments at 6; *see also* Verizon Comments at 22–23. As the Commission has explained, case-by-case review "permits bidders to participate fully" in acquiring the spectrum, "while still allowing the Commission to assess the impact on competition from the assignment of initial . . . licenses, and to take appropriate action to preserve or protect competition only where necessary." *2020 C-band R&O*, 35 FCC Rcd at 2384, para. 89.

[204] *See, e.g.*, AT&T Comments at 4–5; AT&T Reply at 10; T-Mobile Comments at 3; T-Mobile Reply at 3; Verizon Reply at 2, 21, 27.

[205] *2020 C-band R&O*, 35 FCC Rcd at 2384, para. 89. As we have done in other bands we made available for flexible use, we will apply the standard articulated in the *2008 Union Telephone Order*. *Union Tel. Co. Cellco P'ship d/b/a Verizon Wireless, Applications for 700 MHz Band Licenses, Auction No. 73*, Memorandum Opinion and Order, 23 FCC Rcd 16787, 16791–92, 16796, paras. 9, 18 (2008).

[206] 47 U.S.C. §309(j)(3)(E).

[207] *Upper C-band NPRM*, 40 FCC Rcd at 9477–78, para. 37.

[208] *See* AT&T Comments at 6; CTIA Comments at 32; Verizon Comments at 22; *see also* 47 CFR § 27.13(m); Ericsson Comments at 2; WIA Reply at 3–4 (generally supporting extension of the rules applicable to the Lower C-band to the Upper C-band).

[209] *2020 C-band R&O*, 35 FCC Rcd at 2384–85, para. 90; *Upper C-band NPRM*, 40 FCC Rcd at 9477–78, para. 37.

[210] 47 U.S.C. § 309(j)(4)(B); *see also Upper C-band NPRM*, 40 FCC Rcd at 9478, para. 38.

64. *Performance Requirements*. We conclude that Upper C-band licensees must provide reliable signal coverage and offer service to at least: (1) 45% of the population in each license area no later than one year after the relevant Transition Deadline; and (2) 80% of the population in each license area no later than five years after the relevant Transition Deadline. These population-based coverage metrics match the Lower C-band's requirements for mobile and point-to-multipoint services.[211] While the performance deadlines we adopt herein to meet these coverage metrics differ from those adopted for the Lower C-band and proposed in the *Upper C-band NPRM*, the Lower C-band performance deadlines ran from license grant and were designed to anticipate a lengthy transition to clear incumbent FSS operations before terrestrial wireless operations could commence.[212] We observe that in practice the rapid speed of Lower C-band deployments reflects that a different, more forward-leaning approach is merited here.[213] As proposed by wireless industry commenters, for Upper C-band the relevant performance timeframe will start at the relevant Transition Deadline, which is when Upper C-band licensees are able to access the reconfigured and cleared spectrum in that PEA.[214] In light of the transition timeline prior to those dates, there is no need for a lengthy lead time prior to the interim performance deadline, particularly as many new Upper C-band licensees are likely to have existing Lower C-band deployments which can be leveraged in this context. Given the expected desirability of Upper C-band spectrum, we anticipate that new Upper C-band licensees will begin deploying facilities and constructing their networks in advance during the transition process, as was the case during the Lower C-band transition, so that they can commence operations as soon as possible after the relevant Transition Deadline.[215]

65. We recognize that in the Lower C-band context, carrier deployments have largely focused on the provision of 5G and other advanced mobile broadband services to consumers and enterprises.[216] On this basis, for the Upper C-band we decline to adopt alternative performance requirements for Internet of Things or fixed point-to-point operations, nor will we consider private internal operations in demonstrating buildout compliance. Under our flexible-use policies, licensees may still conduct these types of operations in the Upper C-band, but they will not be options for meeting a licensee's performance requirements as they were in the *2020 C-band R&O*.[217] We find that the performance requirements we adopt herein will provide certainty for licensees, ensure investment, and

[211] 47 CFR § 27.14(v)(1); *2020 C-band R&O*, 35 FCC Rcd at 2385, para. 93.

[212] *See 2020 C-band R&O*, 35 FCC Rcd at 2385, para. 93; *Upper C-band NPRM*, 40 FCC Rcd at 9478, para. 39.

[213] *See* Letter from Joel L. Thayer, President and Member of the Board, Digital Progress Institute, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2 (filed Apr. 24, 2026) (*DPI Apr. 24, 2026 Ex Parte*) ("Carriers began deploying C-band spectrum in the U.S. approximately 11 months after the FCC announced the winning bidders, with commercial service going live on January 19, 2022."); *but see* Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 4 (filed June 12, 2026) (*CTIA June 12, 2026 Ex Parte*).

[214] *See* CTIA Comments at 32; CTIA Reply at 42–43; *see also DPI Apr. 24, 2026 Ex Parte* at 2 ("Tying buildout requirements to the actual date when spectrum is fully cleared will avoid allowing arbitrageurs to bet that clearing will happen early and profit from squatting."); *CTIA June 12, 2026 Ex Parte* at 4.

[215] *2020 C-band R&O*, 35 FCC Rcd at 2386, para. 95; *see also DPI Apr. 24, 2026 Ex Parte* at 2–3 ("Industry has shown that it can deploy quickly, and they will have years to prepare before the spectrum is cleared.").

[216] *See* AT&T Comments at 1–3 ("Indeed, the adjacent Lower C-band currently serves as a foundational building block in 5G deployments. Carriers, including AT&T, moved at lightning speed to deploy the Lower C-band spectrum, with consumers quickly reaping a wide range of benefits, from substantial jumps in download speeds to innovative new use cases."); Verizon Comments at 4 ("The wireless industry writ large has demonstrated its commitment to rapidly putting mid-band spectrum to use for delivery of next-generation services to consumers and enterprises alike.").

[217] *See 2020 C-band R&O*, 35 FCC Rcd at 2387–88, paras. 97–101; *see also* 47 CFR § 27.14(v)(2).

encourage timely deployment of services that best serve the public interest, in furtherance of the United States' wireless policy goals.[218]

66. *Penalty for Failure to Meet Performance Requirements.* We adopt meaningful, enforceable penalties for licensees that fail to meet the performance requirements. Specifically, if a licensee fails to meet either the first performance benchmark (i.e., providing reliable signal coverage and offering service to at least 45% of the population in the license area no later than one year after the relevant Transition Deadline), or the second performance benchmark (i.e., providing reliable signal coverage and offering service to at least 80% of the population in the license area no later than five years after the relevant Transition Deadline) in any license area, its authorization for that particular license area will terminate automatically without Commission action. Although the penalty for missing the first performance benchmark differs from what the Commission adopted in the *2020 C-band R&O* and proposed in the *Upper C-band NPRM*,[219] we reiterate that the performance requirement deadlines are tied to the relevant Transition Deadline, as wireless interests request.[220] We therefore expect that Upper C-band licensees will work and plan in advance to commence their operations as soon as possible after the transition, and the penalties that we adopt reflect that expectation.

67. *Compliance Procedures.* For both performance benchmarks, we will require all Upper C-band licensees to follow the compliance procedures applicable to all part 27 licensees, including the filing of electronic coverage maps and supporting documents.[221] As part of these requirements, we adopt our proposals that electronic coverage maps must accurately depict: (1) the boundaries of each license area and the coverage boundaries of the actual areas to which the licensee provides service; and (2) if a licensee does not provide reliable signal coverage to its entire license area, the boundaries of the area(s) within each license area not being served.[222] Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and signal strength necessary to provide reliable coverage and offer service with the licensee's technology.[223] No commenters opposed these requirements, and we find that these compliance procedures will encourage timely, robust deployment of Upper C-band spectrum, consistent with our goals in this proceeding.[224]

68. *License Renewal.* As proposed, and with record support, we will apply the general renewal requirements applicable to all Wireless Radio Services (WRS) licensees to Upper C-band licensees.[225] We find that applying these requirements will promote consistency across the Upper and Lower C-band as well as other WRS.[226]

69. *Renewal Term Construction Obligation.* In applying our general WRS renewal requirements, each Upper C-band licensee will be required to comply with section 1.949 of our rules by demonstrating that, over the course of its license term, it provided and continues to provide service to the

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[218] *See, e.g.*, Letter from Joseph Bissonnette, Principal, Satellite Policy, Space Exploration Technologies Corp., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2 (filed Apr. 2, 2026).

[219] *See 2020 C-band R&O*, 35 FCC Rcd at 2389, para. 102; *Upper C-band NPRM*, 40 FCC Rcd at 9480, para. 45.

[220] *See* CTIA Comments at 32; CTIA Reply at 42–43.

[221] 47 CFR §§ 1.946(d), 27.14(k).

[222] *Upper C-band NPRM*, 40 FCC Rcd at 9480–81, para. 47.

[223] *Upper C-band NPRM*, 40 FCC Rcd at 9480–81, para. 47.

[224] *Upper C-band NPRM*, 40 FCC Rcd at 9478, paras. 38–39.

[225] *Upper C-band NPRM*, 40 FCC Rcd at 9481, para. 48; *see* 47 CFR § 1.949; *see also* AT&T Comments at 5; AT&T Reply at 10; CTIA Comments at 32; Verizon Comments at 22.

[226] *Upper C-band NPRM*, 40 FCC Rcd at 9481, para. 48; *see also 2020 C-band R&O*, 35 FCC Rcd at 2390, para. 106 (applying the general renewal requirements "will promote consistency across services").

public.[227] Licensees can demonstrate compliance either through the renewal showing in section 1.949(f) or the relevant safe harbor in section 1.949(e)(2).[228] Absent record feedback to the contrary, we find that applying these requirements to the Upper C-band will help promote the continued deployment of next-generation wireless technologies.[229]

3. Technical Rules

70. We find that the technical rules we adopt herein will encourage maximum potential use of the Upper C-band for next-generation wireless technologies, encourage efficient use of spectrum resources, and promote investment in the Upper C-band while protecting any residual incumbent users in the band and promoting coexistence with operations in adjacent bands. Consistent with our proposals in the *Upper C-band NPRM*, the technical rules are generally aligned with the rules applicable to the Lower C-band with a view towards the creation of a single 3.7 GHz Service, although we make certain modifications herein that are applicable across the entire C-band to reinforce a successful co-existence environment with adjacent band radio altimeters.[230] We believe that this approach will produce significant economies of scale, improve affordability for consumers, encourage rapid operational expansion, and facilitate deployment of high-powered terrestrial wireless networks in the band. As described in greater detail below, we deviate from this approach only with regard to antenna height limits due to specific technical and operational considerations unique to the Upper C-band.

a. Power Levels

71. *Power Limits for Fixed and Base Stations*. As proposed in the *Upper C-band NPRM*, we will allow fixed or base stations in non-rural areas to operate at power levels up to 1640 watts per megahertz EIRP and base stations in rural areas to operate at power levels up to 3280 watts per megahertz EIRP.[231] We therefore apply sections 27.50(j)(1)–(2) and (4)–(5) of the Commission's rules to both fixed and base stations operating in the Upper C-band.[232] This approach is consistent with the power limits adopted by the Commission for the Lower C-band and other broadband mobile services in nearby bands (3.45 GHz, AWS-1, AWS-3, AWS-4, and PCS).[233] The record supports our proposed approach for this reason[234] and also reflects that these power limits will align with adjacent band radio altimeter operations.[235] We agree and find that these power limits will: (1) provide licensees with the ability to optimize their system designs to provide wide area coverage without sacrificing the flexibility needed to address coexistence issues with FSS operations; and (2) promote investment in the Upper C-band, thereby facilitating the rapid and robust deployment of next-generation wireless networks, including 5G. Finally,

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[227] 47 CFR § 1.949(d); *see also Upper C-band NPRM*, 40 FCC Rcd at 9481, para. 49.

[228] *See* 47 CFR § 1.949(e)(2), (f).

[229] *Upper C-band NPRM*, 40 FCC Rcd at 9481, para. 49.

[230] *Upper C-band NPRM*, 40 FCC Rcd at 9481–90, paras. 50–77.

[231] *Upper C-band NPRM*, 40 FCC Rcd at 9481, para. 51.

[232] 47 CFR §§ 27.50(j)(1)–(2), (4)–(5).

[233] *See 2020 C-band R&O*, 35 FCC Rcd at 2468, para. 335; 47 CFR §§ 24.232(a)–(b), 27.50(d)(1)–(2), 27.50(j)(1)–(2) (establishing power limits for PCS, AWS, and Lower C-band, respectively). The Commission applied the same rationale in adopting rural and non-rural power limits for base station operations in the 3.45 GHz band that are consistent with limits adopted for the Lower C-band, AWS, and PCS bands. *See 3.45 GHz Band 2d R&O*, 36 FCC Rcd at 6014, para. 70; *see also* 47 CFR § 27.50(k)(1)–(2).

[234] *See* CTIA Comments at 32; CTIA Reply at 41–42; Ericsson Comments at 12; Garmin Comments at 6; ITI Comments at 2; Nokia Comments 5; Samsung Comments at 3; T-Mobile Comments at 4–5; Verizon Comments at 23.

[235] *See* Boeing Comments at 11–12; Garmin Comments at 6–7; Joint Aviation Comments at 11; Joint Aviation Reply at 11.

because advanced antenna systems often have multiple radiating elements in the same sector, we clarify that the power limits we adopt apply to the aggregate power of all antenna elements in any given sector of a fixed or base station.

72. *Power Limits for Mobile and Portable Devices.* While the *Upper C-band NPRM* proposed a power limit of 1 Watt EIRP for all mobile devices,[236] commenters note that a 4 Watt power limit will improve user equipment coverage and throughput for fixed wireless services (e.g., in-home broadband).[237] We find that an increased power limit could facilitate more innovative, efficient uses of valuable mid-band spectrum and we therefore adopt a power limit of 4 Watts EIRP for mobile and portable devices to support these types of user equipment.[238] To create consistency between the Lower and Upper C-bands, we apply this limit to the Lower C-band so that the same power limits apply throughout the 3.7–4.14 GHz band.

b. Out-of-Band Emissions

73. *Fixed and Base Station Out-of-Band Emissions.* Based on the totality of the record before us, we adopt fixed and base station out-of-band emission (OOBE) requirements for the Upper and Lower C-band that differ from those previously adopted in the *2020 C-band R&O*.[239] We observe that the record in response to the *Upper C-band NPRM* and the *Record Refresh PN* reflects a variety of views on whether OOBE limits throughout the C-band should be set using an equivalent isotropically radiated power (EIRP)-based standard[240] or a conducted power limit, as was previously adopted for the Lower C-band.[241] Further, since 2023 wireless licensees in the Lower C-band have voluntarily adhered to a conducted limit on spurious emissions into 4.2–4.4 GHz of -48 dBm/MHz.[242] Subsequent to the *Record Refresh PN*, CTIA proposed a compromise OOBE limit into the 4.2–4.4 GHz band of either an EIRP level of -28.4 dBm/MHz, or a conducted power level of -46 dBm/MHz applicable to both Lower and

[236] *Upper C-band NPRM*, 40 FCC Rcd at 9483–84, paras. 56–57 (seeking comment on whether alternative mobile station power limits should be considered based on expected use cases and inviting proposals for alternative mobile station power limits). That proposal would have been consistent with the limit previously adopted for the Lower C-band. *See 2020 C-band R&O*, 35 FCC Rcd at 2470, paras. 340–42; 47 CFR § 27.50(j)(3).

[237] AT&T Comments at 7–8; AT&T Reply at 12; CTIA Comments at 33; CTIA Reply at 43–44; Qualcomm Comments at 5; Verizon Comments at 24; Verizon Reply at 27–28. *But see* Joint Aviation Reply at 12–13 (acknowledging the potential benefit of such a power increase if 4 Watt user equipment is required to maintain the existing OOBE limits for 1 Watt EIRP user equipment).

[238] For the reasons explained *infra*, we also retain the applicable OOBE limit governing all mobile and portable devices. *See* 47 CFR § 27.53(l)(2).

[239] For the Lower C-band, base stations were generally required to suppress their emissions beyond the edge of their authorization to a conducted power level of -13 dBm/MHz. *Upper C-band NPRM*, 40 FCC Rcd at 9484, para. 58; *2020 C-band R&O*, 35 FCC Rcd at 2470, para. 343.

[240] ASRI Comments at 2, 7–10; Boeing Comments at 13–15; Garmin Comments at 7–8 & n.31; Joint Aviation Comments at 12–14; Joint Aviation Reply at 13–14, 16–17; NAB Comments at 9–10; *see also* Joint Aviation Comments, GN Docket Nos. 18-122 and 25-59, at 7–11 (rec. May 5, 2026) (Joint Aviation Record Refresh Comments); ASRI Comments, GN Docket Nos. 18-122 and 25-59, at 2–3 (rec. May 5, 2026) (ASRI Record Refresh Comments).

[241] AT&T Comments at 7–8; AT&T Reply at 11; CTIA Comments at 34–35; CTIA Reply at 23; Ericsson Comments at 12–13; Ericsson Reply at 11; Nokia Comments at 4–5; Qualcomm Comments at 6–7; Samsung Comments at 3; SES Comments at 31–32; T-Mobile Comments at 4–5; Verizon Comments at 24–25; *see also* AT&T Comments, GN Docket Nos. 18-122 and 25-59, at 1–3 (rec. May 5, 2026) (AT&T Record Refresh Comments); CTIA Record Refresh Comments at 10–12; Verizon Comments, GN Docket Nos. 18-122 and 25-59, at 2–4 (rec. May 5, 2026) (Verizon Record Refresh Comments).

[242] *See Voluntary Commitments Ex Parte* at Appx. at 3.

Upper C-band wireless operations.[243]

74. We adopt the option-driven approach advocated by CTIA to OOBE compliance for emissions into the adjacent 4.2–4.4 GHz band, which we will harmonize for both Upper and Lower C-band terrestrial wireless operations. Wireless licensees in both the Lower and Upper C-band may comply with an OOBE limit into the 4.2–4.4 GHz band of *either* an EIRP level of -28.4 dBm/MHz, or a conducted power level of -46 dBm/MHz.[244] The relevant OOBE limit into other spectrum bands will remain at a conducted power level of -13 dBm/MHz. We find that adoption of these alternative OOBE requirements across the C-band will promote ongoing coexistence with post-retrofit radio altimeters without any additional measures in place.[245]

75. *Mobile and Portable Out-of-Band Emissions*. As proposed in the *Upper C-band NPRM*, we adopt a mobile and portable OOBE limit that is consistent with the service rules adopted for the Lower C-band.[246] Commenters that addressed this proposal support its extension to new operations in the Upper C-band.[247] Specifically, we will require mobile and portable units to suppress their conducted emissions to no more than -13 dBm/MHz outside their authorized frequency band, i.e., at the authorized channel edge as measured at the antenna terminals.[248] We also adopt the same measurement procedure as we adopted for the Lower C-band where a narrower resolution bandwidth can be used to measure the OOBE limits in the spectrum immediately adjacent to the channel edge.[249] For emissions within 1 megahertz from the channel edge, the minimum resolution bandwidth would be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kilohertz.[250] In the bands between one and five megahertz removed from the licensee's authorized frequency block, the minimum resolution bandwidth would be 500 kilohertz.[251] We find that this approach will promote consistency between mobile 5G deployments in C-band as well as various other bands and will not increase the potential for OOBE to cause harmful interference.

76. *Other OOBE Limit Issues.* We adopt our proposal to otherwise model our approach to OOBE issues based on that used in the Lower C-band transition, subject to the OOBE emissions limits

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[243] *See* Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA et al., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 25-59 and 18-122 (filed June 18, 2026) (*CTIA June 18, 2026 Ex Parte*).

[244] Given that existing Lower C-band deployments have voluntarily complied with a -48 dBm/MHz conducted limit since 2023, we anticipate that application of this new rule will have no practical impact on such deployments, effectively grandfathering them.

[245] We anticipate with the commitment of Lower C-band licensees to extend the earlier voluntary commitments until the FAA's first radio altimeter retrofit deadline, that the adoption of this new OOBE rule for emissions into 4.2–4.4 GHz will obviate the need for those commitments beyond that point. We also expect that the Office of Engineering and Technology will issue measurement guidance on complying with these new OOBE limits under its delegated authority to administer the Equipment Authorization program. 47 CFR § 0.241(b).

[246] *See Upper C-band NPRM*, 40 FCC Rcd at 9485, para. 60; *2020 C-band R&O*, 35 FCC Rcd at 2472, para. 347; 47 CFR § 27.53(l)(2).

[247] AT&T Comments at 7–8; AT&T Reply at 11; CTIA Comments at 34–35; CTIA Reply at 23; Ericsson Comments at 12; Ericsson Reply at 11; Nokia Comments at 4–5; Qualcomm Comments at 6; Samsung Comments at 3; T-Mobile Comments at 5; Verizon Comments at 24–25.

[248] *See Upper C-band NPRM*, 40 FCC Rcd at 9485, para. 60; *2020 C-band R&O*, 35 FCC Rcd at 2472, para. 347.

[249] *See Upper C-band NPRM*, 40 FCC Rcd at 9485, para. 60; *2020 C-band R&O*, 35 FCC Rcd at 2472, para. 348; 47 CFR § 27.53(l)(2); *see also* 47 CFR § 27.53(l)(1)–(2).

[250] *See Upper C-band NPRM*, 40 FCC Rcd at 9485, para. 60; *2020 C-band R&O*, 35 FCC Rcd at 2472, para. 348; 47 CFR § 27.53(l)(2).

[251] *See Upper C-band NPRM*, 40 FCC Rcd at 9485, para. 60; *2020 C-band R&O*, 35 FCC Rcd at 2472, para. 348; 47 CFR § 27.53(l)(2).

adopted herein.[252] No commenting party opposes this approach. In specific, we extend section 27.53(i) to the Upper C-band, which provides that the Commission may, in its discretion, require greater attenuation than specified in the rules if an emission outside of the authorized bandwidth causes harmful interference.[253] We find that this approach will further harmonize wireless operations across the entire C-band.

c. Antenna Height Limits

77. Based on the record received in response to the *Upper C-band NPRM*, we adopt an antenna height limit for 3.98–4.14 GHz wireless operations of no greater than 450 feet above ground level. In order to foster coexistence between radio altimeters operating at 4.2–4.4 GHz and terrestrial wireless operations in the Upper C-band, aviation and wireless industry stakeholders submitted a number of filings to the record explaining that they have reached a cross-industry consensus on this antenna height limit for such wireless operations.[254] No commenting party opposes this consensus limit. We therefore depart from the Commission's proposal not to impose restrictions on antenna heights for Upper C-band operations.[255] Rather, we find that an antenna height limit of 450 feet above ground level for Upper C-band wireless operations is reasonable, supported by the record before us, and in the public interest.

d. Service Area Boundary Limit

78. As proposed in the *Upper C-band NPRM*, we adopt the -76 dBm/m^2/MHz power flux density (PFD) limit at a height of 1.5 meters above ground at the border of the licensees' service area boundaries.[256] We also permit licensees operating in adjacent geographic areas to voluntarily agree to higher levels at their common boundaries. Commenters that addressed these proposals, including AT&T, CTIA, Ericsson, and Verizon, support the -76 dBm/m^2/MHz PFD limit in this context given that it currently applies to operations in both the Lower C-band and Upper Microwave Flexible Use Service bands.[257] Commenters further indicate that it is sufficient to protect geographically adjacent licensees from co-channel interference in the Upper C-band as well.[258] We agree and also note that this metric is straightforward to calculate or measure and also scales with channel bandwidth to provide licensees flexibility for demonstrating compliance.

e. International Boundary Requirements

79. We adopt our proposal to apply section 27.57(c) of our rules, which requires all part 27 operations—including those in the Lower C-band—to comply with international agreements for

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[252] *See Upper C-band NPRM*, 40 FCC Rcd at 9485–86, para. 61; *2020 C-band R&O*, 35 FCC Rcd at 2473, para. 350.

[253] *See Upper C-band NPRM*, 40 FCC Rcd at 9485–86, para. 61; *2020 C-band R&O*, 35 FCC Rcd at 2473, para. 350.

[254] *See* Letter from Dorothy B. Reimold, Vice President Civil Aviation, Aerospace Industries Association, Sharon Pinkerton, Senior Vice President, Legislative and Regulatory Policy, Airlines for America, and Umair Javed, Senior Vice President and General Counsel, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket 25-59, at 1, 11 (filed Oct. 2, 2025); *see also* Joint Aviation Comments at 11 & n.38; Joint Aviation Reply at 12; Boeing Comments at 15–16; CTIA Comments at 18; CTIA Reply at 26; Garmin Comments at 2–3, 8–9; Joint Aviation Record Refresh Comments at 11–12; ASRI Record Refresh Comments at 3–4.

[255] *Upper C-band NPRM*, 40 FCC Rcd at 9486, para. 62.

[256] *Upper C-band NPRM*, 40 FCC Rcd at 9486, para. 62.

[257] *See* AT&T Comments at 7; CTIA Comments at 35; Verizon Comments at 26; Roberson Paper at 3, 6–7; Ericsson Reply at 11; *see also 2020 C-band R&O*, 35 FCC Rcd at 2473, paras. 354–55; 47 CFR § 27.55(d).

[258] Roberson Paper at 3.

operations near the Mexican and Canadian borders.[259] Commenters that specifically address this proposal support its extension to new operations in the Upper C-band.[260] We concur, recognizing that under this provision, new operations in the Upper C-band must not cause harmful interference across the border, consistent with the terms of the agreements currently in force. We note that modification of the existing rules might be necessary in order to comply with any future agreements with Canada and Mexico regarding the use of any subject bands.

f. Other Part 27 Rules

80. As proposed in the *Upper C-band NPRM*, we will apply several additional technical rules that are currently applicable to all part 27 services, including sections 27.51 (Equipment authorization) and part 1, subpart BB of the Commission's rules (Disturbance of AM Broadcast Station Antenna Patterns), for new terrestrial wireless operations in the Upper C-band.[261] We find that these rules implement important safeguards for all wireless services to ensure that devices meet RF safety limits, minimize the potential for causing harmful interference to other operations, and create consistency with the Lower C-band.[262] Commenters that addressed this issue support this approach.[263]

81. As the Commission has done for other part 27 services since 2014, we also require that client devices be capable of operating across the entire C-band.[264] Specifically, we extend section 27.75 to include 3.98–4.14 GHz, which requires mobile and portable stations operating in certain AWS-3 bands, the 600 MHz band, the Lower C-band, and 3.45 GHz band to be capable of operating across each relevant band using the same air interfaces that the equipment uses on any frequency in the relevant band.[265] This requirement does not require licensees to use any particular industry standard.[266] The record in response to the *Upper C-band NPRM* supports this approach.[267]

g. Protection of Incumbent FSS Earth Stations

82. As proposed in the *Upper C-band NPRM*, for post-transition FSS operations that remain in 4.16–4.2 GHz, we will incorporate and extend the incumbent protection measures that govern terrestrial wireless operations in the Lower C-band to new terrestrial wireless operations in the Upper C-band.[268] Commenters that address this proposal support it.[269] Therefore, to protect incumbent earth

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[259] *Upper C-band NPRM*, 40 FCC Rcd at 9486–87, para. 63; *see 2020 C-band R&O*, 35 FCC Rcd at 2474, para. 356; 47 CFR § 27.57(c).

[260] *See* CTIA Comments at 35; Ericsson Comments at 13.

[261] *Upper C-band NPRM*, 40 FCC Rcd at 9487, paras. 65–66; *see also* 47 CFR §§ 1.30000–1.30004, 27.51.

[262] *See 2020 C-band R&O*, 35 FCC Rcd at 2474, para. 357.

[263] AT&T Comments at 6–9; CTIA Comments at 4, 35; Ericsson Comments at 2, 13; Eutelsat Comments at 6 & n.17; Qualcomm Comments at 4; Verizon Comments at 20, 23; WISPA Comments at 9; *see also* CTIA Reply at 39; Ericsson Reply at 10; ICLE Reply at 4; Verizon Reply at 21 (generally supporting extension of the rules applicable to the Lower C-band to the Upper C-band).

[264] *See* 47 CFR § 27.75(a)(3); *2020 C-band R&O*, 35 FCC Rcd at 2474, para. 358.

[265] 47 CFR § 27.75(a)(1)–(4).

[266] 47 CFR § 27.75(b).

[267] CTIA Comments at 35–36; *see also* AT&T Comments at 6–9; Ericsson Comments at 2, 11–13; Eutelsat Comments at 6, n.17; Qualcomm Comments at 4; Verizon Comments at 20, 23; WISPA Comments at 9 (generally supporting extension of the rules applicable to the Lower C-band to the Upper C-band).

[268] *Upper C-band NPRM*, 40 FCC Rcd at 9487–88, paras. 67–70.

[269] AT&T Comments at 8; CTIA Comments at 36; Eutelsat Comments at 6 & n.17; SES Comments at 31–32; Verizon Reply at 28. Some transportable earth station and temporary fixed earth station (TFEs) operators allege they have received signal degradation and interference from Lower C-band wireless operations. *See* PSSI

(continued….)

stations from out-of-band emissions, we require that all emissions from fixed stations, base stations, and mobile and portable stations operating in the C-band comply with a PFD limit of -124 dBW/m^2/MHz in 4.16–4.2 GHz, as measured at the incumbent earth station antenna.[270] In order to protect incumbent earth stations from receiver blocking, we will also extend the PFD limit of -16 dBW/m^2/MHz to emissions within 3.98–4.14 GHz, as measured at the incumbent earth station antenna.[271] Once the instant transition is complete, all remaining incumbent earth stations will operate above 4.16 GHz, and we will allow full band/full arc use of their authorized band of operation.[272]

h. Protection of TT&C Earth Stations

83. Based on the record received in response to the *Upper C-band NPRM*, we adopt our proposals to maintain and apply existing co-channel and adjacent channel protection measures to safeguard existing Telemetry, Tracking, and Command (TT&C) operations throughout the C-band.[273] During the Lower C-band transition, incumbent space station operators were required to identify and consolidate their TT&C operations within the contiguous United States by December 5, 2021, and the Commission determined that it would not authorize any new TT&C operations elsewhere in the contiguous United States, except to facilitate that consolidation.[274] TT&C operations are protected at the consolidated locations until December 5, 2030; after that date TT&C operations may continue in the C-band on an unprotected basis until the satellites they are communicating with cease operation.[275] The Commission also authorized negotiated agreements for longer operation and private negotiation of TT&C sites between TT&C station operators and new terrestrial wireless licensees, either to permit early entry of wireless operations or to prolong TT&C operations in instances where these operations are designed to coexist.[276] Earth stations located at the consolidated TT&C sites are also allowed to use the 3.7–4.0 GHz band for international gateway and other purposes on an unprotected basis until 2030, or longer if agreements can be negotiated with terrestrial wireless operators, so long as they do not cause harmful interference to terrestrial deployments in the band.[277]

84. The record received in response to the *Upper C-band NPRM* reflects ongoing support for the existing TT&C protection measures at the consolidated locations until December 5, 2030, which will remain in place until that time, and does not identify any additional TT&C sites that are active in the

(Continued from previous page)
Comments at 22–25; Spectrum Alliance Comments at 4. As transportable earth stations and TFEs are non-stationary and by definition can change location with some frequency, on-site coordination is necessary to prevent any potential operational issues. We strongly encourage transportable earth station and TFE operators and existing and future C-band terrestrial wireless licensees to continue ongoing coordination efforts in this regard.

[270] *See 2020 C-band R&O*, 35 FCC Rcd at 2475–76, paras. 361–65; 47 CFR § 27.1423(a).

[271] *See 2020 C-band R&O*, 35 FCC Rcd at 2476–78, paras. 366–71; 47 CFR § 27.1423(b).

[272] *2020 C-band R&O*, 35 FCC Rcd at 2478–79, para. 372.

[273] *Upper C-band NPRM*, 40 FCC Rcd at 9488–90, paras. 71–77.

[274] *2020 C-band R&O*, 35 FCC Rcd at 2479–80, paras. 374–75. While the *2020 C-band R&O* specified that that C-band TT&C operations were to be consolidated at four locations, during the Lower C-band transition, SES and Intelsat opted to use three locations total: Andover, ME; Hawley, PA; and Brewster, WA. *See Expanding Flexible Use of the 3.7 to 4.2 GHz Band, Phase I Certification of Accelerated Relocation of SES Americom, Inc., as amended*, GN Docket Nos. 18-122 & 21-320, Order, 36 FCC Rcd 16432, 16436 & n.30 (2001); *Expanding Flexible Use of the 3.7 to 4.2 GHz Band, Phase I Certification of Accelerated Relocation of Intelsat License LLC, Debtor in possession, as amended*, GN Docket Nos. 18-122 & 21-320, Order, 36 FCC Rcd 15844, 15848 & n.33 (2001).

[275] *2020 C-band R&O*, 35 FCC Rcd at 2480, para. 376; *see also* 47 CFR § 25.203(n).

[276] *2020 C-band R&O*, 35 FCC Rcd at 2480, paras. 376–77.

[277] *2020 C-band R&O*, 35 FCC Rcd at 2480, para. 380–81.

Upper C-band.[278] Several parties nonetheless advocate for the Commission to adopt new safeguards for unprotected fixed earth stations at the designated TT&C locations, non-TT&C gateways, and teleports in other locations, or to extend TT&C protections beyond 2030.[279] Based on the record before us, we see no reason to modify the Commission's earlier decisions with respect to unprotected gateway and other fixed earth stations at the consolidated TT&C sites, particularly given their remote locations, or to extend the TT&C protection timeline, and accordingly we find once again that coordination and negotiation between the relevant FSS operators and wireless licensees on this issue best serves the public interest for potential operations beyond the 2030 timeframe.[280] We also decline to adopt new protections for teleport or gateway sites in locations apart from the consolidated TT&C locations, which would disrupt existing and future wireless deployments and run counter to the Commission's earlier decision to consolidate TT&C sites and limit protections to those necessary to facilitate the Lower C-band transition.[281]

85. *Co-channel Protection Criteria.* As proposed in the *Upper C-band NPRM,* we will maintain and apply the existing co-channel protection criteria to protect TT&C sites throughout the C-band.[282] Commenters who address this proposal generally support it.[283] Co-channel operations are defined as when any of the terrestrial licensee's authorized frequencies are separated from the center frequency of the TT&C earth stations by less than 150% of the maximum emission bandwidth in use by the TT&C operation.[284] In the *2020 C-band R&O*, the Commission required that new terrestrial wireless licensees ensure that the aggregated power from their operations met an interference to noise ratio (I/N) of -6 dB as received by the TT&C earth station.[285] The Commission also required new terrestrial wireless licensees to coordinate their co-channel operations with incumbent TT&C earth stations within a 70 km radius.[286] Terrestrial wireless licensees with base stations located within the coordination distance must

[278] AT&T Comments at 8; AT&T Reply at 12–13; CTIA Comments at 36–37; CTIA Reply at 45; Verizon Comments at 25; Verizon Reply at 28–29; SES Comments at 9, 29–30.

[279] SES Comments at 9, 29–30 (seeking extension of unprotected gateway use at existing TT&C sites beyond the 2030 TT&C protection sunset date); SES Comments, GN Docket Nos. 18-122 and 25-59, at 4–8 (rec. May 5, 2026) (SES Record Refresh Comments) (seeking protection of TT&C operations indefinitely for the lifetime of on-orbit C-band satellites); USEI Comments at 2–4; USEI Reply at 3–4 (advocating for protection of non-TT&C FSS operations from at least one remote TT&C gateway station on each coast); PSSI Comments at 6–7 (asking for its international teleport in New Kensington, PA to receive protections similar to those adopted in 2020 for the consolidated TT&C sites); *see also* Letter from Robert C. Lamb, President and Founder, PSSI, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed Apr. 27, 2026).

[280] *2020 C-band R&O*, 35 FCC Rcd at 2481, para. 381.

[281] *2020 C-band R&O*, 35 FCC Rcd at 2479–81, paras. 374–81; *see also* AT&T Comments at 8; AT&T Reply at 12–13; CTIA Comments at 36–37; CTIA Reply at 45; Verizon Comments at 25; Verizon Reply at 28–29.

[282] *Upper C-band NPRM*, 40 FCC Rcd at 9489, paras. 73–74; *see also* 47 CFR § 27.1423(c); *2020 C-band R&O*, 35 FCC Rcd at 2481–83, paras. 382–87.

[283] *See* AT&T Comments at 8; AT&T Reply at 12–13; CTIA Comments at 36–37; CTIA Reply at 45; Verizon Comments at 25.

[284] *2020 C-band R&O*, 35 FCC Rcd at 2482–83, para. 385.

[285] *2020 C-band R&O*, 35 FCC Rcd at 2481–82, para. 382.

[286] *2020 C-band R&O*, 35 FCC Rcd at 2481–82, para. 382. The Commission observed that there are few TT&C earth stations relative to other FSS earth stations, they are run by highly qualified technical staff, and that a coordination process accounting for terrain, shielding, polarization, and other technical parameters will result in adequate earth station protection and permit terrestrial use at a closer distance. *2020 C-band R&O*, 35 FCC Rcd at 2482, para. 384. Further, the coordination process minimizes the risk of harmful interference; this process includes the expectation that new terrestrial wireless licensees will take all practical steps necessary to protect TT&C operations, operate in good faith, and cooperate to resolve any interference issues via mutually satisfactory arrangements. *2020 C-band R&O*, 35 FCC Rcd at 2482, para. 384.

provide upon request an engineering analysis to the TT&C operator to demonstrate their ability to comply with the I/N requirement.[287] The protection criteria only apply to the frequencies, bandwidths, and look angles in use at each TT&C site, not full band or full arc.[288]

86. *Adjacent Channel Protection Criteria.* Consistent with the proposals in the *Upper C-band NPRM*, we will also extend in this context the existing criteria to protect TT&C sites from adjacent channel interference due to out-of-band emissions.[289] Specifically, aggregated power from adjacent terrestrial wireless operations must meet a -6 dB I/N ratio, and the limit will apply to all emissions removed from the TT&C earth station's center frequency by more than 150% of the TT&C's necessary emission bandwidth.[290] In addition, while new terrestrial wireless licensees and TT&C earth station operators need not engage in prior coordination, they are expected to cooperate in good faith and make reasonable efforts to anticipate and resolve technical problems that may inhibit effective and efficient use of the spectrum. TT&C earth station operators are also expected to make available pertinent technical information about their systems upon request by new terrestrial wireless licensees, and licensees of stations suffering or causing harmful interference are expected to cooperate and resolve the problem by mutually satisfactory arrangements.[291]

87. In addition, as proposed in the *Upper C-band NPRM*, we require a PFD limit of -16 dBW/m^2/MHz, as measured at the TT&C earth station antenna, to protect against potential receiver overload.[292] This blocking limit applies to all emissions within the new terrestrial wireless licensee's authorized band of operation. All TT&C earth stations will be protected based on the assumption that robust filters have been installed at the facilities, like other incumbent FSS earth stations. TT&C filter quality must provide a minimum of 60 dB of rejection, and the frequency at which the filter must meet this 60 dB of rejection will vary with the bandwidth. TT&C filters must meet 60 dB of rejection for all frequencies removed from the center frequency by more than 150% of the TT&C's emission bandwidth, both above and below the channel, and the filter must provide 70 dB of rejection for all frequencies removed from the TT&C's center frequency by more than 250% of the TT&C's emission bandwidth, both above and below the channel. In the event of a claim of harmful interference, the earth station operator must demonstrate that they have installed a filter that complies with the mask described above, and if they have not installed such a filter or are unable to make such a demonstration, and the new terrestrial wireless licensee can confirm it meets the PFD, the TT&C operator would have to accept the interference.[293]

i. Other Matters

88. In the *Upper C-band NPRM*, we noted earlier comments filed by NTIA detailing radio astronomy sites that conduct observations in the C-band.[294] These radio astronomy sites carry out their observations on an opportunistic basis (i.e., with no primary allocation); they therefore enjoy no protection from harmful interference.[295] We nevertheless observe that certain coordination processes do

[287] *2020 C-band R&O*, 35 FCC Rcd at 2482, para. 384.

[288] *2020 C-band R&O*, 35 FCC Rcd at 2482–83, para. 385.

[289] *Upper C-band NPRM*, 40 FCC Rcd at 9489–90, paras. 75–76; *see also* 47 CFR § 27.1423(d); *2020 C-band R&O*, 35 FCC Rcd at 2483–84, paras. 388–89.

[290] *2020 C-band R&O*, 35 FCC Rcd at 2482, para. 385; 47 CFR § 27.1423(d).

[291] *Upper C-band NPRM*, 40 FCC Rcd at 9489–90, para. 75.

[292] *Upper C-band NPRM*, 40 FCC Rcd at 9490, para. 76; *see also* 47 CFR § 27.1423(e).

[293] *Upper C-band NPRM*, 40 FCC Rcd at 9490, para. 76.

[294] *See Upper C-band NPRM*, 40 FCC Rcd at 9490, para. 78.

[295] *See* CTIA Reply at 46; NAS CORF Reply at 10.

presently apply to new or modified fixed stations within the National Radio Quiet Zone, which is home to some radio astronomy operations.[296] Several commenters characterize other radio astronomy sites as small in number and situated in remote locations where their isolation mitigates interference.[297] As such, we decline to adopt formal protections or coordination procedures designed to protect radio astronomy service operations.

C. The Transition of FSS Operations

89. Consistent with our long-standing precedent, and as proposed in the *Upper C-band NPRM*, we will again use our *Emerging Technologies* framework to facilitate the swift transition of an additional 160 megahertz of spectrum for terrestrial wireless use in the contiguous United States in furtherance of the OBBB Act's mandate. While we broadly model the forthcoming transition of incumbent FSS operations in 4.0–4.16 GHz on the framework used in the *2020 C-band R&O*, we also refine and tailor our approach based on input from stakeholders that were involved in the Lower C-band transition, as well as the specific Upper C-band transition proposals advanced in the instant record.

1. Definition of Incumbent FSS Operations

90. In order to promote a timely and efficient transition process, we adopt our proposals in the *Upper C-band NPRM* to employ the same definitions used in the *2020 C-band R&O* to establish the scope of incumbent FSS space station and earth station operations for the Upper C-band transition.[298] The relevant classes of incumbents will be eligible for reimbursement of their reasonable and necessary FSS C-band transition costs consistent with our *Emerging Technologies* precedent, as well as interference protection for those incumbent earth stations that remain in the Upper C-band. Identification of these incumbent FSS operations is once again intended to provide clarity about the transition process and inform auction bidders about the costs they will incur as a condition of their license.[299] While we recognize that certain commenters seek a broader interpretation of incumbency,[300] we find such an expansion to be unnecessary given we are mirroring the Lower C-band transition, in which eligible space station operators led the process, and the result was an efficient and effective transition.[301]

91. *Incumbent Space Station Operators*. As a general matter, for purposes of the Upper C-band transition, we proposed to use the same baseline definition of incumbent space station operators as for the Lower C-band, while accounting for any changes in the legal or operational status of those entities in the intervening time period.[302] The Commission determined in the Lower C-band context that "incumbent space station operators" whose authorizations would be impacted generally include all space station operators authorized to provide C-band service to any part of the contiguous United States

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[296] *See* 47 CFR § 1.924(a); NAS CORF Reply at 6–7, 10; NRAO Comments at 2–3.

[297] *See* NTIA Comments at 9–10; AAS Reply at 1; NAS CORF Reply at 10.

[298] *Upper C-band NPRM*, 40 FCC Rcd at 9491–93, paras. 80–84; *2020 C-band R&O*, 35 FCC Rcd at 2391, para. 111.

[299] *Upper C-band NPRM*, 40 FCC Rcd at 9491, para. 80; *2020 C-band R&O*, 35 FCC Rcd at 2391, para. 111 ("[B]idders need to know before an auction commences when they will get access to that currently occupied spectrum as well as the costs they will incur as a condition of their overlay license.").

[300] *See* NCTA Comments at 12–13, Content Companies Reply at 17.

[301] *2020 C-band R&O*, 35 FCC Rcd at 2455, para. 292 ("A space station operator must plan, coordinate, and perform (or contract for the performance of) all the tasks necessary to migrate any incumbent earth station that receives or sends signals to a space station owned by that operator, whether the satellite service provider is in direct privity of contract with the earth station operator or indirectly through another entity; in short, the space station operator must provide a turnkey solution to the transition.").

[302] *Upper C-band NPRM*, 40 FCC Rcd at 9491, para. 81.

pursuant to a Commission-issued license or grant of market access as of June 21, 2018.[303] That was the date on which certain new space station applications in the C-band were frozen to preserve the landscape of authorized operations in the 3.7–4.2 GHz band.[304] Today, the remaining entities that qualify under this definition are: Empresa, Eutelsat, Hispasat, SES, and Telesat.[305]

92. More specifically for transition cost reimbursement purposes, the *Upper C-band NPRM* sought comment on repurposing the Lower C-band definition of an "eligible space station operator" as an incumbent space station operator that has demonstrated as of February 1, 2020, that it has an existing relationship to provide service via C-band satellite transmission to one or more incumbent earth stations in the contiguous United States.[306] Today, the remaining entities that qualify under this definition and continue to provide service to one or more incumbent earth stations within the contiguous United States are: Eutelsat, SES, and Telesat.[307] In light of record support, we adopt our proposed repurposing of the Lower C-band definitions for incumbent and eligible space station operators in the instant context.[308]

93. *Incumbent Earth Stations*. The *Upper C-band NPRM* also sought to employ the earlier Lower C-band definition of incumbent earth stations, using the most recently released incumbent earth station list from the Lower C-band transition as the baseline going forward.[309] The Commission previously defined "incumbent earth stations" in the Lower C-band context to include fixed and temporary fixed earth stations that were operational as of April 19, 2018, and that: (1) continue to be operational; (2) were licensed or registered in the IBFS (now ICFS) database on November 7, 2018; and (3) timely certified the accuracy of the information on file with the Commission by May 28, 2019.[310] As

[303] 47 CFR § 27.1411(b)(1); s*ee 2020 C-band R&O*, 35 FCC Rcd at 2391–92, para. 115.

[304] *See International Bureau Announces Temporary Filing Freeze on New Fixed Satellite Service Space Stations in the 3.7–4.2 GHz Band*, Public Notice, 33 FCC Rcd 6119 (IB Jun. 21, 2018) (*Space Station Freeze Public Notice*). While we will maintain this space station application freeze during the Upper C-band transition to maintain a stable spectrum environment, eligible space station operators seeking flexibility to implement transition related steps may seek a waiver as necessary. *See* SES Comments at 31.

[305] At the time of the *2020 C-band R&O,* those entities were: ABS, Empresa, Eutelsat, Hispasat, Intelsat, SES, Star One (later renamed Embratel), and Telesat. *2020 C-band R&O*, 35 FCC Rcd at 2392, para. 115 Since then, certain of those entities have either ceased operations in the contiguous United States or merged with other incumbent space station operators. *See, e.g.*, Embratel TVSAT Telecomunicações S.A., Quarterly Status Report (Q2 2023), GN Docket 18-122 (filed June 28, 2023) ("Embratel has exited the C-band market in the United States, no longer has any contractual obligations to provide C-band services in the United States, and has ceased operations from the Star One C1 satellite (call sign S2677) that was used to provide C-band."); *see also* Letter from Michele C. Farquhar, Counsel to SES S.A., to Marlene H. Dortch, Secretary, FCC, SB Docket No. 24-267 (filed July 17, 2025) (providing notice of consummation of the merger of SES S.A. and Intelsat Holdings, S.à.r.l.). ABS surrendered its authorization in May 2024.

[306] *Upper C-band NPRM*, 40 FCC Rcd at 9491–92, para. 82; *see also* 47 CFR § 27.1411(b)(2). The D.C. Circuit upheld the Commission's determination that certain smaller satellite operators were not entitled to reimbursement because they "provide[d] 'little to no service' in the C-band within the United States," nor did they show how they would either find new domestic customers or recruit existing business away from other providers. *PSSI Glob. Servs.*, 983 F.3d at 8 (quoting *2020 C-band R&O*, 35 FCC Rcd at 2399–400, para. 135).

[307] In 2020, those entities were: Intelsat, SES, Telesat, Eutelsat, and Star One/Embratel. *2020 C-band R&O*, 35 FCC Rcd at 2426, para. 200. As noted *supra*, Embratel subsequently ceased providing C-band service in the United States, and Intelsat was acquired by SES after receiving Commission approval of the transaction. *See Applications of SES S.A. and Intelsat S.A for Consent to Transfer Control of Licenses and Authorizations*, SB Docket No. 24-267, Memorandum Opinion and Order, 40 FCC Rcd 4919 (SB, WTB, OET 2025).

[308] Verizon Reply at 16–17.

[309] *Upper C-band NPRM*, 40 FCC Rcd at 9492–93, paras. 83–84.

[310] 47 CFR §§ 25.138(c), 27.1411(b)(3); *see also 2020 C-band R&O*, 35 FCC Rcd at 2392–94, paras. 116–23. The Commission clarified in the *2020 C-band R&O* that eligible incumbent earth stations included those registered as

(continued….)

with space stations, a freeze on the filing of new or modified earth station applications throughout the entire C-band was issued on April 19, 2018—the qualifying date for incumbency—and the freeze remains in place.[311] During and subsequent to the Lower C-band transition, Commission staff periodically updated its list of incumbent earth stations found to qualify under these criteria,[312] the most recent of which was issued on November 19, 2025.[313]

94. Some earth station operators, whose C-band earth stations are unregistered or were otherwise previously found ineligible as incumbents for Lower C-band purposes, seek a lift of the freeze and qualification of those facilities as incumbents for the Upper C-band transition.[314] In addition, other earth station operators seek incumbent status for earth stations that have been expanded or relocated since the Lower C-band transition.[315] On balance, however, we find that the public interest benefits of continuity and administrative efficiency that result from restarting where the Lower C-band transition left off in terms of the relevant scope of incumbent earth stations outweighs any potential change in course at this point in time.[316] Given our statutory requirement to complete an Upper C-band auction quickly pursuant to the OBBB Act, potential bidders in the forthcoming auction need to have clarity in the short term about the costs they will incur as a condition of their licenses pursuant to our *Emerging Technologies* precedent. In a similar vein, we also recognize that the three eligible space station operators involved in the Upper C-transition need to quickly ascertain the scale and scope of any required work in order to finalize their Transition Plans. This certainty can be most rapidly achieved by repurposing the Lower C-band definitional standard and incumbent earth station list for Upper C-band purposes, as any reopening of incumbent earth station eligibility would take time to adjudicate, and thus inject uncertainty into the auction and transition planning process.

(Continued from previous page)
fixed or temporary fixed (i.e., transportable) earth stations in the former IBFS (now ICFS), and did not include other classes of earth stations such as those on vessels and other licensees operating under blanket earth stations. *C-band R&O*, 35 FCC Rcd at 2393, para. 122.

[311] *See Temporary Freeze on Applications for New or Modified Fixed Satellite Service Earth Stations and Fixed Microwave Stations in the 3.7–4.2 GHz Band*, Public Notice, 33 FCC Rcd 3841 (IB, PSHSB, WTB 2018).

[312] *See International Bureau Releases Preliminary List of Incumbent Earth Stations in the 3.7–4.2 GHz Band in the Contiguous United States*, IB Docket No. 20-205; GN Docket No. 20-305, Public Notice, DA 20-703 (IB July 6, 2020); *International Bureau Releases List of Incumbent Earth Stations in the 3.7–4.2 GHz Band in the Contiguous United States*, IB Docket No. 20-205; GN Docket No. 20-305, Public Notice, DA 20-823 (IB Aug. 3, 2020).

[313] The most current version of the list supersedes all prior versions and incorporates changes to the list during and since the Lower C-band transition. *See, e.g.*, *Space Bureau Releases Corrected, Updated List of Incumbent Earth Stations in the 4.0–4.2 GHz Band in the Contiguous United States*, IB Docket No. 20-205; GN Docket No. 20-305, Public Notice, DA 25-960 (SB Nov. 19, 2025) (noting the current version of the list takes into account changes since the last iteration, which in most cases are surrendered calls signs and antenna removals). We anticipate continuing to refine the list in this same manner on a going forward basis over the course of the Upper C-band transition, and delegate authority to Space Bureau to periodically update the list to maintain its accuracy.

[314] ACA Comments at 15–18; ACA Reply at 9–12; Cunningham Communications Comments at 1–7; Jackson Energy Authority Comments at 1–8; North American Spectrum Alliance Comments at 8–9; North American Spectrum Alliance Reply at 4; NPR Comments at 5–6; Affiliates Associations Reply at 13; Kraus Electronic Systems, Inc. Reply at 1–5; Local Broadcasters Reply at 3–5; NAB Reply at 6; NCTA Reply at 10.

[315] Letter from Brian Hurley, Senior Vice President of Legal and Regulatory Affairs, ACA Connects—America's Communications Association, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 et al., at 2 (filed Apr. 23, 2026).

[316] *See* Verizon Reply at 16–18 ("Lifting the freeze at this time would undermine the careful information collection the Commission undertook over several years to assess the landscape of incumbent operations in the C-band."); AT&T Reply at 14 ("The Commission should not inject additional complexity into the proceeding by opening new earth station registration windows at this time.").

95. With this goal in mind, we reiterate our earlier finding in the *2020 C-band R&O* that "[e]arth station operators [were] provided ample opportunity to register their earth stations with the Commission."[317] Ineligible earth station operators that filed petitions for reconsideration and/or sought waivers in light of their specific circumstances had those matters addressed on the merits during the Lower C-band transition.[318] Further, with a freeze continuously in place since 2018 on the filing of new or modified earth station applications, any operators opting to deploy new C-band earth stations since that time were on notice of: (1) the evolving environment in the band; and (2) that any deployments at that time came with risk and no present ability to register their facilities with the Commission, which in turn meant no expectation of incumbent rights. On this basis, we adopt our proposal to utilize the Lower C-band incumbent earth station operator definition in the Upper C-band transition, with the most recently released incumbent earth station list from the Lower C-band transition serving as the baseline going forward. We will also maintain the earth station application freeze throughout the Upper C-band transition in order to maintain a stable spectrum environment.

2. Clearing FSS Operations in the Upper C-band

96. At the outset, we reiterate that the OBBB Act directs the Commission to grant licenses through a system of competitive bidding for "at least" 100 megahertz of the Upper C-band, which requires repurposing and clearing that baseline amount, at a minimum.[319] The statutory language also reflects Congress' intent for the Commission to explore transitioning spectrum above and beyond that floor. And by requiring an auction of the Upper C-band, in full awareness of the record-breaking Lower C-band auction that occurred years earlier, congressional action is best understood as ratifying the nature and types of regulatory mechanisms the Commission employed to clear the band and remunerate affected parties following the Lower C-band auction. As detailed *supra*, we find that repurposing 160 megahertz for terrestrial wireless use, plus a 20 megahertz guard band, best serves our Congressional mandate, the public interest, and our policy goals. Consistent with the *Upper C-band NPRM,* the *2020 C-band R&O,* and transition proposals advanced by incumbent space station operators representing the vast majority of existing FSS C-band operations, we therefore exercise our authority under section 316 of the Act to propose to modify, as needed, the existing licenses, market access authorizations, and registrations currently held by FSS C-band incumbents to clear 4.0–4.16 GHz.[320] Below we detail our exercise of this authority, and address arguments relevant to existing FSS C-band incumbents' continued ability to provide substantially the same service during and after the transition.

a. Clearing Space Station Operations

97. Pursuant to our authority under section 316 of the Act,[321] we hereby modify the authorizations of all C-band incumbent space station operators to limit FSS operations to 4.16–4.2 GHz in the contiguous United States.[322] Section 316 vests the Commission with broad authority to modify licenses "if in the judgement of the Commission such action will promote the public interest,

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[317] *2020 C-band R&O*, 35 FCC Rcd at 2393, para. 120.

[318] *See, e.g.*, *Incumbent Earth Stations in the 3.7–4.2 GHz Band in the Contiguous United States*, Order, 35 FCC Rcd 11896 (2020).

[319] *See* OBBB Act, § 40002(b)(2).

[320] We note that 3.98–4.0 GHz was previously reallocated and cleared in the *2020 C-band R&O* in order to serve as a guard band. *2020 C-band R&O*, 35 FCC Rcd at 2371–72, 2394–2406, paras. 58, 124–48.

[321] *See* 47 U.S.C. § 316.

[322] This includes the authorizations of all FSS C-band incumbent space station operators as defined *supra*, including but not limited to the eligible space station operators. See *2020 C-band R&O*, 35 FCC Rcd at 2399–405, paras. 135–46; *PSSI Glob. Servs.*, 983 F.3d at 8–12. As in the Lower C-band transition, and consistent with other past practice, we will accord to grants of market access the same protections that we accord to Commission license. *See 2020 C-band R&O*, 35 FCC Rcd at 2397, para. 131 & n.371.

convenience, and necessity."[323] We find that modifying the authorizations of all C-band incumbent space station operators to clear 4.0–4.16 GHz and confining any remaining FSS C-band operations to 4.16–4.2 GHz within the contiguous United States is within the Commission's statutory authority, is consistent with prior Commission practice, and will promote the public interest, convenience, and necessity.[324]

98. As noted in the *2020 C-band R&O*, the Commission has long relied on section 316 to change or reduce the frequencies used by a licensed service where it has found that doing so would be in the public interest.[325] The Commission has also relied on its section 316 authority to "rearrang[e] licenses within a spectrum band."[326] And as part of the *Spectrum Frontiers* incentive auction, the Commission modified the authorizations of incumbent licensees by altering their assigned frequencies and, in many cases, their geographic service areas, in a way that ensured that the spectrum usage rights under the modified licenses were comparable to those under originally configured licenses.[327]

99. Further, the Commission's modification authority under section 316 does not require the consent of licensees.[328] As the United States Court of Appeals for the District of Columbia Circuit has stressed, "if modification of licenses were entirely dependent upon the wishes of existing licensees, a large part of the regulatory power of the Commission would be nullified."[329] Indeed, that court has reiterated that Congress broadened the Commission discretion by adding section 316, which "provides the FCC with the authority to modify licenses without the approval of their holders."[330] Rather, the

[323] 47 U.S.C. § 316; *see also Cal. Metro Mobile Commc'ns, Inc. v. FCC*, 365 F.3d 38, 45 (D.C. Cir. 2004) ("Section 316 grants the Commission broad power to modify licenses."); *Upper C-band NPRM*, 40 FCC Rcd at 9493–94, para. 88; *2020 C-band R&O*, 35 FCC Rcd at 2394, para. 125.

[324] As in the Lower C-band context, we recognize that space-to-Earth transmissions from space station operators directed to locations outside of the contiguous United States and other countries may incidentally transmit to earth stations in the contiguous United States. *See 2020 C-band R&O*, 35 FCC Rcd at 2398–99, para. 134. These incidental transmissions will be allowed as they present no risk of harmful interference to terrestrial wireless operations.

[325] *2020 C-band R&O*, 35 FCC Rcd at 2394–95, para. 126. For example, in the *800 MHz Order*, the Commission relied on section 316 to relocate the public safety and other land mobile communications systems operating in the 800 MHz band to new spectral locations both within and outside of the band. *Improving Public Safety Communications in the 800 MHz Band*, WT Docket No. 02-55, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, 19 FCC Rcd 14969, 14976, para. 8 (2004) (*800 MHz Order*); *see also Establishing Rules and Policies for the use of Spectrum for Mobile Satellite Services in the Upper and Lower L-Band*, IB Docket No. 96-132, Report and Order, 17 FCC Rcd 2704, 2704, 2712–13, paras. 1, 21 (2002) (*2002 MSS Order*) (relying on section 316 to relocate an incumbent and reduce its spectrum assignment); *Amendment of the Commission's Rules to Relocate the Digital Electronic Message Service from the 18 GHz Band to the 24 GHz band and to Allocate the 24 GHz Band for Fixed Service*, ET Docket No. 97-99, Order, 12 FCC Rcd 3471 (1997) (modifying pursuant to section 316 licenses to relocate the operations of certain Digital Electronic Message Service licenses from the 18 GHz band to the 24 GHz band).

[326] *Service Rules for Advanced Wireless Services in the 2000–2020 MHz and 2180–2200 MHz Bands*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16178, para. 175 (2012) (*AWS-4 Service Rules R&O*) (proposing modification of incumbent 2 GHz MSS authorization holders to add AWS-4 terrestrial spectrum rights pursuant to section 316).

[327] *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-177, Fourth Report and Order, 33 FCC Rcd 12168, 12174–75, paras. 15–18 (2018) (*2018 Spectrum Frontiers Order*) (modifying the licenses of all existing licenses in the 39 GHz band pursuant to the Commission section 316 authority, regardless of whether the incumbent chose to participate in the Commission's incentive auction of licenses for that spectrum).

[328] *See Rainbow Broadcasting v. FCC*, 949 F.2d 405, 410 (D.C. Cir. 1991); *Peoples Broadcasting Co. v. United States*, 209 F.2d 286 (D.C. Cir. 1953).

[329] *Peoples Broadcasting*, 209 F.2d at 288.

[330] *Rainbow Broadcasting*, 949 F.2d at 410.

Commission need only find, as we do here, that the modification "serves the public interest, convenience, and necessity."[331] Further, the courts have consistently held that the Commission may exercise its license modification authority as part of a rulemaking proceeding, as we do here.[332]

100. Commenters responding to the *Upper C-band NPRM* generally acknowledge the applicability of this framework, although they differ on what constitutes a permissible modification of incumbent space station operations in the current context. For example, SES and Eutelsat both anticipate that, as in the Lower C-band, transitions associated with reasonable relocation cost reimbursement and an appropriate incentive structure, which together enable them to maintain substantially the same service both during and after the transition, would align with the Commission's modification authority under section 316.[333] They also acknowledge that clearing 160 megahertz would allow them to maintain one C-band transponder for critical services,[334] and they indicate that they can otherwise provide their customers with substantially the same service by migrating them to a hybrid solution that, in part, uses the Ku-band, notwithstanding the Ku-band's greater susceptibility to rain fade.[335] In keeping with the Lower C-band transition, both eligible space station operators who have commented seek to design and lead service transition efforts for their own and their customers' operations with a view towards addressing the additional complexities present with a potential migration of some services or links to the Ku-band.[336]

101. SES and Eutelsat both specify that they will need to coordinate closely with customers to provide continuity of substantially the same service.[337] SES proposes a number of specific measures designed to ensure that any future services or links in the Ku-band would be substantially the same as existing ones in the C-band, such as: (1) the procurement and launch of new satellites to provide sufficient Ku-band downlink capacity that ensures similar link availability; (2) having optimized Ku-band beam designs in which the beam power can be concentrated; (3) cross-strapping the Ku-band downlink (11.7–12.2 GHz) with existing C-band uplink (5850–6425 MHz) to minimize the impact of rain fade on the uplink; (4) retrofitting existing C-band antennas with Ku-band feeds for added gain; and

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[331] *Cal. Metro Mobile Communc'ns*, 365 F.3d at 45. As the D.C. Circuit has noted, the Commission's judgments on the public interest arising from a license modification "are entitled to substantial judicial deference." *NTCH, Inc. v. FCC*, 950 F.3d 871, 881 (D.C. Cir. 2020).

[332] *See Celtronix Telemetry, Inc. v. FCC*, 272 F.3d 585, 589 (D.C. Cir. 2001) (citing cases and noting that the Commission retains the power "to alter the term[s] of existing licenses by rulemaking").

[333] SES Comments at 7–8, 24–25; SES Reply at 10–19; Eutelsat Comments at 4–13; Eutelsat Reply at 3–10. As noted *supra*, the only remaining incumbent FSS space station operator with existing C-band customers is Telesat, which has not participated in the instant proceeding and thus not raised concerns with any of the Commission's proposed reconfiguration options.

[334] While some commenters—none of whom are eligible space station operators—claim that further compression or repacking within the C-band will compromise the quality of any residual FSS service and cause harmful interference, there is no evidence in the record demonstrating this to be the case. *See* Spectrum Alliance Comments at 2, 4–6; Spectrum Alliance Reply at 1. To the contrary, SES specifically provides that allowing it to retain at least 40 megahertz in the C-band for FSS would allow "critical services that require the reach and reliability of C-band for best performance to remain in the Upper C-band." SES Reply at 9.

[335] SES Comments at 7–8, 16–17 ("[L]eaving satellite operators with at least 40 megahertz of FSS downlink spectrum would promote the public interest by ensuring that meaningful, high reliability C-band satellite services can continue to be provided."); SES Reply at 3–4; Eutelsat Reply at 10–12 ("With appropriate structures and incentives in place, Eutelsat is confident it can deliver a successful and timely transition that meets the Commission's objectives while continuing to meet the needs of its customers.").

[336] SES Comments at 10–14; Eutelsat Comments at 7–8.

[337] SES Comments at 14 ("By deploying these technical solutions and leveraging experience gained from managing the Lower C-band transition, SES will be able to provide substantially the same service that its customers enjoy today and help preserve the value satellite services provide to the media distribution ecosystem."); SES Reply at 16–19; Eutelsat Reply at 10–12.

(5) implementation of a terrestrial recovery network to fill in lost packets due to any sort of fade or interference.[338] Eutelsat similarly points to Ku-band satellite acquisition and launch, alternative terrestrial distribution technologies, and the reconfiguration of ground-based infrastructure, as elements it proposes to use in meeting the needs of its existing customers.[339]

102. By contrast, media interests emphasize the ongoing use of FSS C-band services provided by the eligible space station operators for programming contribution and distribution, and raise concerns about the potential impacts on those operations as a result of any comprehensive reconfiguration of the Upper C-band.[340] Content providers, broadcasters, multichannel video programming distributors (MVPDs), and other downstream customers of the eligible space station operators note Ku-band satellite coverage and differences in rain fade susceptibility, along with recent changes in the applicable Equivalent Power Flux Density (EPFD) limits, as diminishing the Ku-band's suitability as an alternative to existing FSS C-band satellite services, which they characterize as extremely reliable and affording a high quality of service.[341] As such, some members of the media sector argue that any migration of existing FSS C-band services to the Ku-band is unlikely to result in "substantially the same service" and thus constitutes an impermissible fundamental license change.[342]

103. We concur with SES and Eutelsat and find that an appropriately structured transition of existing FSS C-band services is achievable in the instant context to enable the eligible space station operators to continue providing "substantially the same" service during and after the transition. As set forth *infra*, we establish an FSS transition cost reimbursement program modeled on that from the Lower C-band transition to ensure that all reasonable and necessary steps to relocate existing FSS C-band operations from 4.0–4.16 GHz in the contiguous United States will be compensated for, in addition to setting forth an appropriate incentive structure in recognition of the eligible space station operators' role developing and managing comprehensive Transition Plans for the services used by their customers. SES and Eutelsat—the eligible space station operators responsible for the vast majority of existing FSS C-band operations—have also both indicated that with sufficient reserved capacity in the Upper C-band for essential services they will be able to offer their customer base "substantially the same" service both for

[338] SES Comments at 10–14; SES Reply at 16–19; Letter from Nancy Eskenazi, Senior Vice President, Global Legal & Regulatory Affairs, SES, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2–3 (filed Apr. 9, 2026) (*SES Apr. 9, 2026 Ex Parte*).

[339] Eutelsat Reply at 11–12.

[340] ACA Comments at 6–15; ACA Reply at 3–9; ARCTEK Comments at 1–4; ARCTEK Reply at 1–2; NAB Comments at 2–8; NAB Reply at 4–10; NPR Comments at 2–6; NCTA Comments at 2–20; NCTA Reply at 2–19; Spectrum Alliance Comments at 1–9; Spectrum Alliance Reply at 1–7; PSSI Comments at 1–39; SBE Comments at 3–11; Affiliates Associations Reply at 3–14; Content Companies Reply at 4–20; Local Broadcasters Reply at 2–3, 6–7; Starz Reply at 3–7.

[341] ACA Reply at 7–9; ARCTEK Comments at 2–3; NAB Reply at 7–8; NCTA Comments at 20–22; NCTA Reply at 18–19; Spectrum Alliance Comments at 5–6; Spectrum Alliance Reply at 6; SBE Comments at 7–9; Affiliates Associations Reply at 7–10; Content Companies Reply at 9–13; Starz Reply at 3–4; *see also* Letter from Mary Claire York, Vice President and Associate General Counsel of Legal and Regulatory Affairs, NCTA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2–3 (filed Apr. 29, 2026) (*NCTA Apr. 29, 2026 Ex Parte*); Letter from Mary Claire York, Vice President and Associate General Counsel of Legal and Regulatory Affairs, NCTA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2–3 (*NCTA June 2, 2026 Ex Parte*). Commenters also question the suitability of stand-alone IP-delivered services to replicate existing FSS C-band service. *Id.*; *but see* LTN Comments at 8–13, 15–17; LTN Reply at 2–5; Zixi Comments at 1–3; Zixi Reply at 3–4; Letter from Alan Young, Vice President, Strategic Development, Zixi, LLC, et al., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed May 8, 2026) (*Zixi May 8, 2026 Ex Parte*).

[342] ACA Comments at 6–15; ACA Reply at 3–4; NAB Reply at 3, 5–6; NCTA Comments at 8–11; NCTA Reply at 8–9; PSSI Comments at 8, 14–22; Content Companies Reply at 13–14; Local Broadcasters Reply at 2–3, 6–7.

repacked services in the C-band and migrated services and/or links in the Ku-band post-transition.[343] To that end, and as proposed by SES, our reallocation of 160 megahertz for terrestrial wireless services will allow for the possibility of maintaining a residual transponder of FSS C-band service for each eligible space station operator.[344]

104. While we acknowledge the concerns raised by various segments of the media industry about the potential migration to the Ku-band of many FSS services and links currently received in the C-band as part of a hybrid delivery approach, we ultimately disagree with the view that this proposed relocation would result in a fundamental license change. The relevant standard is "substantially the same" or "essentially the same," not "exactly the same." As such, post-transition services need only be comparable in nature to the pre-transition ones. While in the *2020 C-band R&O* we found that use of the upper 200 megahertz in the Upper C-band was sufficient to continue providing the same services previously provided over the entire 500 megahertz of C-band,[345] that finding does not require us to follow precisely the same path based on present circumstances and the record before us today.[346] Likewise, the D.C. Circuit's subsequent reference to the Commission's determination reflects its assessment that the Commission did not exceed its modification authority, given that it found essentially the same services could be delivered post-transition through different means.[347] Contrary to the suggestion of some commenters,[348] this does not mean that we must maintain 200 megahertz of C-band spectrum for FSS services (setting aside the congressional mandate that we reconfigure at least 100 megahertz). Indeed, since the *2020 C-band R&O* incumbent FSS uses of the C-band have continued to wane.[349] While the record reflects that the media sector continues to make meaningful, albeit diminished, use of FSS C-band services today,[350] we find that these same content acquisition and distribution services can be delivered through different means as proposed by the eligible space station operators, namely a hybrid delivery approach that involves C-band, Ku-band, and a terrestrial recovery network in certain locations.[351]

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[343] SES Comments at 7–8, 16–17; SES Reply at 3–4; Eutelsat Reply at 10–12.

[344] SES Comments at 7–8; SES Reply at 6–8.

[345] *2020 C-band R&O*, 35 FCC Rcd at 2397, para. 130.

[346] *See Intelligent Transp. Soc'y of Am. v. FCC*, 45 F.4th 406, 414–15 (D.C. Cir. 2022).

[347] *PSSI Glob. Servs.*, 983 F.3d at 11 ("This finding establishes that the SSOs will be able to provide essentially the same services after the transition as before. They will just be required to do so through different means—by utilizing the upper 200 MHz of the C-band rather than the entire 500 MHz.").

[348] PSSI Comments at 18–22.

[349] *In the Matter of Applications of SES S.A. and Intelsat S.A. For Consent to Transfer of Control of Licenses and Authorizations*, Memorandum Opinion and Order, DA 25-614, SB Docket No. 24-267 (July 11, 2025) ("In particular, the Applicants argue that media customers have several alternative distribution options, including terrestrial fiber networks, which have become increasingly competitive with their satellite-based services; and argue that changing video consumption patterns among consumers have reduced demand for traditional linear television service, and therefore, the Applicants' programming distribution services as well. The applicants assert that their revenues from media services have declined due to increased competition and reduced demand for their services.").

[350] *See, e.g.*, ARCTEK Comments at 2; Eutelsat Comments at 1–2; NAB Comments at 1; NCTA Comments at 1–2; NPR Comments at 1–3; SES Comments at 5–6; SES Reply at 6–7; Spectrum Alliance Comments at 5. *But see* Ericsson Comments at 7 ("Demand for C-band satellite services is diminishing as media consumption moves from traditional linear television service to streaming and as content distribution services have come to increasingly rely upon other platforms."); LTN Reply at 1 ("Alternative distribution models such as those that utilize internet protocol ("IP") have already successfully replaced legacy fixed satellite services ("FSS") utilizing C-band with equal or better performance and reliability metrics.").

[351] We make the same finding with respect to other FSS C-band data and communications services that eligible space station operators also provide.

105. A key element of this hybrid delivery approach, as proposed by the eligible space station operators, involves migrating some existing FSS C-band services and/or links to the Ku-band with a terrestrial recovery network in relevant locations to mitigate any packet loss due to rain fade or other outages. Commenters underscore the viability of such a hybrid delivery approach, and emphasize that in the aggregate it addresses limitations with each individual transmission technology.[352] Specifically, in detailing the various measures it is proposing as part of its hybrid approach, including a supplemental terrestrial recovery network, SES concludes that it "will be able to mitigate the inherent differences between C-band and Ku-band spectrum and provide its media customers with substantially the same level of service in Ku-band as they enjoy today in the Upper C-band.[353] Data provided by NAB confirms that the various measures advanced by SES to bolster any Ku-band downlinks can offset any technical differences from C-band downlinks, except in the locations most susceptible to rain fade, which we believe a terrestrial recovery network can otherwise address.[354] Given the multiple technical measures proposed by the eligible space station operators in this hybrid delivery approach, including the potential retention of certain uplink services in the C-band and use of a terrestrial recovery network in specific locations, we believe that the risk of rain fade or other signal disruption historically attributed to Ku-band service alone will be sufficiently offset to constitute "substantially the same service" in comparison with those services currently delivered in the C-band. We reiterate that these services need only be substantially the same in nature to meet the requirements of section 316, and that the Commission's technical and licensing rules do not guarantee any particular quality of service standard.[355]

106. In this context, we also address concerns raised by commenters with respect to recent changes in the EPFD limits applicable to the Ku-band for GSO links.[356] The framework recently adopted by the Commission will ensure the protection of Ku-band systems by extending our time-tested good-faith coordination model that allows non-geostationary orbit (NGSO) and geostationary orbit (GSO) operators to negotiate for appropriate interference protections through voluntary, private agreements. As

[352] *See* SES Comments at 10–14 (citing Video Services Forum Technical Recommendation TR-06-4 Part 7, "Reliable Internet Stream Transport (RIST) Satellite-Hybrid: In-band Method" as "expected to improve overall availability while minimizing terrestrial transport costs for existing C-band media customers" which as a new method "will require coordination with customers and the development of new equipment"); SES Reply at 16–19; *SES Apr. 9, 2026 Ex Parte* at 2–3; Synamedia Comments at 2–3; InterTECH Reply at 2–4, Exh. A; Letter from William D. Bauer, President and CEO, InterTECH Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 at 1 (filed Apr. 14, 2026); Harmonic Reply at 3–4.

[353] SES Comments at 10–14; SES Reply at 16–19; *SES Apr. 9, 2026 Ex Parte* at 2–3 (detailing measures including the deployment of optimized Ku+ satellites with C-band uplinks, improvements in satellite ground infrastructure, lower modulation, coding, and error correction ("ModCod") schemes, and a supplemental recovery network); *see also NCTA Apr. 29, 2026 Ex Parte* at 2 ("[T]he SES proposal to launch new Ku-band satellites . . . with C-band uplinks cross-strapped to Ku-band downlinks is promising and could be workable in many instances."); Letter from Frank Sanders to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 1 (filed May 19, 2026) (analyzing "how use of larger sized antennas for Ku-band downlinks can deliver comparable service to today's Upper C-band operations").

[354] *See* Letter from Robert Weller, Vice President, Spectrum Policy, NAB to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed Apr. 9, 2026); *see also SES Apr. 9, 2026 Ex Parte* at 3 ("This terrestrial recovery solution can be activated to recover data packets that are corrupted or lost in transit (e.g., due to rain fade) and will integrate seamlessly with the Ku-band satellite service to provide automated (i.e., no manual intervention) and "hitless" (i.e., no service disruption) recovery of video packets lost due to rain fade.").

[355] Further, SES specifies that while its media customers expect a high quality of service, "that level of service is not typically provided for in the service agreements with customers." *SES Apr. 9, 2026 Ex Parte* at 1.

[356] *Modernizing Spectrum Sharing for Satellite Broadband*, SB Docket No. 25-157, Report and Order, FCC 26-26 (Apr. 30, 2026) (*NGSO-GSO Sharing R&O*); *see also SES Apr. 9, 2026 Ex Parte* at 3 & n.3 ("The potential impact of [the NGSO-GSO] Order underscores the need for the multi-faceted approach SES proposes here to help replicate essentially the same C-band service in Ku-band for its transitioned customers.").

a backstop where coordination is not reached, the Commission adopted different metrics based on whether the GSO link uses Adaptive Coding and Modulation (ACM), among other protections.[357] For video distribution satellite systems that typically do not employ ACM, we believe that the relevant interference-to-noise limit and the limitation on the absolute increase in link unavailability will address potential interference concerns, in addition to other measures that the GSOs could adopt, some of which have been identified by SES as part of its tentative transition proposal in the instant proceeding.[358] We note that in developing more formal Transition Plans, the eligible space station operators also have the ability to plan for adequate spectrum to implement any necessary measures that may require additional spectrum, such as error detection and correction coding. We thus conclude that concerns about our recent EPFD changes with respect to the Ku-band are unavailing and will in no way diminish the Ku-band's suitability as part of a hybrid delivery system that will provide substantially the same service as existing FSS C-band service.

107. In sum, we find that modifying the authorizations of all incumbent space station operators to clear 4.0–4.16 GHz and confining their operations to 4.16–4.2 GHz in the contiguous United States is within the Commission's statutory authority, consistent with prior Commission practice, and will promote the public interest, convenience, and necessity by enabling the reconfiguration of the Upper C-band for expanded terrestrial wireless use as required by the OBBB Act. We also determine that the potential migration of certain incumbent FSS C-band satellite operations to a hybrid delivery approach involving the Ku-band will meet the "substantially the same" standard for permissible license modifications under section 316 of the Act. As detailed *infra*, we also establish an FSS transition cost reimbursement regime and appropriate incentives for the eligible space station operators consistent with our *Emerging Technologies* framework to facilitate the clearing and relocation process.

b. Clearing Earth Station Operations

108. Our rationale for clearing incumbent earth station operations from the Upper C-band mirrors that relating to incumbent space station operations. However, we reiterate that earth station registrants are not Commission licensees and thus have neither "transmission" authority[359] nor any corresponding licensed spectrum usage rights.[360] On this basis, past regulatory actions involving receive-only earth stations has been based on our Title I ancillary authority as part of "other regulatory responsibilities to maximize effective use of satellite communications" over which the Commission has express Title III authority.[361] The Commission utilized this authority in the *2020 C-band R&O* to modify

[357] *NGSO-GSO Sharing R&O* at 26–32, paras. 50–65. For GSO links using ACM, we require no more than 3% time-weighted average throughput degradation and no more than 0.1% absolute increase in link unavailability. For GSO links that do not employ ACM, such as point-to-multipoint video transmissions, we require an interference-to-noise of -10.5 dB 80% of the time and no more than 0.1% absolute increase in link unavailability. We also require a minimum 3-degree GSO arc avoidance angle for NGSO systems. *Id.*

[358] *NGSO-GSO Sharing R&O* at 28–32, paras. 54–65. These additional measures include greater interleaving of packets in the transmission scheme, increased error detection and correction coding, the use of larger antennas for increased gain, increased power, and the addition of a supplemental recovery ground network to aid in recovering missing or corrupted data packets. *Id.*; *see also SES Apr. 9, 2026 Ex Parte* at 2–4; SES Comments at 10–14.

[359] *Upper C-band NPRM*, 40 FCC Rcd at 9494, para. 90; *2020 C-band R&O*, 35 FCC Rcd at 2365–66, 2406, paras. 43, 147 ("The Communications Act defines the term "license" narrowly as "that instrument of authorization *required by* [the Act] or the rules and regulations of the Commission made pursuant to [the Act], for the use or operation of apparatus for transmission of energy, or communications, or signals by radio, by whatever name the instrument may be designated by the Commission.").

[360] *Upper C-band NPRM*, 40 FCC Rcd at 9494, para. 90; *2020 C-band R&O*, 35 FCC Rcd at 2365–66, 2406, paras. 43, 147 ("Since 1979 the Commission has found that licensing receive-only earth stations was not required by the Communications Act because, by definition, such earth stations do not transmit energy, communications, or signals by radio, and since 1991 receive-only earth stations have not been eligible to apply for a Commission license.").

[361] *Upper C-band NPRM*, 40 FCC Rcd at 9494, para. 90; *2020 C-band R&O*, 35 FCC Rcd at 2406, para. 147.

the frequencies on which earth station registrations received interference protection to comply with the broader Lower C-band reconfiguration.[362] We take similar action here to limit those frequencies with interference protection to 4.16–4.20 GHz.

109. While a relatively small subset of earth stations in the C-band today are licensed to operate on other frequencies, they have no licensed spectrum usage rights in 4.0–4.2 GHz.[363] Notwithstanding those licenses to transmit in other frequency bands, we continue to believe we have ample authority to modify their authorizations and interference protection rights in the Upper C-band once incumbent satellite operations are modified consistent with section 316.[364] As with our clearing of incumbent space station operations, this proposed modification does not effect a fundamental change because incumbent earth stations will continue to receive and provide similar service (whether in 4.16–4.2 GHz or, as proposed, in the Ku-band) as before the modification of their registration or license.[365]

3. Transition Schedule

110. Consistent with the approach taken in the *2020 C-band R&O*, we once again believe that a mix of carrots and sticks will best facilitate a rapid and predictable transition of incumbent FSS services in the Upper C-band, subject to certain modifications reflecting the instant transition's unique traits.[366] We establish a Primary Transition Deadline of December 30, 2030, for the relocation of all incumbent FSS operations in the top 75 PEAs in the contiguous United States that will align with the FAA's first radio altimeter retrofit deadline.[367] Our intent in aligning these two deadlines is to provide certainty to potential bidders in the forthcoming auction—and among them the eventual new Upper C-band terrestrial wireless licensees—of when they will be able to start operations across the full 160 megahertz of repurposed Upper C-band spectrum in markets representing approximately 70% of the United States population. To this end, we specify that Upper C-band terrestrial wireless operations may begin in those PEAs subject to the Primary Transition Deadline as of December 31, 2030. We also establish a Final Transition Deadline of June 30, 2031 for the entire 160 megahertz in all remaining PEAs in the contiguous United States.[368] Terrestrial wireless operations may begin in PEAs subject to the Final Transition Deadline as of July 1, 2031 or once all eligible space station operators have had their Certifications of Completion for those PEAs validated and the associated incentive payments have been made by the Upper C-band wireless licensees, as discussed *infra*.[369]

111. From an incumbent FSS perspective, we note that both SES and Eutelsat have voluntarily indicated that, assuming cost reimbursement and an appropriate incentive structure, they will be able to

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[362] *2020 C-band R&O*, 35 FCC Rcd at 2406, para. 147.

[363] *Upper C-band NPRM*, 40 FCC Rcd at 9495, para. 91; *2020 C-band R&O*, 35 FCC Rcd at 2406, para. 148.

[364] *Upper C-band NPRM*, 40 FCC Rcd at 9495, para. 91; *2020 C-band R&O*, 35 FCC Rcd at 2406, para. 148.

[365] *2020 C-band R&O*, 35 FCC Rcd at 2406, para. 148. We emphasize that we are not modifying the transmit licensed spectrum usage rights of these entities. While certain holders of these transmit-receive authorizations cite limited availability of the paired uplink spectrum at 5850–6425 MHz, those issues fall outside the scope of the instant proceeding. NAB Comments at 11–12; PSSI Comments at 12–15; Spectrum Alliance Comments at 3–4.

[366] *2020 C-band R&O*, 35 FCC Rcd at 2408–15, paras. 154–77.

[367] The Primary Transition Deadline applies to PEAs 1–41 and 43–76, after which Upper C-band terrestrial wireless operations can commence service. The FAA has likewise specified that its first radio altimeter retrofit requirement deadline, which covers all aircraft operating under 14 CFR part 121 and aircraft operating under 14 CFR part 129 that have 30 or more passenger seats or a payload capacity of more than 7,500 pounds, is intended to correspond with the date on which the Commission authorizes wireless service in the Upper C-band. *See FAA Final Rule* at Section I.A; *FAA NPRM*, 91 Fed. Reg. at 461.

[368] This Final Transition Deadline applies to PEAs 77–211, 213–63, 265–97, 299–359, and 361–411.

[369] *See* Section III.C.5.

clear all of their existing Upper C-band operations in the relevant markets by those dates. Specifically, SES believes it can clear all of its existing Upper C-band operations in accordance with this schedule while still providing substantially the same service.[370] Eutelsat likewise indicates that it can migrate all 160 megahertz in a similar timeframe while meeting the needs of its customers.[371] While we anticipate that the eligible space station operators will refine their planning and schedules through the formal Transition Plan process, we find that sufficient alignment exists in these projected timelines to establish these Transition Deadlines for purposes of the Upper C-band transition. We recognize that this differs from the structure employed in the Lower C-band transition, where the Commission established a final relocation deadline, and allowed eligible space station operators to elect to comply with two earlier accelerated relocation dates.[372] On balance, we find that the circumstances present in the instant transition are sufficiently distinct from those in the Lower C-band that the complexity of that earlier transition structure and schedule is unnecessary. For example, in light of the FAA's parallel efforts to improve the performance of adjacent band radio altimeters, alignment between those efforts and the FSS transition is necessary to provide certainty to auction bidders on when wireless operations can commence in the Upper C-band. Further, we recognize that with fewer eligible space station operators remaining in the Upper C-band, a formal election process for acceleration is unnecessary given SES and Eutelsat's voluntary statements and could be counterproductive in setting a timely and predictable transition timeline. For these reasons, we will authorize new Upper C-band terrestrial wireless licensees to commence operations and provide service to the vast majority of the United States population starting December 31, 2030, with all remaining markets to follow soon thereafter no later than July 1, 2031.

112. In terms of carrots and sticks, we establish *infra* an appropriate incentive structure that recognizes the primary role that the eligible space station operators will play in designing and leading service transition efforts for their and their customers' operations, as well as the additional complexities present in the instant context (e.g., a potential migration of some services or links to the Ku-band and alignment with the FAA's first radio altimeter retrofit deadline). These equities differ from those involved in the Lower C-band transition, which involved the clearing of a larger amount of spectrum through an in-band repack, and the revised incentive structure we adopt herein accounts for those additional variables. We find that this revised incentive structure will best serve our policy goals and the public interest by incentivizing the eligible space station operators to make a substantial amount of Upper C-band spectrum available for terrestrial wireless use on a unified and predictable schedule while at the same time meeting the needs of their customers. To further reinforce this outcome, the relevant penalties for failure to meet the Final Transition Deadline will mirror those from the Lower C-band transition. Specifically, eligible space station operators will lose the right to transition cost reimbursement and incentives and be subject to potential penalties for any unauthorized transmissions in the 4.0–4.16 GHz band after the Final Transition Deadline based on violations of section 301 of the Act.[373]

4. Transition Cost Reimbursement

113. Pursuant to our *Emerging Technologies* framework, new Upper C-band terrestrial wireless licensees will be required to reimburse eligible incumbents for the reasonable and necessary costs of transitioning existing FSS C-band services out of 4.0–4.16 GHz in the contiguous United States.[374] While we intend to follow our Lower C-band transition precedent where applicable, certain aspects of the Upper C-band transition cost reimbursement regime will necessarily differ in light of our clearing target and the specific transition steps that the eligible space station operators have proposed in

[370] SES Comments at 7–8, 16–17; SES Reply at 3–4.

[371] Eutelsat Reply at 10–12.

[372] *2020 C-band R&O*, 35 FCC Rcd at 2408–15, paras. 154–77.

[373] *2020 C-band R&O*, 35 FCC Rcd at 2414–15, paras. 175–77; *see also* 47 U.S.C. § 301.

[374] *See, e.g.*, ACA Reply at 3.

this context. Below we detail our authority to require Upper C-band licensees to cover the reasonable and necessary transition costs of eligible FSS incumbents, provide general guidance on what will constitute a compensable transition cost for purposes of clearing existing FSS C-band services from 4.0–4.16 GHz in the contiguous United States, and identify our overall estimates for the FSS transition cost reimbursement program.

114. *Authority to Require Reimbursement Payments*. As with the Lower C-band transition, we will once again employ our broad spectrum management and licensing authority under section 303 of the Act to condition the grant of new terrestrial wireless licenses in the Upper C-band on the payment of all reasonable and necessary transition costs incurred by eligible space station and incumbent earth station operators to clear existing FSS C-band services from 4.0–4.16 GHz in the contiguous United States.[375] The Commission specified in the Lower C-band context that it has "repeatedly used this authority to impose conditions on new licensees, including buildout conditions, public safety obligations, and obligations to facilitate the transition of incumbents out of the spectrum at issue before commencing operations."[376] Since 1992, the *Emerging Technologies* framework has formed the basis of different cost sharing mechanisms to enable new licensees in a band to facilitate the relocation of incumbents.[377] Further, courts have upheld the Commission's use of this authority.[378] The record in the instant proceeding evidences widespread support for the application of the *Emerging Technologies* framework to the in-band transition of 4.0–4.16 GHz and, as such, we will structure the Upper C-band transition cost reimbursement program with this authority and precedent in mind.[379]

115. *Compensable Transition Costs*. Consistent with Commission precedent, eligible space station operators and incumbent earth station operators may seek reimbursement of reasonable transition costs involved in clearing existing FSS C-band services out of 4.0–4.16 GHz in the contiguous United States that are necessary for such operators to provide substantially the same service after the transition as they did before.[380] These costs will include all reasonable engineering, equipment, site and FCC fees, as well as other reasonable and necessary additional costs that eligible space station operators and incumbent space station operators incur in connection with the transition of existing FSS C-band operations out of 4.0–4.16 GHz in the contiguous United States.[381] We recognize that the specific transition activities that

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[375] 47 U.S.C. § 303; *2020 C-band R&O*, 35 FCC Rcd at 2415–22, paras. 179–92.

[376] *2020 C-band R&O*, 35 FCC Rcd at 2416, para. 180.

[377] *See, e.g.*, *Emerging Technologies Order*; *see also Redesignation of the 17.7–19.7 GHz Frequency Band*, IB Docket No. 98-192, Report and Order, 15 FCC Rcd 13430, 13467, para. 76 (2000) (*18 GHz Order*); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Servies to Support the Introduction of New Advanced Wireless Services*, ET Docket No. 00-258, Ninth Report and Order, 21 FCC Rcd 4473, 4478, para. 8 & n.24 (2006) (*3 GHz R&O*); *Service Rules for Advanced Wireless Services H Block—Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915–1920 MHz and 1995–2000 MHz Bands*, WT Docket No. 12-357, Report and Order, 28 FCC Rcd 9483, 9548, para. 167 (2013).

[378] *Ass'n of Public Safety Commc'ns Offs.-Int'l, Inc. v. FCC*, 76 F.3d 395, 397, 400 (D.C. Cir. 1996); *Teledesic LLC v. FCC*, 275 F.3d 75, 84–86 (D.C. Cir. 2001).

[379] ACA Comments at 6–7; ACA Reply at 3; CTIA Comments at 23–25; Ericsson Comments at 9; Eutelsat Comments at 8–10; LTN Comments at 14–15; NCTA Comments at 8–9; SBE Comments at 9–11; SES Comments at 19–22; T-Mobile Comments at 5; Verizon Comments at 11–14; Verizon Reply at 10–11; Lumen Reply at 5–8.

[380] *Upper C-band NPRM*, 40 FCC Rcd at 9497–98, para. 96; *2020 C-band R&O*, 35 FCC Rcd at 2422–28, paras. 193–204.

[381] *Emerging Technologies Order*, 7 FCC Rcd at 6890, para. 24 ("This includes all engineering, equipment, site and FCC fees, as well as any reasonable, additional costs that the relocated fixed microwave licensee may incur as a result of operation in a different fixed microwave band or migration to other media."); *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, 15 FCC Rcd 12315, 12351, para. 108 (2000) (same); *18 GHz Order*, 15 FCC Rcd at 13469, para. 82 & n.165 (relocation costs (continued….)

eligible incumbents undertake will differ depending on whether the relevant service and/or link is being repacked within 4.16–4.2 GHz or migrated to the Ku-band, and provide general guidance *infra* on the parameters of what constitutes a compensable transition cost in each scenario for purposes of the Upper C-band transition. We also establish an alternative lump sum reimbursement path for incumbent earth station operators that seek to opt out of the formal transition process led by the eligible space station operators. This lump sum mechanism will provide incumbent earth station operators the option to: (1) perform their own transition work to maintain FSS service; (2) migrate to an alternative distribution technology; or (3) discontinue service altogether.

116. For existing FSS C-band services being repacked within 4.16–4.2 GHz in the contiguous United States, the record reflects that no new satellites will be necessary.[382] The eligible space station operators may nonetheless need to install compression and modulation equipment at their terrestrial facilities to make more efficient use of spectrum resources.[383] For incumbent earth station operators, we again anticipate that earth station migration and filtering may be necessary.[384] Our expectation remains that incumbents will obtain the equipment that most closely replaces their existing equipment or, as needed, provides the targeted technology upgrades necessary to clear 4.0–4.16 GHz, so long as those costs are reasonable.[385] This may include, for example, video compression, modulation/coding, and HD to SD down-conversion at downlink locations to the extent necessary to accomplish efficient clearing and so long as they are reasonable in cost.[386]

117. In contrast, the migration of existing FSS C-band services and/or links to a hybrid delivery approach involving the Ku-band may require different transition tasks and thus incur compensable costs distinct from those involved in the Lower C-band transition which in this case may also vary from operator to operator. We reiterate that all such costs must be both reasonable and necessary to migrate existing FSS C-band services to a hybrid/Ku-band delivery approach for purposes of the Upper C-band transition in the contiguous United States, and recognize that each of the eligible space station operators, in coordination with their customers, may choose to implement this migration in different ways. For example, SES proposes to construct new hybrid satellites with "cross-strapped" C-band uplink (5850–6425 MHz) and optimized Ku-band downlink (11.7–12.2 GHz) designed to compensate for rain fade.[387] SES also indicates that its customers may need to use lower modulation and coding schemes in Ku-band than in C-band to maintain quality and availability in all weather

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included "all engineering, equipment, site and FCC fees, and any legitimate and prudent transaction expenses incurred by the terrestrial licensee that are directly attributable to an involuntary relocation (subject to a cap of 2% of the hard costs involved)").

[382] SES Comments at 10 (proposing new, specifically designed Ku-band satellites for any repurposing above 100 megahertz); Eutelsat Reply at 11–12 (proposing only new Ku-band satellites for any repurposing above 130 megahertz).

[383] *Upper C-band NPRM*, 40 FCC Rcd at 9498, para. 96 & n.245; *2020 C-band R&O,* 35 FCC Rcd at 2425, para. 199.

[384] *Upper C-band NPRM*, 40 FCC Rcd at 9498, para. 96 & n.245; *2020 C-band R&O,* 35 FCC Rcd at 2426–27, para. 201. Migration entails any necessary changes to allow an incumbent earth station to receive C-band services on new frequencies once the incumbent space station operators have relocated any relevant services within 4.16–4.2 GHz, such as retuning, repointing, or other necessary equipment and software installations. *Id.* Filtering involves the installation of passband filters, and in some cases new low-noise block downconverters or low-noise amplifiers, to block signals from adjacent channels and to prevent harmful interference. *2020 C-band R&O,* 35 FCC Rcd at 2426–27, para. 201; SES Comments at 9.

[385] *2020 C-band R&O*, 35 FCC Rcd at 2422, para. 194.

[386] *2020 C-band R&O*, 35 FCC Rcd at 2422–23, para. 194.

[387] SES Comments at 12; SES Reply at 17; *SES Apr. 9, 2026 Ex Parte* at 2.

conditions.[388] For its part, Eutelsat proposes that it would need to procure new Ku-band satellites.[389] For incumbent earth stations, SES says that some existing C-band antennas could be retrofitted with Ku-band feeds, resulting in larger dishes with higher gain to further compensate for the effect of precipitation at higher frequencies.[390] In other cases, SES notes that new Ku-band antennas may be appropriate where retrofit is not technically feasible, or to point at additional orbital locations to continue to receive the same programming.[391] To re-transmit and recover any data potentially lost in transmission, SES further proposes to establish a terrestrial recovery network in parts of the United States with the most substantial risk of rain fade, which it says will require coordination with customers and involve developing new equipment.[392] Eutelsat likewise suggests that it would need to migrate its customers, reconfigure ground-based infrastructure, and implement alternative terrestrial distribution technologies.[393]

118. In order to accommodate the migration of existing C-band downlinks to the Ku-band, SES believes that certain existing Ku-band aeronautical and maritime customers may in turn need to be moved to the extended Ku-band to make room for the inbound C-band services.[394] SES indicates that this would entail the addition of extended Ku-band capacity on any newly launched Ku-band satellites, and new extended Ku-band gateway equipment for repacked existing Ku-band customers.[395] Finally, SES says that it may also need to use extended C-band uplink spectrum (from 5850–5925 MHz) as part of its "cross strapped" approach which it suggests may require some feed modifications to enable existing uplink antennas to transmit in the lower frequencies.[396]

119. We emphasize that our recitation of these preliminary proposals is not intended to prejudge the submission of formal Transition Plans by the eligible space station operators. Further, our description of these proposals is not meant to signal any pre-approval thereof in terms of the specific technology choices made, individual transition steps involved, or the compensability of certain costs. We also do not intend for this recitation to be interpreted as circumscribing the Upper C-band Clearinghouse's ability to assess and determine the reasonableness and necessity of actual cost reimbursement claims in the first instance. We describe these proposed steps by the eligible space station operators to illustrate that the Upper C-band transition's complexity will differ from that in the Lower C-band transition. As such, eligible incumbents may incur different compensable transition costs.

120. In this context, we note that the eligible space station operators will publicly file formal Transition Plans that articulate in detail their proposed transition steps, and will be subject to stakeholder input. We caution the eligible space station operators that they must describe with specificity any transition steps for which they intend to seek cost reimbursement in their Transition Plans, particularly those that diverge from transition actions taken in the Lower C-band.[397] At the same time, we delegate

[388] SES Comments at 11; *SES Apr. 9, 2026 Ex Parte* at 3.

[389] Eutelsat Reply at 11–12.

[390] SES Comments at 12; SES Reply at 17; *SES Apr. 9, 2026 Ex Parte* at 2–3.

[391] SES Comments at 12–13.

[392] SES Comments at 13–14; SES Reply at 17 & n.49; *SES Apr. 9, 2026 Ex Parte* at 3.

[393] Eutelsat Reply at 11–12; Letter from Brian D. Weimer, Counsel to Eutelsat Communications S.A., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed Feb. 2, 2026) (*Eutelsat Feb. 2, 2026 Ex Parte*).

[394] SES Comments at 11; SES Reply at 18.

[395] SES Comments at 11; SES Reply at 18.

[396] *SES Apr. 9, 2026 Ex Parte* at 2 & n.2

[397] For example, any proposed migration of Ku-band services to the extended Ku-band to accommodate the Upper C-band transition should be described in full, with a sufficient demonstration of the necessity and reasonableness of the proposed actions to advise stakeholders and facilitate a later clearinghouse initial determination about their compensability. This description should also clearly articulate how the proposed migration is directly necessary to (continued….)

authority to WTB to develop a Cost Catalog to provide guidance to both eligible FSS incumbents and potential auction bidders about a range of presumptively reasonable transition costs, as detailed *infra*, which will be expanded to include transition actions related to the migration of existing FSS C-band services and/or links to the Ku-band. As in the Lower C-band transition, the Upper C-band Cost Catalog will establish a range of estimated costs that may be presumed reasonable, but eligible incumbents will not be precluded from obtaining reimbursement for their actual costs that exceed the amounts in the Cost Catalog so long as such costs are reasonably necessary to the instant transition and incumbents provide justification to the clearinghouse.[398] We anticipate that the Transition Plan and Cost Catalog processes will afford stakeholders and the clearinghouse additional insights and guidance about proposed transition actions, compensable items, and presumptively reasonable cost ranges for purposes of the Upper C-band transition cost reimbursement program.[399]

121. No matter what specific transition activities an eligible incumbent ultimately undertakes, we clarify that certain topline principles from the *2020 C-band R&O* will continue to inform the Upper C-band transition cost reimbursement program. For example, the incremental costs of equipment upgrades beyond what is necessary to clear existing FSS C-band services from 4.0–4.16 GHz in the contiguous United States will be reasonably allocated to and borne by the incumbent operator.[400] Incumbents may not "gold-plate" their systems and will not receive more reimbursement than is necessary and reasonable.[401] If a particular expenditure is unreasonable, the incumbent will only be reimbursed for the reasonable costs it would have incurred had it made a more prudent decision.[402] While we believe that so-called "soft costs," which are legitimate and prudent transaction expenses directly attributable to the transition,[403] should be reimbursable in some cases, we will set a rebuttable presumption cap of 2% of hard costs consistent with past Commission practice.[404] We recognize concerns from stakeholders about the scope of soft costs during the Lower C-band transition, notably financing charges and interest, but do not believe a firm cap on soft costs affords sufficient flexibility as part of the claims review and true up

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clear existing FSS C-band services from 4.0–4.16 GHz in the contiguous United States. Further, any impacted Ku-band facilities (including Earth Stations in Motion aboard aircraft and vessels) must be located in and serve the contiguous United States. We anticipate that any such proposed actions would be narrowly tailored to include only those steps that are reasonable and necessary steps to clear FSS C-band operations from 4.0–4.16 GHz.

[398] *Wireless Telecommunications Bureau Releases Final Cost Category Schedule for 3.7–4.2 GHz Band Relocation Expenses and Announces Process and Deadline for Lump Sum Elections*, GN Docket No. 18-122, IB Docket No. 20-205, Public Notice, 35 FCC Rcd 7967 (WTB 2020) (*Cost Category PN*).

[399] As such, we decline to preemptively assess specific proposed transition steps, such as spare satellites, here in deference to the public Transition Plan and Cost Catalog processes. *See* Letter from Christiaan Segura, Assistant Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 at 4–5 (filed Apr. 22, 2026) (*CTIA Apr. 22, 2026 Ex Parte*); Letter from Nancy Eskenazi, Senior Vice President, Global Legal & Regulatory Affairs, SES, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 5 (filed June 4, 2026) (*SES June 4, 2026 Ex Parte*).

[400] *2020 C-band R&O*, 35 FCC Rcd at 2422–23, para. 194.

[401] *2020 C-band R&O*, 35 FCC Rcd at 2422–23, para. 194.

[402] *2020 C-band R&O*, 35 FCC Rcd at 2423, para. 195.

[403] These transactional expenses can include engineering, consulting, and attorney fees, as well as financing for clearing costs. *Upper C-band NPRM*, 40 FCC Rcd at 9498, para. 96 & n.246; *2020 C-band R&O*, 35 FCC Rcd at 2424, para. 197. For purposes of the Upper C-band transition cost reimbursement program, we will not consider any such expenses involved with appeals of clearinghouse determinations to be compensable.

[404] *Upper C-band NPRM*, 40 FCC Rcd at 9498, para. 96 & n.246; *2020 C-band R&O*, 35 FCC Rcd at 2424–25, paras. 197–98.

process.[405] While we believe it is appropriate for the Upper C-band Clearinghouse to consider whether financing acquisition is part of the ordinary course of business in assessing soft costs that exceed the 2% rebuttable presumption cap, we decline to outright disallow them on this basis.[406]

122. In terms of cost-related issues raised during the Lower C-band transition, we reiterate that only existing incumbent earth stations that remain operational in the C-band in the contiguous United States will be considered eligible incumbents for the Upper C-band transition and its corresponding transition cost reimbursement program.[407] That said, existing FSS C-band earth stations outside of the contiguous United States but within the United States may be eligible for reimbursement of transition costs where they "demonstrate that they were required to make the system modifications for which they seek reimbursement as a direct result of the transition in the contiguous United States."[408] However, no FSS C-band facilities outside of the United States will be eligible for any reimbursement of transition costs, independent of any arguable relationship to the transition in the contiguous United States.[409]

123. We also delineate broad categories that fall squarely outside the scope of permissible transition-related costs.[410] Consistent with established Commission precedent, including the Lower C-band transition, we find that it would not serve the public interest to reimburse eligible incumbents for the speculative value of business opportunities that they claim will be lost as a result of the Upper C-band transition.[411] Similarly, claims for "lost revenues" are not compensable as we find that the eligible space station operators will be able to continue providing substantially the same service to that which they provide today throughout and after the transition.[412] We also decline to consider ongoing operational expenses as reimbursable transition-related costs, as they are routine business expenses for any distribution technology, including existing FSS C-band service for which eligible incumbents hold direct responsibility today, and thus are not "reasonably necessary to complete the transition in a timely

[405] CTIA Comments at 27; CTIA Reply at 36–37; Verizon Comments at 13; SES Reply at 18–19, 27; *CTIA Apr. 22, 2026 Ex Parte* at 4; *SES June 4, 2026 Ex Parte* at 4–5.

[406] CTIA Comments at 27; CTIA Reply at 36–37; Verizon Comments at 13; SES Reply at 18–19, 27; *SES June 4, 2026 Ex Parte* at 5–7.

[407] As discussed *supra*, earth stations receiving existing FSS C-band services must meet our definition of an incumbent earth station to be eligible for transition cost reimbursement, and we will use the most recently released incumbent earth station list as the baseline going forward.

[408] *Upper C-band NPRM*, 40 FCC Rcd at 9498–99, para. 97; *2020 C-band R&O*, 35 FCC Rcd at 2428, para. 204; *Cost Category PN*, 35 FCC Rcd at 7968, 7996 & n.2, Attach. A & n.1.

[409] *Upper C-band NPRM*, 40 FCC Rcd at 9498–99, para. 97; *2020 C-band R&O*, 35 FCC Rcd at 2425, n.535; *see also Anuvu Licensing Holdings, LLC*, WT Docket No. 21-333, Initial Decision, FCC 26D-01 (ALJ Feb. 6, 2026).

[410] *See, e.g.*, *CTIA Apr. 22, 2026 Ex Parte* at 6–7.

[411] *Upper C-band NPRM*, 40 FCC Rcd at 9497–98, para. 96; *2020 C-band R&O*, 35 FCC Rcd at 2423–24, para. 196 & n.526; *see, e.g.*, *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, 6824–25, para. 630 (2012) (stating that the Spectrum Act prohibits reimbursement for "lost revenues" and declining to provide for compensation such losses that a station or MVPD might claim, such as lost ad revenue while a station is off air during a channel relocation); *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8825, 8848, para. 43 (1996) (*Microwave Relocation Cost Sharing Order*) (setting a limit on certain compensable soft costs associated with the relocation, finding that failing to adopt such restrictions "would encourage incumbents to view the relocation process as a business opportunity").

[412] *2020 C-band R&O*, 35 FCC Rcd at 2429, para. 207 & n.560 ("Indeed, if we were to credit such possible losses, we would also have to discount them given the year-over-year declines in industry C-band revenues.").

manner."[413] Other recurring charges that eligible incumbents may potentially incur shall not be compensable past the Final Transition Deadline, given all relevant transition-related tasks must be completed by that date.[414] Finally, in light of the multiple mitigation steps proposed by the eligible space station operators to offset rain fade and other differences between existing C-band and Ku-band service, which includes a terrestrial recovery system where needed, we find that the separate adoption of multiple distribution technologies or other redundancies (e.g., new Internet or fiber connections) directly by incumbent earth station operators themselves would constitute an optional upgrade in excess of what would be considered a reasonable and necessary transition cost.[415] While the goal of the in-band FSS transition cost reimbursement program is to enable eligible incumbents to provide substantially the same service during and after the transition, that service need not be exactly the same as it was pre-transition, nor does it guarantee a specific quality of service level. In keeping with our long standing precedent, eligible incumbents opting for actual cost reimbursement will receive all necessary and reasonable FSS transition costs to clear 4.0–4.16 GHz, but will not be allowed to "gold-plate" and/or seek compensation beyond that threshold.[416]

124. *Lump Sum Reimbursement Option*. Based on record support, we will once again give incumbent earth station operators flexibility to make efficient decisions to better accommodate their needs through a lump sum reimbursement option.[417] This lump sum mechanism will afford incumbent earth station operators in the contiguous United States the option to: (1) perform their own transition work to maintain FSS service; (2) migrate to an alternative distribution technology such as an IP-delivered

[413] *Upper C-band NPRM*, 40 FCC Rcd at 9497–98, para. 96; *2020 C-band R&O*, 35 FCC Rcd at 2423, para. 194; *see also* NAB Comments at 8; NCTA Comments at 16–17 (suggesting that some programmers may be 'forced' to use an alternative distribution technology that incurs regular monthly charges in lieu of as-needed services, and seeking reimbursement for up to 10 years of recurring operational charges); NCTA Reply at 14; PSSI Comments at 39; Spectrum Alliance Comments at 7–8; ACA Reply at 6; *Zixi May 8, 2026 Ex Parte* at 2. We further disagree with NCTA's suggestion that earlier Commission decisions related to the role of recurring charges in mandatory relocation negotiations, cost sharing formulas, Rural Health Care support, or other funding mechanisms are relevant to our use of the *Emerging Technologies* framework in this context. NCTA Reply at 14–15. We expect that eligible space station operators, programmers, and incumbent earth station operators will coordinate on appropriate transition steps as part of their private contractual relationships. Customers that retain FSS service will remain responsible for any relevant operational charges (whether recurring or as-needed) as part of those contractual relationships. For existing FSS customers that wish to use an alternative distribution technology going forward, they may elect a lump sum reimbursement option for any incumbent earth stations they operate (equivalent to the average cost of transitioning their facilities to the Ku-Band) which affords them flexibility to choose the technology and service provider that best suits their business goals. Once that election is made, however, they will have opted out of the formal FSS transition and may no longer seek actual transition cost reimbursement.

[414] CTIA Comments at 27.

[415] For example, SES notes that its proposed "cross-strapping" of C-band uplink and Ku-band downlink would eliminate the risk of rain fade for program contribution, and various technical measures and a terrestrial recovery network would offset that risk on the distribution side. *See* SES Comments at 12–13. *Cf.* ACA Comments at 6–15; ACA Reply at 3–9; ARCTEK Comments at 1–4; ARCTEK Reply at 1–2; NAB Comments at 2–8; NAB Reply at 4–10; NPR Comments at 2–6; NCTA Comments at 2–20; NCTA Reply at 2–19; Spectrum Alliance Comments at 1–9; Spectrum Alliance Reply at 1–7; PSSI Comments at 1–39; SBE Comments at 3–11; Affiliates Associations Reply at 3–14; Content Companies Reply at 4–20; Local Broadcasters Reply at 2–3, 6–7; Starz Reply at 3–7.

[416] *See generally 2020 C-band R&O*, 35 FCC Rcd at 2423, para. 195.

[417] *Upper C-band NPRM*, 40 FCC Rcd at 9499–500, para. 98–99; *2020 C-band R&O*, 35 FCC Rcd at 2427–28, paras. 202–03; *see also* ACA Comments at 10–11; LTN Comments at 22; SES Comments at 26; Summit Ridge Comments at 4; Verizon Comments at 13–14; Verizon Reply at 8, 20; Letter from J. Armand Musey, President, Summit Ridge Group, LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 6 (filed June 2, 2026) (*Summit Ridge June 2, 2026 Ex Parte*).

service; or (3) discontinue service altogether.[418] While the decision to opt for the lump sum payment in lieu of actual cost reimbursement is again irrevocable, we will allow incumbent earth station operators to elect lump sum payments on a per site basis to enable operators with a mix of facilities in urban and rural areas to opt for the type of transition that best meets their long term needs.[419] Any incumbent earth station operators electing the lump sum will be responsible for their own transition work for the relevant sites from that point forward, and must comply with the relevant Transition Deadline for the PEA where they are located.[420]

125. We delegate to WTB the authority to determine the appropriate amounts and procedures for lump sum elections by various classes of incumbent earth station operations as part of its Cost Catalog process. Consistent with past practice, the lump sum amounts will be based on the average estimated, reasonable costs of transitioning existing FSS C-band service out of 4.0–4.16 GHz,[421] but for purposes of the Upper C-band transition this shall include costs related to the potential migration of service or links to the Ku-band which we expect will be greater than those costs associated with a repack within the Upper C-band.[422] This will ensure that lump sum electees receive ample compensation to transition to a comparable service, but not for any optional upgrades that would exceed those costs by an order of magnitude.[423] Electees will need to make their irrevocable choice no later than 45 days after release of the Cost Catalog, and specify for each site whether it will be performing its own FSS transition work, migrating to a new distribution technology, or discontinuing service altogether.[424]

126. *Estimated Cost of FSS Transition*. We recognize that providing potential auction bidders with an estimate of their estimated transition cost reimbursement obligations associated with the Upper C-band transition is more challenging than in the Lower C-band context in light of the multiple ways in which eligible FSS C-band incumbents may opt to relocate their services. More granular transition cost

[418] We again specify that incumbent earth station owners may not elect a lump sum payment for earth stations outside of the contiguous United States. *2020 C-band R&O*, 35 FCC Rcd at 2428, para. 204 & n.550.

[419] In the Lower C-band transition, the Commission found that the needs for consistency and certainty in the transition process, and to prevent any improper cost shifting, justified establishing a one-for-all lump sum approach. *2020 C-band R&O*, 35 FCC Rcd at 2427, para. 202 & n.544. On balance, we believe that greater flexibility in the lump sum process for the Upper C band transition may promote increased adoption of this alternative approach and thus help streamline the cost reimbursement program.

[420] Given early wireless deployments will not be achievable for the Upper C-band transition prior to the FAA's first radio altimeter retrofit deadline, we decline to adopt proposals that lump sum electees notify the Relocation Coordinator or Commission when they have completed their transition tasks. Verizon Comments at 18. Once the relevant Transition Deadline has passed in a given PEA, or in the event that all eligible space station operators have completed the Certifications of Completion process for both Transition Deadlines prior to the Final Transition Deadline and related incentive payments have been made, terrestrial wireless operations in 3.98–4.14 GHz may commence and incumbent earth station operators that have not completed their transition work will lose any interference protection in that frequency range and must accept any harmful interference.

[421] Further, any lump sum categories and their application to specific incumbent earth stations and antennas for purposes of the Upper C-band transition shall comply with the Commission's earlier decision in *Mongoose Works, Ltd.*, WT Docket No. 21-333, File No. 1, Memorandum Opinion and Order, 40 FCC Rcd 731 (2025).

[422] *2020 C-band R&O*, 35 FCC Rcd at 2427–28, paras. 202–03.

[423] *See 2020 C-band R&O*, 35 FCC Rcd at 2428, para. 203 & n.547 ("Any costs over and above the lump sum (i.e., additional costs to transition to fiber) would be borne by the electing incumbent earth station operator."); *see also* LTN Comments at 1 ("[T]ransport stream over internet protocol . . . distribution technologies now outpace[e] satellite in performance, cost, and flexibility"); Zixi Comments at 3 ("Using IP, Zixi's users enjoy a range of cost, flexibility, and quality improvements. Zixi can enable high quality, lower cost delivery of more channels to more locations by making the most of any IP network . . . .").

[424] Lump sum electees opting to perform their own FSS transition work shall be responsible for coordinating with the relevant eligible space station operator(s) as necessary and perform all relocation actions on its own.

information will be available in connection with the Transition Plan process. As an initial estimate, we anticipate total, aggregate FSS C-band transition clearing costs to range from {[XX]} billion.[425] We again caution that this is an estimate only, and new terrestrial wireless licensees in the Upper C-band will be responsible for the entire allowed costs of relocation, including those costs that exceed this estimated range.[426]

127. *Allocating Payment Obligations Among Upper C-Band Licensees.* As a general matter, we allocate the financial responsibilities that each Upper C-band licensee will incur as part of the FSS transition along the same lines as in the *2020 C-band R&O*.[427] Specifically, we find it is reasonable to base the share for each Upper C-band licensee on that licensee's *pro rata* share of gross winning bids. For eligible space station operator transition and clearinghouse costs, and in the event WTB selects a Relocation Coordinator, Relocation Coordinator costs, the *pro rata* share for each Upper C-band licensee will be the sum of the final clock phase prices (*P*) for the set of all license blocks (*I*) that a bidder wins divided by the total final clock phase prices for all *N* license blocks sold in the auction. To determine a licensee's reimbursement obligation (*RO*), that pro rata share would then be multiplied by the total eligible relocation costs (*RC*). Mathematically, this is represented as:

$$RO = \left(\frac{\sum_{i \in I} P_i}{\sum_{j=1}^{N} P_j}\right) \times RC$$

128. For incumbent earth station transition costs, an Upper C-band licensee's *pro rata* share will be determined on a PEA-specific basis, based on the final clock phase prices for the license blocks it won in each PEA.[428] To calculate the *pro rata* share for incumbent earth station transition costs in a given PEA, the same formula above will be used except now *I* will be the set of licenses a bidder won in the PEA, *N* will be the total blocks sold in the PEA, and *RC* will be the PEA-specific earth station relocation costs.

5. Incentives

129. Beyond establishing a transition cost reimbursement regime for all eligible FSS incumbents, we believe that an appropriate incentive structure for eligible space station operators that is tailored to these specific circumstances will recognize their unique role in this process and align with our exercise of our license modification authority under section 316 of the Act.[429] To this end, we will

[425] *See, e.g.*, Letter from Brian D. Weimer, Counsel to Eutelsat Communications S.A., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 3 (filed June 10, 2026) (*Eutelsat June 10, 2026 Ex Parte*); Letter from Nancy Eskenazi, Senior Vice President, Global Legal & Regulatory Affairs, SES, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed June 18, 2026).

[426] *2020 C-band R&O*, 35 FCC Rcd at 2428, para. 205.

[427] In addition to following our Lower C-band precedent, this approach also aligns with that in the H-Block proceeding. *See 2020 C-band R&O*, 35 FCC Rcd at 2445, paras. 250–54; *Service Rules for Advanced Wireless Services H Block — Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012, Related to the 1915–1920 and 1995–2000 MHz Bands*, 28 FCC Rcd 9483, 9548, para. 168 (2013).

[428] In lieu of a PEA-specific allocation for incumbent earth station costs, Summit Ridge advocates for a nationwide cost aggregation model based on the that used in the 3.45 GHz transition. Summit Ridge Comments at 2–3; *Summit Ridge June 2, 2026 Ex Parte* at 7. Contrary to Summit Ridge's suggestion, there is no evidence to suggest that the PEA-based allocation method used in the Lower C-band transition resulted in unnecessary complexity and inequities. Further, given the significantly different size and scope of reimbursable costs in the Lower C-band and 3.45 GHz transitions, we find that a PEA-specific allocation model for incumbent earth station costs is fairer and better aligns with the anticipated scale of the Upper C-band transition.

[429] *See SES Apr. 9, 2026 Ex Parte* at 2 ("As in the Lower C-band proceeding, incumbent operators like SES are best positioned to execute the significant operational tasks necessary to clear the requisite portion of the Upper C-band while seeking to maintain service quality.").

require new Upper C-band licensees to make incentive payments to eligible space station operators as a license condition in the event that those operators meet their clearing obligations by the relevant Transition Deadlines.

130. *Authority to Require Incentive Payments*. Our authority to require Upper C-band licensees to make incentive payments to eligible space station operators as a license condition derives from the *Emerging Technologies* framework and the same statutory underpinnings as our authority to require reimbursement payments.[430] We previously found accelerated relocation payments to be in the public interest in connection with the Lower C-band transition,[431] which was an outgrowth of earlier transitions where similar mechanisms were employed as an incentive to expedite clearing above and beyond transition cost reimbursements.[432] As in the case of such reimbursements, there is also widespread record support for using the *Emerging Technologies* framework to incentivize eligible space station operators to expedite the clearing of existing FSS C-band services from 4.0–4.16 GHz in the contiguous United States.[433] On this basis, we opt to utilize a modified incentive structure based on our Lower C-band precedent, but designed with the specific parameters of the Upper C-band transition in mind.

131. At the outset, we observe that the current record before us reflects general input on the scope of incentives suggesting that they be "appropriate" and modeled on our Lower C-band precedent.[434] In specific, CTIA advocates for any incentives to be "relative to the amount of spectrum repurposed, any restrictions or limitations imposed on terrestrial wireless use of the band, and the speed with which the spectrum is made available for commercial terrestrial wireless use."[435] We agree in concept with these principles and, in recognition of the more streamlined transition structure we are adopting for the Upper C-band, modify the Commission's earlier approach in the Lower C-band accordingly.

132. For purposes of the Lower C-band transition, the Commission adopted an ultimate transition deadline of 69 months from adoption of the *2020 C-band R&O*, with the option for eligible space station operators to elect clearing by two accelerated relocation deadlines which, if met, made them eligible for accelerated relocation payments.[436] As noted *supra*, all five eligible space station operators at

[430] 47 U.S.C. § 303; *2020 C-band R&O*, 35 FCC Rcd at 2417–22, paras. 184–92.

[431] *2020 C-band R&O*, 35 FCC Rcd at 2419, para. 187 ("Based on the unique circumstances of the band, we therefore find that it would best serve the public interest, consistent with the *Emerging Technologies* framework, to condition new licenses on making acceleration payments to the satellite incumbents that voluntarily choose to leave the band on an expedited schedule. Like relocation payments, we find that requiring such mandatory payments is both in the public interest and within our Title III authority.").

[432] *Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band*, PR Docket No. 93-144, First Report and Order, Eighth Report and Order, and Second Further Notice of Proposed Rulemaking, 11 FCC Rcd 1463, 1509, para. 77 (1995); *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, Notice of Proposed Rulemaking, 11 FCC Rcd 1923, 1927–28, para. 7 (1995); *see generally 3 GHz R&O*.

[433] CTIA Comments at 23–25; Eutelsat Comments at 11–13; NCTA Comments at 8–11; SES Comments at 19–25; T-Mobile Comments at 5; Verizon Comments at 11–13; Lumen Reply at 5–8. *But see* OTI Comments at 9–15 (opposing accelerated relocation payments in principle). Other commenters refute OTI's opposition to accelerated relocation payments. *See* Eutelsat Reply at 5; SES Reply at 14–15.

[434] Eutelsat Comments at 11–13; Eutelsat Reply at 2–8, Attach. (offering approaches to apportioning incentives but not addressing their overall scope); SES Comments at 19–25; SES Reply at 11–15, 20–23.

[435] CTIA Comments at 24; *see also* Qualcomm Comments at 3; T-Mobile Reply at 3–5 (arguing that incentives should be predicated on a timely satellite transition resulting in earlier wireless deployments).

[436] *2020 C-band R&O*, 35 FCC Rcd at 2431–45, 2452–57, paras. 211–49, 284–300.

the time elected accelerated relocation,[437] subsequently met the respective accelerated deadlines, and became eligible for the designated accelerated relocation payments.[438] The Commission established the amount of those accelerated relocation payments based on several factors, including an estimate of the price that potential Lower C-band licensees would willingly pay for an earlier transition, assuming any free-rider and holdout problems could be overcome.[439]

133. As discussed *supra*, a key distinguishing factor between the Lower and Upper C-band transitions is the need to align the instant FSS transition deadlines with the initial deadline established by the FAA for its radio altimeter retrofit requirements in order to provide certainty for Upper C-band wireless licensees on when they can commence service. We further recognize the voluntary statements by SES and Eutelsat in the record that with transition cost reimbursements and an appropriate incentive structure in place, they can clear FSS C-band operations from 4.0–4.16 GHz and maintain substantially the same service by the Transition Deadlines we establish herein.[440] Absent those measures, both SES and Eutelsat indicate that it would take up to ten years to effectuate the clearing process.[441] While we are not persuaded that a ten year baseline is an appropriate measure of the clearing efforts that the eligible space station operators have proposed to undertake, we recognize that the underlying record here reflects an expected higher level of complexity as compared with that experienced in the Lower C-band transition.[442] We thus believe that absent an incentive structure, the Upper C-band transition would implicate at least a similar schedule to that established for Lower C-band (i.e., 69 months after adoption of the *2020 C-band R&O*), if not longer. On this basis, we find that December 2032 (or 78 months after adoption of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration*) is an appropriate baseline upon which to establish an incentive structure designed to expedite the FSS transition to align with the FAA's first radio altimeter retrofit deadline. While we do not establish December 2032 as a formal transition deadline in order to avoid the administrative complexities involved with the accelerated relocation election process used in the Lower C-band transition, the incentive structure we set forth *infra* is based on the estimated value of earlier access to the cleared Upper C-band spectrum for winning bidders in the forthcoming auction, and takes into account the voluntary statements of SES and Eutelsat with respect to their ability to meet the Transition Deadlines.

134. In estimating the value of this earlier spectrum access, we use the Lower C-band auction results and an assumed {[XX]}% discount rate in order to calibrate a $/MHz-pop auction price of ${[XX]} if the full 160 megahertz of reconfigured Upper C-band spectrum in the contiguous United States were not available until December 30, 2032.[443] The resulting total benefit of acceleration to the Transition Deadlines for bidders would be ${[XX]} billion, of which 78% is attributable to the PEAs subject to the Primary Transition Deadline. We find that an incentive structure of ${[XX]} billion total is reasonable and would serve the public interest and that this ${[XX]} billion of this amount should be

[437] *Wireless Telecommunications Bureau Announces Accelerated Clearing in the 3.7–4.2 GHz Band*, GN Docket No. 18-122, Public Notice, 35 FCC Rcd 5517 (WTB 2020); 47 CFR § 27.1412(c).

[438] *See generally 2020 C-band R&O*, 35 FCC Rcd at 2415–45, paras. 178–249; 47 CFR § 27.1412(b), (g); *id.* § 27.1422.

[439] *2020 C-band R&O*, 35 FCC Rcd at 2432–34, paras. 216–19.

[440] *See* SES Comments at 7–8, 16–17; SES Reply at 3–4; Eutelsat Reply at 10–12.

[441] SES Comments at 7–8; Eutelsat Comments at 22.

[442] Eutelsat Comments at 3, 5; Eutelsat Reply at 4; NCTA Comments at 18–20; NCTA Reply at 13–14; SES Comments at 1–5, 7–8, 19–20; SES Reply at 14; Spectrum Alliance Comments at 6; SBE Comments at 9–11; Affiliates Associations Reply at 11; Content Companies Reply at 1; Optimum Reply at 6–7; *NCTA June 2, 2026 Ex Parte* at 2–3.

[443] We note that an {[XX]}% weighted average cost of capital is consistent with the approach used in the *2020 C-band R&O. See 2020 C-band R&O*, 35 FCC Rcd at 2433, para. 218.

allocated to clearing the Primary Transition Deadline PEAs and the remaining ${[XX]} billion should be allocated to the Final Transition Deadline PEAs.

135. As in the Lower C-band transition, we find it necessary to specify the amount of incentive payment for which each eligible space station operator may qualify, and again conclude that the most appropriate basis on which to allocate these payments is to estimate the relative contribution each eligible space station operator is likely to make towards transitioning the band to flexible use, assuming all other operators clear. In the *2020 C-band R&O*, the Commission estimated the relative contributions of each operator based on: (1) a private market agreement signed by the members of the C-band Alliance that determined the share of any proceeds that each C-Band Alliance member would receive as a result of the proceeding; (2) C-band transponder usage data; and (3) each eligible space station operator's coverage of the contiguous United States with its C-band satellites.[444] However, other than C-band coverage of the contiguous United States, these measures are not available in the Upper C-band context, so we are unable to follow the previously adopted methodology to calculate relative contributions.

136. In this proceeding, Eutelsat and SES have both put forth various proposals for allocating the incentive payments, but we find that none of these provides an appropriate estimate of the likely relative contributions of each operator in transitioning the band to flexible use.[445] Eutelsat submits a report by Analysys Mason that evaluates three potential methodologies for allocating eligible space station operator incentive payments, each of which to differing degrees relies on a public data source that tracks the number of C-band video and radio channels of each operator.[446] In so far as these proposals base their allocations on measures of utilization derived from that data, we reject them given they: (1) appear to treat television and radio services as equivalent, even though the latter occupy only a small fraction of the spectral capacity of the former; (2) do not account for non-media uses of FSS C-band spectrum, such as data services; (3) rely upon data that is not systematically collected or scientifically verified; and (4) lack sufficient detail to adequately assess how the calculated shares were achieved.[447] One of Eutelsat's proposals is more specifically predicated on whether an operator has *any* services within each block of spectrum using this same data, a concept which we also reject as it is not an appropriate measure of the relative contribution of any single operator. SES similarly relies on the same public video channel data as one basis for its allocation proposals, which we likewise find unpersuasive.[448] SES also proposes that the number of customers or earth stations transitioned in the Lower C-band proceeding could also serve as the basis for determining the split of incentive payments among eligible space station operators.[449] However, we believe that this metric alone is more

[444] *See 2020 C-band R&O*, 35 FCC Rcd at 2433, paras. 227–31.

[445] *See* Letter from Nancy Eskenazi, Senior Vice President, Global Legal & Regulatory Affairs, SES, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at 2–3 (filed Apr. 16, 2026) (*SES Apr. 16, 2026 Ex Parte*); SES Reply Comments at Attach. A.

[446] *See* Eutelsat Reply at 8–13, Attach. A (Analysys Mason paper citing and analyzing LyngSat media service data); *Eutelsat June 10, 2026 Ex Parte* at 1–3, Attach. B.

[447] We note that the 14.6% to 18.6% share for Eutelsat that Analysys Mason estimates using LyngSat media service data is significantly higher than Eutelsat's recent estimate using the same LyngSat data in the context of the SES-Intelsat transaction that SES and Intelsat collectively had over a 96% share of video channels distributed in the United States via C-band. *See* Eutelsat Comments, SB Docket No. 24-267, at 5 & n.18 (rec. Sept. 30, 2024). Both of these estimates are inconsistent with that advanced by SES in the instant proceeding also using LyngSat data, suggesting that Eutelsat has a 0% to 2.1% share of all video channels distributed via C-band in the United States. *See SES Apr. 16, 2026 Ex Parte* at 4; *but see* Letter from Brian D. Weimer, Counsel to Eutelsat Communications S.A., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed June 5, 2026) (responding to SES's analysis); *Eutelsat June 10, 2026 Ex Parte* at 2–3, Attach. B (responding to SES's analysis).

[448] *See SES Apr. 16, 2026 Ex Parte* at 4.

[449] *SES Apr. 16, 2026 Ex Parte* at 5–6.

appropriately viewed as a proxy for the transition costs that will be incurred by each eligible space station operator in providing a turnkey transition plan for all its FSS C-band services, and not for the relative contribution each operator will provide in making spectrum available for flexible use.[450]

137. To recognize the unique role of each eligible space station operator in making Upper C-band spectrum available for flexible use, we find that the most appropriate measure of each operator's relative contribution is the value of the spectrum an operator would encumber should it not coordinate timely clearing, assuming all other eligible space station operators do coordinate clearing in a timely manner. To construct our measure of the value of spectrum that each operator would encumber should it not transition expeditiously, we use the location of each incumbent earth station antenna claimed by or assigned to the eligible space station operators as identified by the Lower C-band Relocation Coordinator.[451] We further assume that should the incumbent earth station antenna not be cleared in the forthcoming transition, the relevant Upper C-band wireless licensee(s) would, on average, be unable to serve customers using the repurposed spectrum within an 8 km radius of each such incumbent earth station antenna in order to prevent any harmful interference. We then calculate the potential population encumbered within each PEA under this assumption.[452] To estimate the value of the spectrum that would be encumbered in each case assuming the other eligible space station operators transitioned all incumbent earth station antennas receiving their services, as well as the value of encumbered spectrum by all eligible space station operators combined, we use the dollar per MHz-pop Lower C-band final clock prices for the B and C blocks. To determine the appropriate shares attributable to Eutelsat and Telesat, we divide the value that each of these operators would hypothetically encumber by the value of the spectrum encumbered by all three eligible space station operators, and then use the share attributable to each operator as the basis for their share of incentive payments.[453] We then allocate the remaining share of incentive payments to SES. As shown in the table below, based on this methodology we find that an appropriate allocation of incentive payments based on the relative contribution of each operator in making spectrum available for flexible use is {[XX]}% to SES, {[XX]}% to Eutelsat, and {[XX]}% to Telesat, which more closely aligns with each operator's overall market share than other proposals in the instant record:

Allocation of Incentive Payments		*Total Incentive Payment Amount*	*Primary Deadline Incentive Amount*	*Final Deadline Incentive Amount*
SES	{[XX]}%	${[XX]}	${[XX]}	${[XX]}
Eutelsat	{[XX]}%	${[XX]}	${[XX]}	${[XX]}
Telesat	{[XX]}%	${[XX]}	${[XX]}	${[XX]}

138. Assuming the eligible space station operators meet each relevant Transition Deadline, they will be eligible for the incentive amounts set forth *supra*. However, in the event that they do not meet the Primary Transition Deadline, we establish an incremental reduction plan based on that used in the Lower C-band transition to enable the receipt of reduced inventive payments associated with that deadline based upon a sliding scale as set forth below:

[450] As detailed *supra*, all reasonable and necessary FSS C-band transition costs will be reimbursed through the Upper C-band transition cost reimbursement program.

[451] *See Lower C-band Relocation Coordinator Final Report* at Exh. G.

[452] This is done by taking the union of the required earth station buffers and then using 2020 Census block population estimates to calculate the total population within the union of these buffers under an assumption that the population is uniformly distributed within each Census block.

[453] We round the calculated values to a half percentage point both for administrative convenience and in recognition of the inherent impreciseness of calculating the value of encumbered spectrum.

Date of Completion	*Incremental Reduction*	*Incentive Payment Percentage*
By Deadline	0%	100%
1-30 days late	10%	90%
31-60 days late	10%	80%
61-90 days late	10%	70%
91-120 days late	15%	55%
121-150 days late	15%	40%
151-180 days late	20%	20%
181+ days late	20%	0%

To the extent that an eligible space station operator fails to meet the Final Transition Deadline, they will not receive any incentive payment associated with that deadline, and may be subject to penalties as discussed *supra*.

139. We model our certification procedures for incentive payments on those used in the Lower C-band transition.[454] Each eligible space station operator's satisfaction of the Transition Deadlines and eligibility to receive incentives will be determined by the timely filing, no later than each Transition Deadline, of a Certification of Completion with the Commission demonstrating in good faith that the eligible space station operator has completed all necessary clearing actions pursuant to its Transition Plan.[455] We clarify that each eligible space station operator's satisfaction of the certification requirement and their clearing responsibilities will be determined on an individual basis. An eligible space station operator shall not be held responsible for transition delays due to circumstances beyond their control.[456] We direct WTB to establish any necessary procedures or guidance for this certification process, which must include a public comment cycle to allow relevant stakeholders to challenge the validity of the certification. If credible challenges as to an eligible space station operator's satisfaction of the relevant Transition Deadline are made, WTB shall issue a public notice identifying such challenges and will render a final decision as to the validity of the certification no later than 60 days from its filing. Absent notice from WTB of any such deficiencies within 30 days of filing of the certification, the Certification of Completion will be deemed validated.

140. An eligible space station operator that meets either of the Transition Deadlines and has its corresponding Certification of Completion subsequently validated may request the relevant incentives be disbursed. The Upper C-band Clearinghouse will collect and distribute the incentives after promptly notifying the Upper C-band wireless licensees of the certification validation. The Upper C-band wireless licensees shall pay the incentives to the clearinghouse within 60 days of the validation notification. The clearinghouse will in turn disburse the incentives to the relevant eligible space station operators within seven days of receipt from the Upper C-band wireless licensees. While no wireless operations may commence in the Upper C-band prior to the Primary Transition Deadline, to the extent that all three eligible space station operators clear the entire 160 megahertz throughout the contiguous United States prior to the Final Transition Deadline and have their Certifications of Completion validated, the Upper C-band wireless licensees may start wireless operations following payment of any required incentive amounts.

[454] *See 2020 C-band R&O*, 35 FCC Rcd at 2457, paras. 298–300.

[455] To the extent that an eligible space station operator clears all 160 megahertz throughout the contiguous United States prior to the Primary Transition Deadline, it may file one Certification of Completion to demonstrate its compliance with both Transition Deadlines.

[456] An eligible space station operator must submit a notice of any incumbent earth station transition delays to the Wireless Telecommunications Bureau within 7 days of discovering an inability to accomplish the assigned earth station transition task. Such a request must include supporting documentation to allow for resolution as soon as practicable and must be submitted before the relevant Transition Deadline.

6. Upper C-band Clearinghouse

141. In light of the successful Lower C-band transition as well as the record received in response to the *Upper C-band NPRM*, we will again employ an independent, third-party clearinghouse to oversee the cost-related aspects of the in-band FSS transition. While we largely model the selection process and define the clearinghouse's duties along the lines of those in the *2020 C-band R&O*, we also modify certain aspects of those existing rules with a view towards greater efficiencies while maintaining protections to prevent fraud, waste, and abuse in the reimbursement program.[457] The existence of an independent third party for this purpose, subject to the Commission's rules and oversight, is consistent with our past practice and will once again serve the public interest and ensure fairness and transparency in the handling of the in-band reimbursement obligations associated with the Upper C-band transition.[458] We anticipate the same clearinghouse will also administer the adjacent band radio altimeter retrofit rebates and separately address that topic in section III.D *infra*.

a. Duties of the Clearinghouse

142. In the *Upper C-band NPRM*, we proposed that in keeping with the Lower C-band precedent, an independent, third-party clearinghouse would carry out four categories of essential duties in connection with overseeing the financial aspects of the forthcoming transition: claims processing, cost apportionment, dispute resolution, and reporting obligations.[459] Stakeholders associated with the in-band FSS transition broadly support this structure and delineation of duties, although individual commenters advocate for various refinements designed to promote efficiency with claims processing, fiscal discipline in administrative costs, and greater transparency in terms of reporting and oversight.[460] We concur that an independent, third-party clearinghouse is best suited to oversee the financial aspects of the Upper C-band transition and charge it with largely the same responsibilities as proposed in the *Upper C-band NPRM*, subject to specific modifications described in greater detail *infra*, as well as the integration of specific selection committee criteria from the Lower C-band transition as affirmative duties of the Upper C-band Clearinghouse.[461] We also agree that an updated Cost Catalog will provide both the clearinghouse and stakeholders with a list and estimated range of presumptively reasonable transition costs to help guide auction bidding strategy, transition planning, and the transition cost reimbursement

[457] *2020 C-band R&O*, 35 FCC Rcd at 2446–52, paras. 255–83; 47 CFR §§ 27.1414–1422.

[458] *2020 C-band R&O*, 35 FCC Rcd at 2446–47, paras. 255, 258 (citing 47 CFR § 27.1162).

[459] *Upper C-band NPRM,* 40 FCC Rcd at 9501–04, paras. 105–11.

[460] AT&T Comments at 8–9; AT&T Reply at 14–15; CTIA Comments at 25–27; CTIA Reply at 34–39; Eutelsat Comments at 16–19; NAB Comments at 8; Qualcomm Comments at 3; RPC Reply at 4; SES Comments at 26–29; SES Reply at 26–31; Summit Ridge Comments at 4–6; Verizon Comments at 14–15; Verizon Reply at 10–16; *see also CTIA Apr. 22, 2026 Ex Parte* at 1–2; *SES June 4, 2026 Ex Parte* at 1–2.

[461] In the *Upper C-band NPRM*, we proposed to integrate certain search committee requirements from the Lower C-band transition more formally into clearinghouse duties here, including the requirements for the Upper C-band Clearinghouse in administering the transition to: (1) engage in strategic planning and adopt goals and metrics to evaluate its performance; (2) adopt internal controls for its operations; (3) use enterprise risk management practices; (4) use best practices to protect against improper payments and to prevent fraud, waste, and abuse in its handling of funds; (5) create written procedures in its operations, using the GAO Green Book to serve as a guide; (6) adopt robust privacy and data security best practices in its operations, comply with, on an ongoing basis, all applicable laws and federal government guidance on privacy and information security requirements such as relevant provisions in the Federal Information Security Management Act, National Institute of Standards and Technology publications, and Office of Management and Budget guidance; and (7) hire a third-party firm to independently audit and verify on an annual basis its compliance with privacy and information security requirements and to provide recommendations based on any audit findings, to correct any negative audit findings, and adopt any additional practices suggested by the auditor and report the results to the Bureau. *Upper C-band NPRM,* 40 FCC Rcd at 9504, para. 112 & n.286; *2020 C-band R&O*, 35 FCC Rcd at 2451, paras. 276–77. We adopt these proposals and formally integrate them into our rules as affirmative duties of the Upper C-band Clearinghouse.

program.

143. *Claims Processing*. As in the Lower C-band transition, and given broad stakeholder support in the record, the Upper C-band Clearinghouse will again be directly responsible for the initial receipt, review, and disposition of all reimbursement claims (whether actual cost or lump sum) based on their reasonableness as filed by eligible FSS incumbents.[462] Claimants must justify and document all of their claims and, where relevant, any actual transition-related costs to the clearinghouse, make all relevant documentation available to the clearinghouse upon its request, cooperate with the clearinghouse during the claims submission and review process, and may be subject to audit in the clearinghouse's discretion.[463] In order to provide clarity for all stakeholders, and in keeping with past practice from the Lower C-band transition, we direct the clearinghouse to establish, within six months of the Commission's approval of its selection, a public-facing website with information and resources to assist eligible FSS incumbents with claims submission and processing.[464] These resources should include a claims processing handbook specifying the relevant registration and submission procedures, target timelines for the processing of complete claims, and examples of supporting materials and other information needed from eligible incumbents as part of their reimbursement claims.[465] Claimants shall once again have a reasonable opportunity to supplement any claims that the clearinghouse finds deficient with additional information and documentation,[466] and are directed to respond to requests for additional information from the clearinghouse in a timely manner. In the event that a claimant is not responsive to such requests in a timely manner, the clearinghouse may, consistent with earlier guidance provided during the Lower C-band transition, either process any related claims on the basis of information previously submitted by that claimant[467] or, alternatively, dismiss the claim subject to any appropriate procedures or limits the clearinghouse may establish in its claims processing handbook on the refiling of claims.[468]

144. While we generally decline at this time to set firm deadlines or service-level requirements related to claimant registration, claims submission, or their subsequent disposition to avoid delays due to timing disputes,[469] we again delegate to WTB broad oversight over the clearinghouse and its transition

[462] *See 2020 C-band R&O*, 35 FCC Rcd at 2447, para. 260; 47 CFR §§ 27.1415–1416; *see also* AT&T Comments at 8–9; AT&T Reply at 14–15; CTIA Comments at 25–27; CTIA Reply at 34–39; Eutelsat Comments at 16–19; NAB Comments at 8; SES Comments at 26–29; SES Reply at 26–31; Summit Ridge Comments at 4–6; Verizon Comments at 14–15; Verizon Reply at 10–16; *CTIA Apr. 22, 2026 Ex Parte* at 1–2.

[463] *2020 C-band R&O*, 35 FCC Rcd at 2447–48, para. 261; 47 CFR §§ 27.1414(d), 27.1415, 1416(a).

[464] The Lower C-band Clearinghouse maintained a website with various guidance materials throughout that transition at https://www.cbandrpc.com. As part of the wind down of its operations in the summer of 2025, that website was eventually shut down. *Wireless Telecommunications Bureau Announces Wind Down of the 3.7–4.2 GHz Relocation Payment Clearinghouse*, GN Docket 18-122 and WT Docket 21-333, Public Notice, 40 FCC Rcd 6003, & n.4 (WTB 2025); *see also* CTIA Comments at 26.

[465] For example, the Lower C-band Clearinghouse issued and made publicly available at its website several iterations of its claims processing handbook, which provided claims submission and documentation guidance to stakeholders. *See* C-band RPC, *RPC C-band Handbook* (version 1.8). We clarify that the Upper C-band Clearinghouse may also revise its claims processing handbook as appropriate during the duration of the instant transition so long as those new versions are made publicly available at its website. *See* Eutelsat Comments at 17; Verizon Comments at 15; CTIA Reply at 35–36.

[466] *2020 C-band R&O*, 35 FCC Rcd at 2447, para. 260; 47 CFR §§ 27.1415–1416(a).

[467] *Wireless Telecommunications Bureau Adopts Final Deadlines For Submission of C-band Reimbursement Claims*, GN Docket No. 18-122, Public Notice, 38 FCC Rcd 11111, 11120 (2023) (*Lower C-band Final Deadline PN*).

[468] *See* Verizon Comments at 15; CTIA Reply at 36; *CTIA Apr. 22, 2026 Ex Parte* at 5.

[469] CTIA Comments at 26; CTIA Reply at 35; SES Comments at 27–29; SES Reply at 5, 28–30; Verizon Comments at 15; Verizon Reply at 14; *CTIA Apr. 22, 2026 Ex Parte* at 3

cost reimbursement program generally,[470] as well as specific authority to establish those and any other deadlines, guidance, or policies that may be in WTB's judgement necessary to ensure the successful and efficient administration of the program. We will require enhanced transparency by the Upper C-band Clearinghouse both in terms of providing target timelines for the processing of complete claims in its claims processing handbook, and on the pendency of claims as part of its quarterly status reports discussed *infra*. However, we caution claimants that our expectation is they will submit all claims expeditiously and actual cost claims as soon as possible after they are incurred, constructively work with the clearinghouse as the initial decision maker on all claims and, along with the new terrestrial wireless licensees ultimately responsible for paying those claims, duly engage in the dispute resolution process established by the clearinghouse. This structured approach aligns with the clearinghouse's role as initial decision maker and the Commission's appellate role in the dispute resolution process; as such, we decline to establish a direct path for claimants to escalate pending claims or interpretative issues to another adjudicatory body.[471] To ensure a timely conclusion to this program, however, we do establish a final and binding claims submission deadline for all FSS transition cost reimbursement claims (whether actual cost or lump sum) no later than six months after the Final Transition Deadline. This final claims submission deadline is intended to serve as an outward boundary for the claims submission process, and is without prejudice to any earlier deadlines that WTB may determine are necessary pursuant to its delegated authority.

145. With respect to various proposals to expedite the clearinghouse's processing of claims, we take a measured approach consistent with earlier guidance provided in the Lower C-band transition, as we do not wish to require specific process measures that may unnecessarily limit the clearinghouse in its duties and its responsibility to prevent fraud, waste, and abuse.[472] That said, we strongly encourage the Upper C-band Clearinghouse to voluntarily adopt streamlined processing practices where, in its discretion, such practices will appropriately expedite claims processing (or any given category thereof, such as low-value claims) without sacrificing the integrity of the transition cost reimbursement program.[473] For example, these practices may include, as appropriate, batch processing, sampling, auditing, cost-averaging, and certifications.[474] The clearinghouse may also, in coordination with the eligible space station operators and new Upper C-band wireless licensees, explore the viability of advance funding or partial approval of some or all of certain significant capital costs (e.g., new satellite milestone payments and launch-related items) to help minimize financing costs, with the proviso that any such arrangements must appropriately protect the cost reimbursement program from unforeseen contingencies such as a claimant's bankruptcy, and will require documentation supporting the reasonableness and necessity of the underlying claim, and be subject to a later true up.[475]

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[470] *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 262 ("We also direct the Wireless Telecommunications Bureau to make further determinations related to reimbursable costs, as necessary, throughout the transition process."); 47 CFR § 27.1416(a); *see also* RPC Reply at 3–4 ("In sum, the protocols and controls adopted in the *Lower C-band Report and Orde*r for oversight of the Lower C-band Clearinghouse were thorough, clear, well developed and consistently implemented with precedent from similar programs over the prior two decades.").

[471] CTIA Comments at 27; SES Comments at 28; *CTIA Apr. 22, 2026 Ex Parte* at 5; *SES June 4, 2026 Ex Parte* at 3.

[472] *Lower C-band Final Deadline PN*, 38 FCC Rcd at 11120; RPC Reply at 6 ("[T]he Upper C-band Clearinghouse should apply legal, technical, and cost-reasonableness principles consistently with the Lower C-band program.").

[473] RPC Reply at 6 ("[T]he Commission [should] provide the Upper C-band Clearinghouse with the opportunity and flexibility to introduce appropriate measures and enhancements as program conditions warrant and not limit that flexibility only to those measures specifically proposed by the Commenters.").

[474] CTIA Comments at 26; CTIA Reply at 15; Eutelsat Comments at 16–17; SES Comments at 26; SES Reply at 27, 29; Verizon Comments at 15; Verizon Reply at 14–15; AT&T Reply at 15; RPC Reply at 5–6; *CTIA Apr. 22, 2026 Ex Parte* at 3.

[475] Eutelsat Comments at 16–19 ("Eutelsat recommends that such advances be subject to a final true-up or clawback by the Clearinghouse; that is, at the conclusion of the transition or upon final reconciliation of costs, any

(continued….)

146. In terms of substantive guidance that may inform the claims review process beyond the instant *Report and Order, Order of Proposed Modification, and Order on Reconsideration*, the clearinghouse is instructed to take notice of the Cost Catalog that will be developed and issued by WTB, as detailed *infra*. As with the Lower C-band transition, any claims that fall within the estimated range of costs for a given category shall be presumed reasonable.[476] Also consistent with the Lower C-band transition,[477] the Upper C-band Clearinghouse may consider the Transition Plans submitted by the eligible space station operators, as well as any public comments submitted in response thereto, as part of its review of the reasonableness and necessity of an actual cost reimbursement claim. While we continue to believe that the eligible space station operators are best positioned to assume responsibility for their own space station transition process and the migration of incumbent earth stations belonging to customers who wish to continue satellite service, were the clearinghouse to defer entirely to eligible space station operators and their Transition Plans, it would undermine the clearinghouse's ability to make determinations about the reasonableness and necessity of actual cost reimbursement claims, and to prevent fraud, waste, and abuse.[478] As such, we reiterate the Commission's earlier statement from the *2020 C-band R&O* that "we decline to make a finding that technology choices that space station operators include in their transition plans automatically will be deemed presumptively reasonable."[479] Finally, we will not pre-emptively recognize previous claims decisions by the Lower C-band Clearinghouse as precedent[480] in this context as such decisions are inherently fact-specific, may not be relevant to the instant transition, and in most cases, neither the underlying claims record nor the final decisional memoranda have been presented before the Commission. Claimants may, however, include any relevant final decisional memoranda from the Lower C-band Clearinghouse along with their claims submissions for the Upper C-band, and we clarify that the Upper C-band Clearinghouse will have discretion to consider those decisions to the extent they are relevant to any claims pending before it.

147. *Cost Apportionment*. In keeping with the Lower C-band precedent, and recognizing general support in the record to use that precedent as a model in the instant context,[481] as proposed the Upper C-band Clearinghouse will again be tasked with apportioning costs among the new terrestrial wireless licensees in the band and distributing payments to claimants including eligible space station operators, incumbent earth station operators, and appropriate surrogates of those parties that incurred compensable costs.[482] Each eligible space station operator will be responsible for payment of its own

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overpayments would be returned to the Clearinghouse, and any reasonable, documented additional expenses to be reimbursed to the satellite operator."); Eutelsat Reply at 9–10; SES Reply at 18–19, 30.

[476] *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 262.

[477] *See* C-band RPC, *RPC C-band Handbook* (version 1.8) ("To establish the necessity of submitted claims, the RPC will evaluate cost claims for consistency against the relevant SSO transition plan as part of the claim submission process. Costs submitted for reimbursement must be allocable to specific elements of the transition plan. Satisfaction of this requirement, by itself, may not establish the cost as presumptively reasonable in all cases.").

[478] *2020 C-band R&O*, 35 FCC Rcd at 2454, para. 287; Eutelsat Comments at 7–8, 18–19.

[479] *2020 C-band R&O*, 35 FCC Rcd at 2430 & n.565.

[480] SES Comments at 27.

[481] AT&T Comments at 8–9; CTIA Comments at 25–27; CTIA Reply at 34; Eutelsat Comments at 16–19; NAB Comments at 8; SES Comments at 26–29; Verizon Comments at 14–15; Verizon Reply at 10–11.

[482] *Upper C-band NPRM,* 40 FCC Rcd at 9501–02, paras. 105, 107; *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 263; 47 CFR §§ 27.1418–1420. We again expect that the new clearinghouse will enter into one or more appropriate contracts with eligible space station operators, new Upper C-band wireless licensees, and their agents or designees. *2020 C-band R&O*, 35 FCC Rcd at 2451, para. 279; RPC Reply at 8–9. We decline, however, to create enforceable contractual or other rights which may conflict with the clearinghouse's status as an independent, third-party body subject to Commission oversight. CTIA Comments at 27–28; CTIA Reply at 37.

satellite transition costs and the administrative costs of the clearinghouse until the Commission has awarded licenses to the new Upper C-band wireless licensees, at which time those administrative costs will be repaid to those eligible space station operators.[483]

148. After the forthcoming auction is complete, the clearinghouse shall calculate each new Upper C-band wireless licensee's estimated share of the eventual relocation costs, as well as an estimate of total costs from before the auction through the first three months after its completion.[484] The Upper C-band wireless licensees shall each pay their share of the initial cost estimate into the clearinghouse reimbursement fund shortly after the auction is complete and replenish the fund on a going-forward basis at three-month intervals until the reimbursement program is complete, and the clearinghouse will draw from that fund to reimburse approved, invoiced claims.[485] The clearinghouse shall calculate the estimated total program costs for every three-month period until the transition is complete,[486] notify the Upper C-band wireless licensees of their amounts owed to replenish the reimbursement fund at least 30 days before every three-month payment deadline, and reimburse approved claims within 30 days of invoice submission.[487]

149. The clearinghouse is directed to include its own costs in its three-month estimates and invoice its actual, reasonable costs to the Upper C-band wireless licensees at appropriate intervals.[488] The clearinghouse may withdraw and reimburse its costs from the reimbursement fund 30 days after each invoice submission, absent a timely objection filed by one of the Upper C-band wireless licensees pursuant to the clearinghouse's dispute resolution plan, discussed *infra*.[489] The clearinghouse shall also

[483] *2020 C-band R&O*, 35 FCC Rcd at 2449, para. 291.

[484] *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 263; 47 CFR §§ 27.1417–18.

[485] *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 263; 47 CFR §§ 27.1417–18. While in the Lower C-band transition replenishments to the reimbursement fund happened on a semi-annual basis, for budgeting and cash flow efficiencies we opt for quarterly replenishments in this instance. *See CTIA Apr. 22, 2026 Ex Parte* at 5.

[486] To the extent that an Upper C-band wireless licensee relinquishes to the Commission its license prior to all its transition payment responsibilities being discharged, we will once again require that the remaining payments be distributed among other similarly-situated Upper C-band wireless licensees. If a new license is issued for such previously relinquished rights prior to final payments becoming due, the new licensee will be responsible for the same *pro rata* share of the payment obligations as the initial Upper C-band wireless licensee. Finally, if an Upper C-band wireless licensee sells its rights on the secondary market, we will require that the new licensee will be obligated to fulfill all payment obligations associated with the license. *Upper C-band NPRM,* 40 FCC Rcd at 9503, para. 110 & n.279; *2020 C-band R&O*, 35 FCC Rcd at 2449, para. 266; 47 CFR § 27.1418(d).

[487] *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 264; 47 CFR §§ 27.1416–18. We clarify that in this context, invoice submission means transmittal of invoices documenting approved claims from the Upper C-band Clearinghouse to the relevant Upper C-band licensee(s). 47 CFR § 27.1416(b); *cf.* SES Reply at 18–19.

[488] *2020 C-band R&O*, 35 FCC Rcd at 2449, para. 267; 47 CFR § 27.1418(b)(1), (c). We decline, however, to adopt proposals to include incentives or penalties based on the clearinghouse's performance as they would inherently conflict with the clearinghouse's obligation to prevent fraud, waste, or abuse. Summit Ridge Comments at 5; *Summit Ridge June 2, 2026 Ex Parte* at 5; Optimum Reply at 9; *but see* RPC Reply at 11; Verizon Reply at 15–16.

[489] We note that, contrary to the suggestion of several commenters, the terrestrial wireless licensees in the Lower C-band transition did have the right to dispute any invoice issued by that clearinghouse, including those for its own expenses. CTIA Comments at 28; Verizon Comments at 16–17; Verizon Reply at 11–12, 15. *But see Wireless Telecommunications Bureau Announces Procedures For Appeals of Relocation Payment Clearinghouse Decisions*, WT Docket No. 21-333, Public Notice, 37 FCC Rcd 3956 (2022) (*WTB RPC Appeals PN*) ("Where one or more eligible 3.7 GHz Service Licensees wish to dispute any type of payment or cost sharing decision by the Clearinghouse other than a lump sum or reimbursement claim, they must file an objection within twenty (20) days of invoice issuance."); C-band RPC, *Dispute Resolution Plan* at Section 8.1.2 (version 2.0) (enabling Lower C-band licensees to file an objection to "any other payment or cost sharing obligation"); *see also* RPC Reply at 10. We clarify that a similar process shall be created for Upper C-band wireless licensees to dispute clearinghouse cost

(continued….)

include its costs in an annual financial audit of the program and its operations submitted to the Office of the Managing Director (OMD) and WTB.[490]

150. *Dispute Resolution*. While only two formal disputes arose during the Lower C-band transition, and there are limited comments on this topic in the instant record, as proposed in the *Upper C-band NPRM,* we direct the clearinghouse to, as needed, act as a special master and either mediate disputes related to cost estimates or payments, or refer the parties to alternative dispute resolution fora.[491] Parties disputing a cost estimate, invoice, payment, or sharing obligation will again be required to first file an objection with the clearinghouse.[492] The Upper C-band Clearinghouse shall establish a path to refer disputing parties to expedited non-binding arbitration, with costs shared by those parties.[493] As per past practice, these dispute resolution mechanisms and procedures shall be detailed in a written dispute resolution plan that the clearinghouse shall make publicly available at its website.[494]

151. Once disputing parties have exhausted all avenues established in the clearinghouse dispute resolution plan, they may seek *de novo* review in the first instance by WTB, with the opportunity for further *de novo* review on appeal to the Commission.[495] In order to expedite resolution of the appeals process and ensure an orderly completion of the transition cost reimbursement program, going forward we will not designate such matters for an evidentiary hearing before an Administrative Law Judge.[496] We direct WTB to again establish any necessary procedures governing such *de novo* appeals, which as per prior practice shall be considered restricted proceedings.[497] We also reiterate guidance from the Lower C-band transition that appealing parties bear responsibility for their costs associated with an appeal, none of which will be reimbursable transition expenses.[498]

152. *Reporting Obligations*. While commenters generally support reinstituting a quarterly information and progress reports requirement in order to ensure proper oversight of the clearinghouse program, some stakeholders seek additional detail in those reports, particularly on the number of claims awaiting disposition and the length of their pendency before the clearinghouse.[499] As such, we require

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invoices in the Upper C-band Clearinghouse's dispute resolution plan, subject to *de novo* review on appeal to WTB and the Commission.

[490] The audited statement shall follow generally accepted accounting procedures (GAAP) or generally accepted government auditing standards (GAGAS). *Upper C-band NPRM,* 40 FCC Rcd at 9502, para. 107 & n.273; *2020 C-band R&O*, 35 FCC Rcd at 2449, para. 267 & n.659.

[491] *Upper C-band NPRM,* 40 FCC Rcd at 9502–03, paras. 108, 110; *2020 C-band R&O*, 35 FCC Rcd at 2449, para. 268; 47 CFR § 27.1421.

[492] *2020 C-band R&O*, 35 FCC Rcd at 2449, paras. 268–69; 47 CFR § 27.1421(a).

[493] *2020 C-band R&O*, 35 FCC Rcd at 2449, paras. 268–69; 47 CFR § 27.1421.

[494] As with its claims processing handbook, the Lower C-band Clearinghouse issued and made publicly available at its website several iterations of its dispute resolution plan. C-band RPC, *Dispute Resolution Plan* (version 2.0). We clarify that the Upper C-band Clearinghouse may also revise its dispute resolution plan as appropriate during the duration of the instant transition so long as those new versions are made publicly available at its website.

[495] *2020 C-band R&O*, 35 FCC Rcd at 2449, paras. 268–69; 47 CFR § 27.1421.

[496] *2020 C-band R&O*, 35 FCC Rcd at 2449–50, para. 269; 47 CFR § 27.1421(c)(2)–(3).

[497] *WTB RPC Appeals PN*, 37 FCC Rcd at 3961. As part of its delegated authority, WTB may establish any necessary procedures related to the protection of business sensitive or confidential claims information that is relevant to the adjudication of any clearinghouse related disputes before the Commission. *See CTIA Apr. 22, 2026 Ex Parte* at 4.

[498] *WTB RPC Appeals PN*, 37 FCC Rcd at 3958.

[499] *2020 C-band R&O*, 35 FCC Rcd at 2450, para. 270; *see also* CTIA Comments at 28; CTIA Reply at 38; Verizon Comments at 16; Verizon Reply at 14; *CTIA Apr. 22, 2026 Ex Parte* at 5.

the Upper C-band Clearinghouse to file public quarterly status reports with the Commission, including an overview of pending claims awaiting disposition, information related to available funds for reimbursement, payments issued, amounts collected from licensees, incumbents' certifications, funds spent on the transition, and description of any disputes and their resolutions.[500] Notwithstanding this enhanced transparency, these reports and any audit documentation, or additional information provided upon request to WTB and OMD, shall protect any commercially sensitive and security-related information.[501]

153. *Cost Catalog*. In light of record support, we once again direct WTB to establish a Cost Catalog to provide guidance to both eligible FSS incumbents and potential auction bidders about a range of reasonable transition costs.[502] The Cost Catalog shall also detail the process and relevant categories for incumbent earth station operators seeking a lump sum payment by choosing to opt out of the formal transition or otherwise transition to an alternative distribution technology.[503] Consistent with this past approach, actual cost reimbursement claims that fall within the applicable range in the new Cost Catalog will be presumed reasonable.[504] We delegate to WTB broad discretion to formulate an appropriate Cost Catalog for the Upper C-band transition, including the ability to retain or adjust any portions of the Lower C-band Cost Catalog that remain relevant and/or develop any new categories as necessary for the Upper C-band transition.[505] WTB is directed to seek public comment on its proposed Cost Catalog and finalize it no later than six months after release of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration*.

b. Selecting the Clearinghouse

154. Based on the record received in response to the *Upper C-band NPRM*, we adopt our proposal to mirror the clearinghouse selection process used in the Lower C-band transition, with certain modifications detailed herein.[506] As noted *supra*, commenters with equities in the in-band FSS transition

[500] *2020 C-band R&O*, 35 FCC Rcd at 2450, para. 270; *see, e.g.*, *July 2025 RPC Quarterly Report*. This reporting obligation will start the first quarter after a clearinghouse selectee is confirmed by WTB to meet the selection criteria.

[501] *See* RPC Reply at 8; *see also 2020 C-band R&O*, 35 FCC Rcd at 2450, para. 271. During the period when the prohibition in 47 CFR § 1.2105(c) applied to competitive bidding for licenses in the Lower C-band, the Clearinghouse was also required to make real-time disclosures of the content and timing of and the parties to communications, if any, from or to applicants to participate in competitive bidding, as defined by 47 CFR § 1.2105(c)(5)(i). *2020 C-band R&O*, 35 FCC Rcd at 2452, para. 282 & n.666. As proposed, in the *Upper C-band NPRM*, we now adopt the same requirement here for competitive bidding for licenses in the Upper C-band. *Upper C-band NPRM,* 40 FCC Rcd at 9503, para. 109 & n.278. Applicants must take care that their communications with the Clearinghouse do not violate the prohibition against communications by revealing bids or bidding strategies. Further, applicants will have to consider their independent obligation to report potential violations to the Commission pursuant to auction rules. *See* 47 CFR § 1.2105(c).

[502] *C-band NPRM,* 40 FCC Rcd at 9503–04, para. 111; *Cost Category PN,* 35 FCC Rcd at 7968, para. 2; *see also* CTIA Comments at 29; CTIA Reply at 35; Eutelsat Comments at 10; Verizon Comments at 14; Verizon Reply at 20; AT&T Reply at 15; RPC Reply at 8; SES Reply at 27–28; *CTIA Apr. 22, 2026 Ex Parte* at 5, 8; *SES June 4, 2026 Ex Parte* at 4.

[503] *Cost Category PN,* 35 FCC Rcd at 7976–93, paras. 16–41.

[504] *2020 C-band R&O*, 35 FCC Rcd at 2448, para. 262.

[505] Contrary to suggestions to shrink the Cost Catalog, we anticipate that additional categories will be needed for the Upper C-band transition in light of the migration of certain FSS services to alternative distribution technologies. *See* Summit Ridge Comments at 4.

[506] *Upper C-band NPRM*, 40 FCC Rcd at 9504–05, paras. 112–13.

broadly support repurposing the Lower C-band Clearinghouse model,[507] with proposed changes to the selection process focused on the composition of the new selection committee and expanding its remit to include an ongoing oversight role.[508] While we agree that the Lower C-band transition serves as a useful predicate and should include organizations with direct experience in that earlier framework on the selection committee, we decline to create an ongoing supervisory role for the committee that might conflict with the Upper C-band Clearinghouse's independence and the Commission's own oversight role over this cost reimbursement program. Instead, we will require the clearinghouse to brief key stakeholders at regular intervals with a view towards greater transparency about its claims processing status and operational costs.

155. The selection committee will include seven members chosen by six organizations reflecting the breadth of stakeholder equities in the Upper C-band transition: SES, Eutelsat, CTIA (2 members), CCA, NAB, and NCTA.[509] By including organizations who can select individual committee members with direct experience with the Lower C-band Clearinghouse, our intent is for the committee as a whole to benefit from their insights.[510] As proposed, the selection committee's membership will be balanced among in-band FSS transition stakeholders including eligible space station operators, current Lower C-band and potential Upper C-band terrestrial wireless licensees, and organizations with incumbent earth station operator members.[511] We also include in the selection committee two aviation organizations—A4A and Aircraft Owners and Pilots Association (AOPA)—who can each designate an individual member with equities in the separate adjacent band radio altimeter retrofit rebates, which will also be administered by the same clearinghouse. The nine member total committee shall once again proceed by consensus. However, should a vote be required to select the clearinghouse, it shall be by a majority vote.[512]

156. In order to quickly identify a clearinghouse selectee and determine whether it meets the requisite selection criteria, we will require the selection committee to convene no later than 60 days after publication of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* in the Federal Register.[513] As proposed in the *Upper C-band NPRM*, to further streamline the search process, the selection committee shall employ selection criteria based upon the clearinghouse's revised duties discussed *supra*.[514] The selection committee shall notify the Commission of its detailed selection criteria no later than 30 days after its first meeting, after which WTB is directed to issue a public notice notifying the public of the criteria, outlining the submission requirements, and providing the closing dates

[507] AT&T Comments at 8–9; AT&T Reply at 14–15; CTIA Comments at 25–27; CTIA Reply at 34–39; Eutelsat Comments at 16–19; NAB Comments at 8; SES Comments at 26–29; Summit Ridge Comments at 4–6; Verizon Comments at 14–15; Verizon Reply at 10–16.

[508] CTIA Comments at 28–29; Verizon Comments at 17–18; Summit Ridge Comments at 6; *SES June 4, 2026 Ex Parte* at 2.

[509] In recognition that CTIA's members include multiple entities that are Lower C-band licensees and who were directly responsible for a majority of the cost reimbursement and accelerated relocation payments from the Lower C-band transition, we find it is both equitable and will benefit the selection committee to have that experience among its membership. As such, CTIA may designate two members to the Upper C-band Clearinghouse selection committee. *See CTIA Apr. 22, 2026 Ex Parte* at 2.

[510] CTIA Comments at 28–29; Verizon Comments at 17–18; Verizon Reply at 15; *see also CTIA Apr. 22, 2026 Ex Parte* at 2.

[511] *Upper C-band NPRM*, 40 FCC Rcd at 9504, para. 112; *2020 C-band R&O*, 35 FCC Rcd at 2450–51, para. 274.

[512] *Upper C-band NPRM*, 40 FCC Rcd at 9504, para. 112; *2020 C-band R&O*, 35 FCC Rcd at 2451, para. 274.

[513] *See 2020 C-band R&O*, 35 FCC Rcd at 2451, para. 275.

[514] *Upper C-band NPRM*, 40 FCC Rcd at 9504, para. 112; *see 2020 C-band R&O*, 35 FCC Rcd at 2451, paras. 275–78.

for candidate submissions.[515] The selection committee shall inform the Commission of its choice no later than December 15, 2026.[516] Upon the selection of a clearinghouse, WTB is directed to issue a public notice seeking comment on whether that entity satisfies the selection criteria and to issue a final order announcing whether the selection criteria has been satisfied.[517] After release of a final order by WTB confirming the clearinghouse's selection, the selection committee will be dissolved without further action by the Commission.

157. In the absence of feedback from commenters, we will utilize a modified, hybrid version of the various failsafe mechanisms established for the Lower C-band transition in the event the selection committee is unsuccessful in its task.[518] In the event the selection committee fails to select a clearinghouse and notify the Commission by December 15, 2026, the selection committee must drop two members, as determined by a majority vote of the original members, and the remaining members shall select a clearinghouse by majority vote by January 15, 2027.[519] Should the selection committee subsequently fail to select a clearinghouse by January 15, 2027, the selection committee will be dissolved without further action by the Commission.[520] In that event, OMD is directed to initiate a procurement process, and WTB is directed to take other necessary actions, in order to establish a clearinghouse for the Upper C-band transition.[521]

158. Certain commenters advocate that the selection committee maintain a level of oversight over the clearinghouse's operations throughout the transition, including ongoing contractual or third-party beneficiary rights and the ability to select a new clearinghouse in the event the selected entity fails to satisfy its duties.[522] We decline, as these proposals could conflict with the clearinghouse's independence and impinge on the Commission's own direct oversight role. As discussed *supra*, we delegate broad authority to WTB to oversee the clearinghouse and the transition cost reimbursement program and more generally direct WTB to take such measures as are necessary to ensure the timely and efficient transition of the Upper C-band, including but not limited to addressing any failures by the clearinghouse to fulfill its duties.[523] To promote greater transparency about the clearinghouse's claims processing status and operational costs, we instead require the clearinghouse to brief key stakeholders—including key claimants and Upper C-band licensees underwriting the transition cost reimbursement program—at regular six-month intervals from the date the clearinghouse's satisfaction of the selection criteria is determined by WTB in its final order.[524]

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[515] *See 2020 C-band R&O*, 35 FCC Rcd at 2451, paras. 275, 278.

[516] *See 2020 C-band R&O*, 35 FCC Rcd at 2451–52, paras. 279–80.

[517] *Upper C-band NPRM*, 40 FCC Rcd at 9504, para. 112; *see 2020 C-band R&O*, 35 FCC Rcd at 2452, para. 280.

[518] *See 2020 C-band R&O*, 35 FCC Rcd at 2452, 2460, paras. 281, 311 (establishing different failsafe mechanisms for the selection of the Lower C-band Clearinghouse and Relocation Coordinator).

[519] *See 2020 C-band R&O*, 35 FCC Rcd at 2452, para. 281.

[520] *See 2020 C-band R&O*, 35 FCC Rcd at 2452, para. 281.

[521] *See 2020 C-band R&O*, 35 FCC Rcd at 2460, para. 311.

[522] CTIA Comments at 27–29; Summit Ridge Comments at 4–6; Verizon Comments at 17–18; SES Reply at 31; *CTIA Apr. 22, 2026 Ex Parte* at 3–5; *Summit Ridge June 2, 2026 Ex Parte* at 2–3.

[523] *See supra* Section III.C.6.a; *2020 C-band R&O*, 35 FCC Rcd at 2452, paras. 280, 282. This may include, as appropriate, removal and replacement of the Upper C-band Clearinghouse by the Commission. *See* RPC Reply at 9.

[524] *See* Summit Ridge Comments at 2; Optimum Reply at 9 (encouraging deeper collaboration between stakeholders). We clarify that the clearinghouse, in consultation with WTB, may determine the appropriate scope of participants in such briefings. Further, the clearinghouse is instructed to maintain the confidentiality of any business sensitive or other non-public claimant information in conducting these briefings.

159. At the conclusion of the in-band FSS transition cost reimbursement program and radio altimeter retrofit rebates, WTB is specifically directed to issue a public notice upon receipt of a request from the clearinghouse to wind down and suspend operations.[525] If no material issues are raised within 15 days of release of such public notice, WTB may grant the clearinghouse's request to suspend operations on a specific date.[526] The Upper C-band terrestrial wireless licensees must complete payment of all their cost obligations prior to the date set forth in the public notice.[527]

7. The Logistics of Relocation

160. In keeping with our Lower C-band precedent, we will structure the logistics of clearing FSS operations from 4.0–4.16 GHz around an eligible space station operator-led process, which will be facilitated by a Relocation Coordinator.[528] As detailed *infra*, and in light of record support, we adopt our proposals from the *Upper C-band NPRM* to require the eligible space station operators to prepare and submit formal Transition Plans by November 5, 2026, which will be subject to public review and input along with opportunities for eligible space station operators to periodically update the plans as necessary.[529] These Transition Plans must address various topics relevant to the instant transition, with implementation progress to be documented through quarterly status reports publicly filed by the eligible space station operators.[530] The Relocation Coordinator, upon its selection by a committee of relevant stakeholders, will utilize its expertise to track and supplement these transition efforts across all eligible space station operators to ensure a timely and coordinated relocation process.[531]

161. *Transition Plans*. We believe that the Commission's previous finding that the eligible space station operators possess the technical and operational expertise required to facilitate the anticipated relocation of FSS services remains valid for purposes of the current transition.[532] Each eligible space station operator shall be responsible for coordinating with its customers and determining all appropriate relocation tasks. Such relocation tasks include those applicable to all incumbent earth stations that currently receive the eligible space station operator's C-band services within the contiguous United States, apart from the incumbent earth station operators that elect the lump sum payment and thus assume responsibility for their own transitions. Each eligible space station operator shall publicly file a formal Transition Plan detailing all relocation steps and estimated costs necessary to clear 4.0–4.16 GHz. Each eligible space station operator must plan, coordinate, and perform (or contract for the performance of) all tasks identified in its Transition Plan to migrate any incumbent earth station that receives or sends signals to a space station owned by that operator, whether the eligible satellite service provider is in direct privity of contract with the incumbent earth station operator or indirectly through another entity.[533] Should multiple eligible space station operators wish to file a joint Transition Plan, they may do so as long as it contains all required elements detailed herein regarding to each eligible space station operator.[534]

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[525] *See 2020 C-band R&O*, 35 FCC Rcd at 2452, para. 283.

[526] *2020 C-band R&O*, 35 FCC Rcd at 2452, para. 283.

[527] *2020 C-band R&O*, 35 FCC Rcd at 2452, para. 283.

[528] *2020 C-band R&O*, 35 FCC Rcd at 2452–61, paras. 284–317.

[529] *Upper C-band NPRM*, 40 FCC Rcd at 9505, paras. 114–15; *see also* Eutelsat Comments at 16–19; NAB Comments at 10; Spectrum Alliance Comments at 6; Verizon Comments at 18–19; Verizon Reply at 10–11; Optimum Reply at 8–9.

[530] *Upper C-band NPRM*, 40 FCC Rcd at 9505, paras. 114–15.

[531] *Upper C-band NPRM*, 40 FCC Rcd at 9505–06, para. 116.

[532] *2020 C-band R&O*, 35 FCC Rcd at 2452–61, paras. 284–317.

[533] *2020 C-band R&O*, 35 FCC Rcd at 2455, para. 292.

[534] *Upper C-band NPRM*, 40 FCC Rcd at 9505, para. 115; *2020 C-band R&O*, 35 FCC Rcd at 2458, para. 304.

162. All eligible space station operators must publicly file initial Transition Plans no later than November 5, 2026, after which interested stakeholders may review the plans and provide input. We direct WTB to establish a dedicated Electronic Comment Filing System (ECFS) docket for such purposes, and to issue a public notice seeking input on the initial Transition Plans shortly after their submission into such docket. As a general matter, each initial Transition Plan must specify which incumbent services are being retained and repacked within the C-band, as well as those services or links being migrated to the Ku-band. To the extent that an eligible space station operator determines that it must migrate any existing Ku-band services or links to the extended Ku-band (or any other service it provides) to accommodate the underlying migration of C-band services,[535] it shall describe those plans with sufficient specificity to demonstrate both: (1) the necessity and reasonableness of such relocations in connection with the Upper C-band transition; and (2) how incumbent services that are moved to the extended Ku-band or other post-transition location will be protected.

163. Specifically, each initial Transition Plan shall also detail all necessary transition steps and estimated costs that the eligible space station operator proposes for the Upper C-band transition, including but not limited to: (1) descriptions of all existing space stations with operations that will need to be repacked; (2) the number of new satellites, if any, the operator will need to launch to maintain sufficient capacity after the transition and a detailed description of why they are necessary; (3) a specific grooming plan for migrating services into the new spectrum, including the pre- and post-transition frequencies that each customer will occupy; (4) any necessary technology upgrades or other solutions that the operator intends to implement; (5) the number and location of incumbent earth station antennas currently receiving the eligible space station operator's transmissions that would need to be transitioned; (6) an estimate of the number of incumbent earth station antennas that will require returning, repointing, or other modifications to receive content on new transponder frequencies after the transition; and (7) the specific timeline for implementing the actions described in (2) through (6).[536] Estimated cost information shall be specified with appropriate itemization to allow reasonable review by potential auction bidders, the clearinghouse, and the Commission.[537]

164. Following the public review and input period, the eligible space station operators will have an opportunity to amend their Transition Plans in response to stakeholder input and in order to remove any incumbent earth station antennas registered to operators that have subsequently opted to elect a lump sum payment and will therefore not take part in the formal transition process.[538] WTB is further delegated authority to issue a public notice opening and establishing procedures for this amendment window, which shall close prior to the start of auction bidding, as well as any other amendment windows that may be appropriate throughout the transition process.[539] We caution the eligible space station

[535] *See, e.g.*, SES Comments at 13–14.

[536] *Upper C-band NPRM*, 40 FCC Rcd at 9505, para. 115 & n.294; *2020 C-band R&O*, 35 FCC Rcd at 2458, para. 303 & n.694 ("While we recognize that space station operators may have an interest in maintaining confidentiality regarding certain aspects of specific contractual agreements and identifying customer information, we require that any information necessary to effectuate the transition in a transparent manner must be included in this filing.").

[537] *2020 C-band R&O*, 35 FCC Rcd at 2458, para. 302.

[538] We clarify that once an incumbent earth station operator elects to take a lump sum payment as described *supra*, it has irrevocably decided to not take part in the formal transition process and the relevant eligible space station operator(s) shall no longer be responsible for transitioning said operator's facilities. That said, to the extent that a lump sum electee seeks to perform its own satellite-based transition work and is not discontinuing satellite service, it will be responsible from the point of election going forward for coordinating with the eligible space station operator(s) from which it receives service and complying with the Transition Deadlines set forth *supra*.

[539] We continue to believe that periodic amendment windows established by WTB on delegated authority for formal updates to the Transition Plans will serve the public interest by appropriately balancing the need for stakeholder certainty with measured flexibility. *See, e.g.*, *Wireless Telecommunications Bureau Opens Window for Eligible C-band Satellite Operators to Account for Updates in Their Transition Plans*, GN Docket Nos. 18-122 and 20-173, (continued….)

operators that, after this initial amendment window, their Transition Plans will be considered final as to any critical elements. Any subsequent amendments must be targeted in nature, such as to update the list of associated incumbent earth station antennas based upon new information received during the performance of transition related work. Further, we require that any such amendments are clearly summarized and explained.[540]

165. While we believe that affording transparency for all stakeholders through these Transition Plans is important and will serve the public interest, particularly for potential auction bidders who will ultimately be responsible for related transition cost reimbursements, we do not agree with proposals for the Commission to formally approve these Transition Plans.[541] As in the Lower C-band transition, we decline to find that technology choices made by the eligible space station operators and included in the Transition Plans are deemed presumptively reasonable.[542] We do not wish to prejudge the public review and input process, nor do we seek to unnecessarily constrain the clearinghouse in its independent review of the reasonableness and necessity of specific transition costs.[543]

166. *Status Reports*. In order to provide visibility into the progress of the eligible space station operators in implementing their Transition Plans, we will once again require them to file public quarterly status reports starting at the end of the first quarter of 2027.[544] These reports shall be filed in the same dedicated docket created by WTB for the Transition Plans; we delegate to WTB the authority to establish any other necessary procedures to facilitate the submission of these reports. We also clarify that while the goal of these quarterly status reports is to provide transparency into the eligible space station operators' implementation progress, they are not a surrogate for any formal Transition Plan updates, which must occur during one of the amendment windows established by WTB.

167. *Relocation Coordinator*. Based on record support, and our public interest finding in the Lower C-band context, we opt once again to utilize a Relocation Coordinator to coordinate among the eligible space station operators and to help ensure that the formal FSS transition process is completed in a timely manner.[545] Given that incumbent earth station operators electing the lump sum payment will be responsible for their own transition work and must independently comply with our Transition Deadlines—whether they opt to retain satellite service in some form, move to terrestrial delivery options, or discontinue service altogether—we find that it is unnecessary for the Relocation Coordinator to be a neutral third-party or to track the progress of lump sum electees once they have filed their election notice with the Commission.[546] Instead, we believe that a Relocation Coordinator with similar qualifications

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Public Notice, 36 FCC Rcd 9981 (WTB 2021). As such, we opt not to establish regular, pre-set amendment windows. *See* Eutelsat Comments at 15–16.

[540] *See* Verizon Comments at 18–19.

[541] *See* Eutelsat Comments at 14–16; Eutelsat Reply at 9–10; *see also* Eutelsat Comments, GN Docket Nos. 18-122 and 25-59, at 3–5 (rec. May 5, 2026) (Eutelsat Record Refresh Comments) (seeking early submission and Commission approval of Transition Plans).

[542] *2020 C-band R&O*, 35 FCC Rcd at 2430, para. 209 & n.565.

[543] As described *supra*, the Upper C-band Clearinghouse may nonetheless consider the Transition Plans submitted by the eligible space station operators, as well as any public comments submitted in response thereto, as part of its review of the reasonableness and necessity of an actual cost reimbursement claim.

[544] *Upper C-band NPRM*, 40 FCC Rcd at 9505, para. 114; *2020 C-band R&O*, 35 FCC Rcd at 2461, para. 316.

[545] CTIA Comments at 27–28; Eutelsat Comments at 19–20; Summit Ridge Comments at 2–3; Verizon Reply at 10–11; *see also Upper C-band NPRM*, 40 FCC Rcd at 9505–06, paras. 114, 116; *2020 C-band R&O*, 35 FCC Rcd at 2459–61, paras. 307–17.

[546] *See 2020 C-band R&O*, 35 FCC Rcd at 2461, para. 317. While it need not be a neutral third-party, the Relocation Coordinator will have the same responsibilities with respect to all eligible space station operators and is (continued….)

and responsibilities to those established in the Lower C-band context will appropriately coordinate the transition activities of, and resolve any disputes among, the eligible space station operators and incumbent earth station operators, and serve as a liaison with the Commission and clearinghouse.[547] That said, we emphasize that the Commission retains its oversight functions over the Relocation Coordinator and transition process overall, and thus direct: (1) WTB to perform any functions needed to establish the selection process and ensure the eventual Relocation Coordinator meets its responsibilities to ensure a timely transition described *infra*; and (2) SB to update and maintain the accuracy of the Incumbent Earth Station List based on any findings that the Relocation Coordinator makes during the course of its work.

168. We recognize that in light of the different relocation activities involved in the Upper C-band transition, the duties and expertise required of the Relocation Coordinator may vary somewhat from those in the Lower C-band transition. As such, the Upper C-band Relocation Coordinator must be able to demonstrate that it has the requisite expertise to perform the duties required in this context, which broadly include: (1) coordinating the schedule for clearing the band; (2) performing engineering analysis, as necessary, to determine necessary earth station migration actions; (3) assigning obligations, as necessary, for earth station migrations; (4) coordinating with the Upper C-band licensees throughout the transition process; (5) assessing and tracking the completion of the transition in each PEA and determining the Upper C-band wireless licensees' ability to commence operations; and (6) mediating scheduling disputes.[548] These duties selection criteria shall be used by a selection committee in evaluating potential Relocation Coordinator candidates.

169. Each eligible space station operator is eligible to identify one representative to take part in the selection committee, which will convene no later than October 1, 2026. The selection committee will work by consensus to the extent possible, or by majority vote to the extent consensus cannot be reached, to identify a selectee that meets these criteria. If a selectee is identified, then WTB shall issue a public notice seeking comment on whether such entity satisfies the selection criteria.[549] Following the comment period, WTB shall issue a final order determining whether the selection criteria have been satisfied.[550] If the selectee meets the criteria, each eligible space station operator will be responsible for paying the Relocation Coordinator's costs based on its *pro rata* share of the total amount of incentives detailed *supra*.[551] In the event the selection criteria are not met, the selection committee will restart its evaluation process and identify a new proposed entity that will be subject to the same public comment and review process by WTB.[552] Should the selection committee fail to identify a Relocation Coordinator that meets the selection criteria by January 1, 2027, OMD is delegated authority to initiate a procurement process and WTB shall take all other necessary actions to meet the Transition Deadlines.[553] In such case, the new Upper C-band licensees will be responsible for the Relocation Coordinator's reasonable costs,

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required to operate in good faith to perform its duties on behalf of each incumbent operator. *Id*.; *see also* Verizon Comments at 18; LTN Reply at 5–8.

[547] Eutelsat Comments at 19–20; Summit Ridge Comments at 2–3.

[548] *See Upper C-band NPRM*, 40 FCC Rcd at 9505–06, para. 116.

[549] *See, e.g.*, *Wireless Telecommunications Bureau Seeks Comment on Whether Proposed 3.7–4.2 GHz Relocation Coordinator Satisfies Selection Criteria*, GN Docket No. 18-122, Public Notice, 35 FCC Rcd 8152 (Aug. 3, 2020).

[550] *See, e.g.*, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, Order, 35 FCC Rcd 10469 (WTB 2020).

[551] *2020 C-band R&O*, 35 FCC Rcd at 2459, para. 308; *see supra* Section III.C.5.

[552] *2020 C-band R&O*, 35 FCC Rcd at 2459–60, para. 310.

[553] *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 311.

which shall be submitted to the clearinghouse for allocation on a *pro rata* basis in the same manner as the clearinghouse's own costs, as described *supra*.[554]

170. Once selected, the Relocation Coordinator shall fulfill its duties through a broad range of responsibilities modeled on those involved in the Lower C-band transition.[555] For example, the Relocation Coordinator may review the Transition Plans submitted by the eligible space station operators and recommend any changes that may be necessary to ensure a timely transition.[556] To this end, it may also establish a timeline and take actions necessary to help migrate incumbent earth stations (other than those electing the lump sum payment) to ensure uninterrupted service during and following the transition.[557] To the extent that an incumbent earth station is not accounted for in a Transition Plan, the Relocation Coordinator may assign responsibility for its transition to an eligible space station operator or ensure that migration steps and timelines are outlined in an individualized Earth Station Transition Plan as needed.[558] We specify that all eligible space station operators and incumbent earth station operators must cooperate in good faith with the Relocation Coordinator, and vice versa, throughout the transition.[559] The Relocation Coordinator will also be responsible for receiving notice from incumbent earth station operators or other satellite customers of any disputes related to the comparability of facilities, workmanship, or preservation of service during the transition and shall notify WTB of the dispute and provide recommendations for resolution.[560]

171. To provide transparency about its transition efforts, the Relocation Coordinator shall file its own public quarterly status reports on the overall status of clearing efforts in light of information provided by the eligible space station operators, as well as based on its independent observations through the course of its work.[561] The Relocation Coordinator shall also participate in regular status meetings to update WTB, SB, and other relevant Commission staff on its progress, and provide additional financial or other information requested by staff to satisfy the Commission's oversight responsibilities and/or reporting obligations, whether agency-specific or government-wide.[562] Upon conclusion of the FSS

[554] *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 312.

[555] *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 313.

[556] *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 313.

[557] *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 313.

[558] *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 313.

[559] *2020 C-band R&O*, 35 FCC Rcd at 2460–61, para. 314.

[560] *2020 C-band R&O*, 35 FCC Rcd at 2460–61, para. 314.

[561] *Upper C-band NPRM*, 40 FCC Rcd at 9505, para. 114; *2020 C-band R&O*, 35 FCC Rcd at 2461, para. 316. This reporting obligation will start the first quarter after a Relocation Coordinator selectee is confirmed by WTB to meet the selection criteria. We clarify that the submission deadline for the Relocation Coordinator's reports shall be two weeks after the eligible space station operators submit their individual reports for each quarter.

[562] We again expect that the new Relocation Coordinator will enter into one or more appropriate contracts with eligible space station operators and their agents or designees. *2020 C-band R&O*, 35 FCC Rcd at 2460, para. 312. We also note that, during the period when the prohibition in 47 CFR § 1.2105(c) applied to competitive bidding for licenses in the Lower C-band, the Relocation Coordinator was also required to make real-time disclosures of the content and timing of and the parties to communications, if any, from or to applicants to participate in competitive bidding, as defined by 47 CFR § 1.2105(c)(5)(i). *2020 C-band R&O*, 35 FCC Rcd at 2461, para. 315 & n.700. As proposed in the *Upper C-band NPRM*, we now adopt the same requirement here for competitive bidding for licenses in the Upper C-band. *Upper C-band NPRM,* 40 FCC Rcd at 9505–06, para. 116 & n.295. Applicants must take care that their communications with the Relocation Coordinator do not violate the prohibition against communications by revealing bids or bidding strategies. Further, applicants will have to consider their independent obligation to report potential violations to the Commission pursuant to auction rules. *See* 47 CFR § 1.2105(c).

transition, or at the earlier request of Commission staff, the Relocation Coordinator shall provide public written notice of its plans to discontinue its work on a date certain.[563]

D. Coexistence with Adjacent Band Radio Altimeters

172. In the *Upper C-band NPRM*, the Commission recognized the importance of robust participation from interested stakeholders, as well as continued dialogue and close coordination with NTIA and FAA, among other federal partners, to promote a successful spectral co-existence environment supporting the rapid deployment of terrestrial wireless services in the Upper C-band.[564] The Commission also noted the OBBB Act's direction to repurpose and auction Upper C-band spectrum, and its focus on improving safety in the national airspace.[565] In furtherance of these goals, FAA subsequently issued its own proposed rule seeking to improve the performance of adjacent band radio altimeters in parallel with the instant Commission proceeding.[566] The resulting discourse has reflected significant progress in achieving agreement on key issues,[567] while some differences in perspective and approach remain.[568] The record also contains certain gaps with respect to future equipment designs that remain subject to finalization and regulatory approvals, which impacts the precise analysis of certain elements of the anticipated operational environment. As a result, we recognize that certain decisions that we and our FAA colleagues must make at this juncture are necessarily premised on the best information available today and grounded in analysis and assumptions aligned with each agency's purview and statutory remit.[569] We appreciate this inter-agency collaboration and believe it will enable stable spectral co-existence and a rapid deployment of terrestrial wireless services in the Upper C-band in furtherance of the OBBB Act's near-term requirements. At the same time, we anticipate that new technical data may become available in the future that could enable us to refine certain assumptions and analyses going forward. We thus welcome an open dialogue with both industry and federal stakeholders as technology evolves in furtherance of the successful spectrum co-existence environment that we reinforce with today's action.

173. *Technical Issues*. Since the Lower C-band transition, government and industry stakeholders have engaged in significant technical work to ensure successful coexistence between wireless operations in the C-band and adjacent band radio altimeters.[570] In conjunction with these efforts, the Commission sought comment in the *Upper C-band NPRM* on the current state of radio altimeter performance, the timing of future radio altimeter upgrades, and the expected level of the upgraded altimeters' performance.[571] At the same time, the *FAA NPRM* sought to adopt an Interference Tolerance

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[563] *See* Letter from Sanga Chandel, RSM US LLP, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Aug. 17, 2023).

[564] *Upper C-band NPRM*, 40 FCC Rcd at 9464, para. 3.

[565] *Upper C-band NPRM*, 40 FCC Rcd at 9506–07, para. 117.

[566] *See generally FAA NPRM*.

[567] *See* Letter from Dorothy B. Reimold, Vice President, Civil Aviation, AIA, et al., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed Sept. 30, 2025).

[568] *See* Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed Apr. 10, 2026); Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59, at Attach. (filed Mar. 13, 2026).

[569] *See, e.g.*, *Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services, Promoting Efficient Use of Spectrum Through Improved Receiver Interference Immunity Performance*, Policy Statement, ET Docket Nos. 23-122 and 22-137, 38 FCC Rcd 3682 (2023).

[570] *Upper C-band NPRM*, 40 FCC Rcd at 9506–07, para. 117.

[571] *Upper C-band NPRM*, 40 FCC Rcd at 9507, paras. 118–19.

Mask (ITM) requirement for radio altimeters to enhance their signal rejection capabilities.[572] The FAA has proposed that all aircraft with radio altimeters operating in the contiguous United States under part 121 (U.S.-registered air carriers), part 129 (foreign-registered air carriers), and part 91 (including aircraft operating under parts 125, 133, 135, 136, 137, and 194) must be retrofit to comply with this new capability by one of two different deadlines.[573]

174. The technical rules that we adopt today are intended to align with FAA's independent safety-based decisions and promote a harmonious spectral environment between terrestrial wireless operations throughout the entire C-band and adjacent band radio altimeters.[574] As discussed *supra*, the key technical provisions include: (1) modified OOBE limits into the 4.2–4.4 GHz band; (2) a 450-foot antenna height limit; and (3) base station power limits. These rules will take effect as of our Primary Transition Deadline, which corresponds with FAA's first radio altimeter retrofit deadline on December 30, 2030.[575] After this date, new terrestrial wireless operations may commence in the Upper C-band in the PEAs subject to the Primary Transition Date.

175. *Retrofit Timing*. The Commission solicited stakeholder input in the *Upper C-band NPRM* on the timing of the radio altimeter retrofit process, which is also the subject of the *FAA NPRM*.[576] In specific, the Commission noted the OBBB Act's deadline to complete a system of competitive bidding for at least 100 megahertz of the Upper C-band by July 4, 2027, and the corresponding need to assure bidders as to when they will be able to use the spectrum they purchase at auction.[577] The *FAA NPRM* estimated that the first group of radio altimeter upgrades (involving part 121 and larger part 129 aircraft) could be completed at some point between 2029 and 2032.[578] More recently, aviation interests jointly provided an updated timeline for those specific fleets.[579] The updated timeline projects that in-service retrofits for the vast majority of these aircraft—which are performed as part of routine, overnight maintenance—could be complete in the last quarter of 2029 while a smaller number of regional aircraft that necessitate a new design transceiver could be done by the third quarter of 2030.[580] Based on these revised projections, FAA's first retrofit deadline will be December 30, 2030.[581] All other aircraft subject to the FAA's retrofit requirement would fall under its second deadline, October 31, 2034.[582]

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[572] *See FAA NPRM*, 91 Fed. Reg. at 467.

[573] *See FAA NPRM*, 91 Fed. Reg. at 467–70, 473–75.

[574] *See FAA Final Rule* at Sections IV.A–B.

[575] We acknowledge that the Lower C-band licensees who previously made voluntary commitments on specific technical issues to foster short-term co-existence with adjacent band radio altimeters have filed acknowledging their willingness to voluntarily extend those commitments from the existing expiration date in 2028 until the Primary Transition Deadline. *See, e.g.*, *CTIA June 18, 2026 Ex Parte* at 2–3. After that date, our understanding and expectation is that the voluntary commitments will expire in their entirety, and the modified technical rules we adopt today will govern from that point forward.

[576] *Upper C-band NPRM*, 40 FCC Rcd at 9507, para. 119.

[577] *Upper C-band NPRM*, 40 FCC Rcd at 9507, para. 119.

[578] *See FAA NPRM*, 91 Fed. Reg. at 470. The *FAA NPRM* proposed that part 129 aircraft with 30 or more passenger seats or a payload capacity of more than 7,500 pounds would be subject to this first FAA retrofit deadline, with any remaining part 129 aircraft subject to the second retrofit deadline. *Id.*

[579] *See* Letter from Timothy White, Vice President, Engineering & Technology, Aerospace Industries Association, et al., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-59 (filed Mar. 26, 2026) (*Aviation Coalition March 26, 2026 Ex Parte*).

[580] *See Aviation Coalition March 26, 2026 Ex Parte* at 4–5.

[581] *FAA Final Rule* at Section I.B.

[582] *FAA Final Rule* at Section I.B.

176. *Radio Altimeter Retrofit Rebates*. In addition to seeking more granular technical and operational information about future radio altimeter improvements in the *Upper C-band NPRM*, we also inquired about how compliance with the FAA's requirements could be facilitated. We specifically note that our *Emerging Technologies* framework has never been used to address adjacent band equities.[583] The aviation sector strongly advocates for support for the retrofits,[584] and offers various legal justifications and proposals for structuring such support, largely predicated on our *Emerging Technologies* precedent and the in-band relocation reimbursement program for FSS incumbents that was used in the Lower C-band transition.[585] Wireless interests assert that the *Emerging Technologies* framework is unsuitable and impractical to apply to radio altimeter upgrades.[586]

177. We believe that the radio altimeter retrofits mandated by FAA in its companion rulemaking will facilitate both a stable coexistence environment and the launch of Upper C-band wireless deployments on a predictable timeline. These efforts, which have been expedited in light of the OBBB Act's statutory deadline for an Upper C-band auction, will entail a substantial time and economic commitment by the aviation industry to further improve the signal rejection capability of radio altimeters by rapidly retrofitting a broad range of aircraft that fly in the contiguous United States, closely following on an earlier, more targeted retrofit process in 2023.[587] In light of these factors, and the need to closely coordinate implementation efforts between the FAA and FCC and their respective regulatees in order to carry out a successful and timely repurposing of the adjacent Upper C-band for terrestrial wireless use,[588] we find that it is in the public interest given the unique circumstances present in this context to provide rebates to adjacent band stakeholders to support their efforts to comply with the FAA's radio altimeter retrofit deadlines.

178. We recognize that these rebates do not strictly fall within the *Emerging Technologies* framework given that it centers on relocations of in-band incumbents whose licenses are being modified.[589] Radio altimeters are in the adjacent band, are not being relocated, and their Commission

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[583] *Upper C-band NPRM*, 40 FCC Rcd at 9507–08, para. 120.

[584] A4A Comments at 6–25; A4A Reply at 5–18; ALPA Comments at 8–9; Boeing Comments at 20–23; IATA Comments at 12–21; Lockheed Martin Comments at 14–16; Thales Comments at 10; NBAA Reply at 2–7; Honeywell Reply at 19; VAI Reply at 1–4; Letter from Sharon L. Pinkerton, Senior Vice President, Legislative and Regulatory Policy, Airlines for America, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 25-59, at 2–3 (filed May 7, 2026) (*A4A May 7, 2026 Ex Parte*).

[585] A4A Comments at 6–25; A4A Reply at 5–18; Boeing Comments at 20–23; IATA Comments at 12–21; Lockheed Martin Comments at 14–16; NBAA Reply at 2–7; Honeywell Reply at 19; VAI Reply at 1–4; *A4A May 7, 2026 Ex Parte* at 2–3.

[586] CTIA Reply at 32–33.

[587] *See generally A4A May 7, 2026 Ex Parte*; *see, e.g.*, Federal Aviation Administration, Department of Transportation, Airworthiness Directives; Transport and Commuter Category Airplanes, 88 Fed. Reg. 34065 (May 26, 2023); *see also* FAA Order 8900.1, Vol. 12, Ch. 4, Section 4.3, Paragraphs C048, C059 and C060.

[588] *See, e.g.*, ASRI Comments at 11; AT&T Comments at 9–10; Boeing Comments at ii, 5–6; CTIA Comments at 7–8, 19–20; Joint Aviation Comments at i–ii, 8; NTIA Comments at 1–2, 5–7; Verizon Comments at 5–7, 19–20; Verizon Reply at 9–10; A4A Reply at 11–12; ICLE Reply at 9.

[589] *See, e.g.*, *Emerging Technologies Order*, 7 FCC Rcd at 6886; *18 GHz Order*, 15 FCC Rcd at 13467, paras. 76, 78–79; *3 GHz R&O*, 21 FCC Rcd at 4478, para. 8 & n.24; *2020 C-band R&O*, 35 FCC Rcd at 2415–18, paras. 179–85; *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8825, 8827–29, para. 2 (1996); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, Second Report and Order, 17 FCC Rcd 23193, 23215–16, paras. 46–47 (2002); *Improving Public Safety Communications in the 800 MHz Band, et al.*, Report and Order, Fifth Report and Order, Fourth Memorandum

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authorizations are, contrary to the suggestion of some commenters, not being modified.[590] We nonetheless believe that the same statutory authority underpinning the *Emerging Technologies* framework can be adapted here to suit the current circumstances.

179. We therefore rely on our broad Title III spectrum management and licensing authority to condition the grant of new terrestrial wireless licenses in the Upper C-band on providing rebates to defined classes of eligible aircraft owners and operators to facilitate their compliance with the FAA's radio altimeter retrofit requirements.[591] We have frequently relied on this authority, including section 303 of the Act,[592] to impose conditions on new wireless licensees and do so again here to ensure that our repurposing and subsequent auction of Upper C-band spectrum pursuant to the OBBB Act occurs on a certain and predictable timeframe in light of the unique adjacent band equities involving radio altimeters and the FAA's companion retrofit requirement.[593] The record in the instant proceeding evidences general support for rebates to the aviation sector to support the FAA retrofit requirements.[594]

180. In shaping an appropriate structure for these rebates, we consider the scope and scale of the FAA's retrofit requirement. The *FAA Final Rule* forecasts {[XX]} aircraft with {[XX]} radio altimeters across all categories that would be subject to its two proposed retrofit deadlines.[595] The first retrofit deadline, after which terrestrial wireless operations in the Upper C-band could start from an FAA perspective, will in part cover all aircraft operating in the contiguous United States under part 121, or {[XX]} aircraft with {[XX]} radio altimeters.[596] The scale and scope of overall rebates in this context would thus be significant and present meaningful administrative burdens and operational costs for any entity charged with its oversight. We are also mindful that these rebates are being designed for adjacent band stakeholders that do not hold spectrum licenses for a service with an allocation in the band being repurposed. As such, they are in a distinct posture compared with in-band incumbents whose licenses are being modified and whose operations are being relocated. For this reason, and given the large scope of potential claims, we do not believe that an actual cost framework, for which some commenters advocate, is either appropriate or practicable in this instance.[597] We instead opt for a rebate structure that will establish set amounts for different categories of aircraft based on the number of radio altimeters involved in each upgrade, the general level of efforts involved in each type of retrofit, and other reasonable and

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Opinion and Order, and Order, 19 FCC Rcd 14969, 15010–13, paras. 62–68 (2004); *see also CTIA Apr. 22, 2026 Ex Parte* at 8.

[590] *See* IATA Comments at 17–19; Joint Aviation Reply at 18. *But see CTIA Apr. 22, 2026 Ex Parte* at 8 ("[T]he aviation industry is not being relocated or otherwise deprived of their spectrum use rights as a result of this proceeding . . . .").

[591] 47 U.S.C. §§ 301, 303, 309; *see also* 47 U.S.C. § 154(j).

[592] *See* 47 U.S.C. § 303(c) (authority to "[a]ssign bands of frequencies" to specific uses); 303(f) (authority to "[m]ake such regulations not inconsistent with law as [the Commission] may deem necessary to prevent interference between stations"); 303(g) (authority to "encourage the larger and more effective use of radio [frequencies] in the public interest"); 303(r) (authority to "[m]ake such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the provisions of" the Act).

[593] OBBB Act, § 40002(b)(2); *see FAA Final Rule*.

[594] A4A Comments at 6–25; A4A Reply at 5–18; ALPA Comments at 8–9; Boeing Comments at 20–23; IATA Comments at 12–21; Lockheed Martin Comments at 14–16; Thales Comments at 10; NBAA Reply at 2–7; Honeywell Reply at 19; VAI Reply at 1–4; *A4A May 7, 2026 Ex Parte* at 3–8.

[595] *FAA Final Rule* at Table 5.

[596] *FAA Final Rule* at Table 5.

[597] *See* A4A Comments at 4, 6–25; A4A Reply at 5–18; ALPA Comments at 8–9; Boeing Comments at 20–23; IATA Comments at 12–21; Lockheed Martin Comments at 9–16; NBAA Reply at 4–6; Thales Comments at 9–10; VAI Reply at 2–4.

necessary factors involved in accomplishing each category of retrofit, including timing considerations such as the relevant deadline for compliance. Aside from these rebates, we will not impose any additional conditions on winning auction bidders with respect to radio altimeter retrofits (such as actual cost reimbursement). Our intent in structuring the retrofit rebates in this way is to streamline the overall process to make support available more quickly for the retrofits, with targeted documentation requirements to prevent fraud, waste, or abuse. We anticipate this structure will minimize both the operational costs of administering the rebates and the number of disputes that must be referred to, and adjudicated by, the Commission on appeal.

181. We thus delegate broad authority to WTB to determine the appropriate rebate categories, dollar amounts, documentation requirements, and any other relevant procedures that may be necessary to administer the rebates in an equitable and expeditious manner.[598] WTB is directed to seek public comment on its draft proposals no later than October 6, 2026, and issue a public notice finalizing them as soon as feasible thereafter. In conjunction with this process, we specify that the eligible entities and aircraft for rebates related to the first FAA retrofit deadline will be aircraft operators that hold a U.S. operating certificate under 14 CFR part 119, and aircraft manufactured prior to January 1, 2030, with one or more radio altimeters installed which operate in the contiguous United States pursuant to 14 CFR part 121 and that are subject to the first FAA retrofit deadline.[599] The eligible entities and aircraft for rebates related to the second FAA retrofit deadline will be aircraft owners as determined by FAA's Aircraft Registry, and aircraft manufactured prior to July 1, 2031, with one or more radio altimeters installed which operate in the contiguous United States pursuant to 14 CFR part 91 and that are subject to the second FAA retrofit deadline.[600] We also specify that the rebates apply only to the retrofit of radio altimeters already installed in eligible aircraft and not to any spare inventory that aircraft operators or owners may opt to maintain as an elective practice, which is not required by FAA.[601] We further find that it would not be in the public interest to offer rebates to foreign-registered aircraft operators and owners given the fluid and itinerant nature of their operations in the airspace of the contiguous United States. Relative to federal stakeholders, we noted in the *Upper C-band NPRM* that with respect to the in-band FSS transition, the Antideficiency Act and the Miscellaneous Receipts Act may limit federal entities from receiving reimbursements from third party, non-governmental entities.[602] We anticipate similar limitations in the instant context, and have structured the radio altimeter retrofit rebate eligibility requirements described *supra* with these constraints in mind. We also decline to extend eligibility for

[598] As in the case of reimbursement and lump sum claims related to the in-band FSS transition, we also establish for the radio altimeter retrofit rebates final and binding claims submission deadlines for all rebate claims of no later than six months after the relevant FAA retrofit deadline established in either 14 CFR § 91.220 or 14 CFR § 121.326. These final rebate claims submission deadlines are intended to serve as outward boundaries, and are without prejudice to any earlier deadlines that WTB may determine are necessary pursuant to its delegated authority.

[599] *See* 14 CFR part 121. The aviation sector anticipates that updated radio altimeters will be available such that most in-service mainline aircraft can be retrofit by Q4 2029. *See Aviation Coalition March 26, 2026 Ex Parte* at Attach. This timeline will also enable upgraded radio altimeters to be incorporated into new part 121 aircraft manufactured after January 1, 2030, thus obviating the need for retrofits going forward and making aircraft manufactured after that date, as determined by the date on their aircraft registration, ineligible for the rebate program.

[600] *See* 14 CFR part 91; *see also* FAA, *Aircraft Inquiry*, https://registry.faa.gov/aircraftinquiry/ (last visited June 29, 2026). The aviation sector anticipates that updated radio altimeters will be certified for part 91 aircraft by Q2 2031. Joint Aviation Reply at Annex B. This timeline will also enable upgraded radio altimeters to be incorporated into new aircraft within these categories manufactured after July 1, 2031, thus obviating the need for retrofits going forward and making aircraft manufactured after that date, as determined by the date on their aircraft registration, ineligible for the rebate program.

[601] *See, e.g.*, A4A Reply at 14.

[602] *See Upper C-band NPRM*, 40 FCC Rcd at 9497, para. 95 & n.237; 31 U.S.C. §§ 1341, 3302.

rebates to other entities in the aviation sector, including radio altimeter manufacturers, many of which will already benefit from the rebates indirectly through operation of the relevant supply chain.[603] As a practical matter and from a timing perspective, we conclude that this is not feasible. Until an auction of Upper C-band licenses occurs, and winning bidders apply for and receive their Commission licenses subject to the conditions adopted herein, there will be no responsible entities who would be legally obligated to provide rebates in connection with the Upper C-band transition. That said, the establishment of these rebates is intended to facilitate compliance with the FAA's retrofit requirements through the entities that must undertake compliance efforts, namely the eligible aircraft owners and operators identified *supra*.

182. Based upon information supplied in response to both the *Upper C-band NPRM* and the *FAA NPRM*, we estimate the total rebate costs will be between ${[XX]} billion, with approximately ${[XX]} billion attributable to aircraft subject to the first FAA retrofit deadline, and ${[XX]} billion for those aircraft subject to the second FAA retrofit deadline. As in the case of the in-band FSS transition cost reimbursement program, here we find it is reasonable to base the retrofit rebates share for each Upper C-band licensee on that licensee's *pro rata* share of gross winning bids. For each eligible aircraft operator's or owner's rebate amount, the *pro rata* share for each Upper C-band licensee will be the sum of the final clock phase prices (*P*) for the set of all license blocks (*I*) that a bidder wins divided by the total final clock phase prices for all *N* license blocks sold in the auction. To determine an Upper C-band licensee's reimbursement obligation (*RO*), that pro rata share would then by multiplied by the total eligible relocation costs (*RC*). Mathematically, this is represented as:

$$RO = \left(\frac{\sum_{i \in I} P_i}{\sum_{j=1}^{N} P_j} \right) \times RC$$

IV. ORDER ON RECONSIDERATION

183. In connection with our harmonization of various rules across the entire C-band to create a unified 3.7 GHz Service to the greatest extent practicable, and the anticipated expiration of the Lower C-band voluntary commitments in December 2030, we seek to bring closure to all other outstanding matters from our earlier Lower C-band transition. Six petitions were filed after adoption of the *2020 C-band R&O* seeking reconsideration, and in some cases clarification, of the Commission's determinations therein.[604] On April 10, 2026, WTB released the *Record Refresh PN* to update the record on these petitions, especially with regard to technical proposals in the *Upper C-band NPRM* that correspond with similar ones raised in the petitions in the Lower C-band context on how to promote coexistence with radio altimeters in the 4.2–4.4 GHz band.[605] In specific, the AIA Petition asks that the Commission take "appropriate mitigation measures . . . including limitations on technical parameters,"[606] with regard to

[603] Thales Comments at 10; Honeywell Reply at 19.

[604] Petition for Partial Reconsideration of the 3.7–4.2 GHz Band Report and Order, GN Docket No. 18-122 (filed May 26, 2020), https://www.fcc.gov/ecfs/document/10527379225572/1 (AIA Petition); Intelsat License LLC Petition for Reconsideration, GN Docket No. 18-122 (filed May 26, 2020), https://www.fcc.gov/ecfs/document/10526884925025/1 (Intelsat Petition); Petition of Eutelsat S.A. for Expedited Reconsideration or Clarification, GN Docket No. 18-122 (filed May 26, 2020), https://www.fcc.gov/ecfs/document/10523184488608/1 (Eutelsat Petition); Petition for Clarification and/or Reconsideration, GN Docket No. 18-122 (filed May 26, 2020), https://www.fcc.gov/ecfs/document/10526747701000/1 (ITSO Petition); Petition for Reconsideration of Charter Communications, Inc., GN Docket No. 18-122 (filed May 26, 2020) (Charter Petition), https://www.fcc.gov/ecfs/document/10527106958674/1; Request for Clarification or, in the Alternative, Petition for Partial Reconsideration, GN Docket No. 18-122 (filed May 26, 2020), https://www.fcc.gov/ecfs/document/10526242916138/1 (Raytheon Petition).

[605] *See Record Refresh PN*. Comments to the *Record Refresh PN* were due on May 5, 2026.

[606] AIA Petition at 18.

terrestrial wireless operations in the Lower C-band in recognition of radio altimeter operations in the 4.2–4.4 GHz band.[607]

184. Certain of these petitions have already been addressed *supra* as part of our resolution of the *Upper C-band NPRM*. For example, we grant in part the AIA Petition through our adoption of harmonized OOBE limits applicable to terrestrial wireless operations across the entire C-band that are tailored to ensure coexistence with radio altimeter operations in the 4.2–4.4 GHz band.[608] We deny the requests in the Intelsat Petition and the ITSO Petition related to the protection timeframe of TT&C operations and the protection of international gateway operations throughout the C-band at the consolidated TT&C sites established after the *2020 C-band R&O*.[609] For the reasons explained *supra*, TT&C operations will be protected—and international gateway operations may continue unprotected—at the consolidated sites until 2030.[610]

185. Other petitions have either been rendered moot over time, or were previously addressed by the Commission in the *2020 C-band R&O*. For example, given the Lower C-band transition is complete, we dismiss as moot the requests in the Eutelsat Petition, Raytheon Petition, Intelsat Petition, and ITSO Petition that seek reconsideration or clarification of Commission determinations related to that transition, or of other deadlines that have since passed.[611] The Charter Petition asks the Commission to reconsider requiring Lower C-band licensees to provide TDD synchronization with operations in the Citizens Broadband Radio Service in the 3.55–3.7 GHz band (3.5 GHz band).[612] In the *2020 C-band R&O*, the Commission fully considered the coexistence implications for Lower C-band wireless operations and those at the upper end of the 3.5 GHz band and declined to impose coordination requirements of the sort that Charter requests.[613] Instead, the Commission "encourage[d] parties to explore synchronization of TDD operations to minimize interference between these adjacent services."[614] Because the Commission fully considered and rejected the arguments that Charter presents in its Petition, and in the absence of intervening developments necessitating TDD synchronization between Lower C-band and 3.5 GHz band operations, we deny the Charter Petition.

V. PROCEDURAL MATTERS

186. *Paperwork Reduction Act Analysis.* This *Report and Order, Order of Proposed Modification, and Order on Reconsideration* may contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. All such requirements will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA. OMB, the general public, and other federal agencies will be invited to comment on any new or modified information collection requirements contained in this proceeding. In addition, we note that, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. § 3506(c)(4), we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.

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[607] *See* AIA Petition at 16–18.

[608] *See supra* Section III.B.3.a–b; *see also* AIA Petition at 16–18.

[609] *See* Intelsat Petition at 2–5; ITSO Petition at 15; *see also* SES Record Refresh Comments at 4–8.

[610] *See supra* Section III.B.3.h.

[611] *See generally* Eutelsat Petition; Raytheon Petition; *see also* Intelsat Petition at 20–24; ITSO Petition at 15–17; CTIA Record Refresh Comments at 12–15; Verizon Record Refresh Comments at 7–9; Eutelsat Record Refresh Comments at 2.

[612] *See generally* Charter Petition.

[613] *See 2020 C-band R&O*, 35 FCC Rcd at 2485–86, paras. 396–97; *see also* Verizon Record Refresh Comments at 5–6; CTIA Record Refresh Comments at 15.

[614] *2020 C-band R&O*, 35 FCC Rcd at 2486, para. 396.

187. *Regulatory Flexibility Act.* The Regulatory Flexibility Act of 1980, as amended (RFA)[615] requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[616] Accordingly, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule and policy changes contained in this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* on small entities. The FRFA is set forth in Appendix B.

188. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that this rule is major under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

189. *Comment Period and Filing Procedures*. Pursuant to section 316 of the Communications Act, 47 U.S.C. § 316, interested parties may file any protest of the proposed modifications no later than thirty (30) days after publication of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* in the Federal Register. Protests may be filed using the Commission's Electronic Comment Filing System (ECFS).

- *Electronic Filers*: Comments may be filed electronically using the Internet by accessing the ECFS: https://www.fcc.gov/ecfs.
- *Paper Filers*: Parties who choose to file by paper must file an original and one copy of each filing.
    - Filings can be sent by hand or messenger delivery, by commercial courier, or by the U.S. Postal Service. **All filings must be addressed to the Secretary, Federal Communications Commission.**
    - Hand-delivered or messenger-delivered paper filings for the Commission's Secretary are accepted between 8:00 a.m. and 4:00 p.m. by the FCC's mailing contractor at 9050 Junction Drive, Annapolis Junction, MD 20701. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
    - Commercial courier deliveries (any deliveries not by the U.S. Postal Service) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
    - Filings sent by U.S. Postal Service First-Class Mail, Priority Mail, and Priority Mail Express must be sent to 45 L Street NE, Washington, DC 20554.

190. *People with Disabilities.* To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the FCC's Consumer and Governmental Affairs Bureau at 202-418-0530 (voice).

191. *Additional Information.* For additional information on this proceeding, contact Andrew McArdell, FCC, Wireless Telecommunications Bureau, Mobility Division, Andrew.McArdell@fcc.gov.

VI. ORDERING CLAUSES

192. IT IS ORDERED, pursuant to sections 1, 2, 4(i), 301, 302(a), 303, 304, 307, 309, 316, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 301, 302a(a),

[615] 5 U.S.C. § 601 *et seq*., as amended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA), Pub. L. No. 104-121, 110 Stat. 847 (1996).

[616] 5 U.S.C. § 605(b).

303, 304, 307, 309, 316 and 403, and by section 40002 of the OBBB Act, that this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* IS HEREBY ADOPTED.[617]

193. IT IS FURTHER ORDERED that the rules and requirements as adopted herein ARE ADOPTED, effective sixty (60) days after publication in the Federal Register, and that the *Order of Proposed Modification* is effective as of the date of publication in the Federal Register; provided, however, that sections 25.138(a)–(b); 25.147(a)–(c); 27.14(x)(3); 27.1412(b)–(c); 27.1412(e); 27.1412(g); 27.1413(a)(3); 27.1413(c)(1); 27.1413(c)(9); 27.1413(e)–(f); 27.1414(e); 27.1415; 27.1416; 27.1417; 27.1419; 27.1421; 27.1422(c); 27.1424 of the Commission's rules, which contain new or modified information collection requirements that require review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, will not become effective until the effective date for those information collections is announced in a document published in the Federal Register after the Commission receives OMB approval. The Commission directs the Bureau to issue such document and to cause sections 25.138(a)–(b); 25.147(a)–(c); 27.14(x)(3); 27.1412(b)–(c); 27.1412(e); 27.1412(g); 27.1413(a)(3); 27.1413(c)(1); 27.1413(c)(9); 27.1413(e)–(f); 27.1414(e); 27.1415; 27.1416; 27.1417; 27.1419; 27.1421; 27.1422(c); 27.1424 to be revised accordingly.

194. IT IS FURTHER ORDERED that, pursuant to sections 309 and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 309 and 316, in the *Order of Proposed Modification* the Commission proposes that the licenses and authorizations of all 4.0–4.2 GHz FSS licensees and market access holders and all transmit-receive earth station licenses will be modified pursuant to the conditions specified in this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* at paragraphs 96–109, these modification conditions will be effective 60 days after publication of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* in the Federal Register, provided, however, that in the event any FSS licensee, transmit-receive licensee, or any other licensee or permittee who believes that its license or permit would be modified by this proposed action, seeks to protest this proposed modification and its accompanying timetable, the proposed license modifications specified in this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* and contested by the licensee or permittee shall not be made final as to such licensee or permittee unless and until the Commission orders otherwise. Pursuant to section 316(a)(1) of the Communications Act of 1934, as amended, 47 U.S.C. § 316(a)(1), publication of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* shall constitute notification in writing of our *Order of Proposed Modification* proposing the modification of the 4.0–4.2 GHz FCC licenses and transmit-receive earth station licenses, and of the grounds and reasons therefore, and those licensees and any other party seeking to file a protest pursuant to section 316 shall have 30 days from the date of such publication to protest such *Order of Proposed Modification.*

195. IT IS FURTHER ORDERED, pursuant to sections 309 and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 309 and 316, that following the final modification of each FSS license and transmit-receive earth station license, the Space Bureau shall further modify such licenses as are necessary in order to implement the specific band reconfiguration in the manner specified in this *Report and Order, Order of Proposed Modification, and Order on Reconsideration.*

196. IT IS FURTHER ORDERED that the Petition for Partial Reconsideration filed by the Aerospace Industries Association et al. with respect to the *2020 C-band R&O* in GN Docket No. 18-122 is GRANTED as indicated herein, and the Petitions for Reconsideration filed by Eutelsat S.A., Intelsat License LLC, the International Telecommunications Satellite Organization, Charter Communications, Inc., and Raytheon Technologies Corporation with respect to the *2020 C-band R&O* in GN Docket No. 18-122 are DISMISSED or DENIED, as indicated herein.

[617] Pursuant to Executive Order 12866, 58 Fed. Reg. 51735 (Oct. 4, 1993), as amended by Executive Order 14215, 90 Fed. Reg. 10447 (Feb. 24, 2025), this regulatory action has been determined to be significant under section 3(f)(1) of Executive Order 12866 and has been reviewed by the Office of Management and Budget.

197. IT IS FURTHER ORDERED that the Commission's Office of the Secretary, SHALL SEND a copy of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for the Small Business Administration (SBA) Office of Advocacy.

198. IT IS FURTHER ORDERED that the Office of the Managing Director, Performance Program Management, SHALL SEND a copy of this *Report and Order, Order of Proposed Modification, and Order on Reconsideration* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. § 801(a)(1)(A).

199. It is our intention in adopting these rules that, if any provision of the *Report and Order, Order of Proposed Modification, and Order on Reconsideration* or the rules, or the application thereof to any person or circumstance, is held to be unlawful, the remaining portions of such *Report and Order, Order of Proposed Modification, and Order on Reconsideration* and the rules not deemed unlawful, and the application of the *Report and Order, Order of Proposed Modification, and Order on Reconsideration* and the rules to other persons or circumstances, shall remain in effect to the fullest extent permitted by law.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 1, 2, 25, and 27 as follows:

PART 1 – PRACTICE AND PROCEDURE

1. The authority citation for part 1 continues to read as follows:

Authority: 47 U.S.C. chs. 2, 5, 9, 13; 28 U.S.C. 2461 note, 47 U.S.C. 1754, unless otherwise noted.

2. Amend § 1.9005 by revising paragraph (mm) to read as follows:

§ 1.9005 Included services.

* * * * *

(mm) The 3.7 GHz Service in the 3.7–4.14 GHz band.

* * * * *

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

3. The authority citation for part 2 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

4. Amend § 2.106 by:

a. revising page 41 of the Table of Frequency Allocations to read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

Table of Frequency Allocations	3600-5460 MHz (SHF)				Page 41
International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
3400-3600 MHz: see previous page	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.431B Radiolocation 5.433	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3500-3550 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 US103 US431B	3500-3600 MHz: see previous page	
			3550-3650 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 US105 US107 US245 US433	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) US107 US245 NG169 MOBILE except aeronautical mobile	Satellite Communications (25) Citizens Broadband (96)
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.434 Radiolocation 5.433	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.435	3650-3700 US109 US349	US105 US109 US349 US433	
	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile		3700-4200	3700-4160 FIXED MOBILE except aeronautical mobile NG182 NG457A	Wireless Communications (27)
				4160-4200 FIXED FIXED-SATELLITE (space-to-Earth) NG457A NG182	Satellite Communications (25)
4200-4400 AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440			4200-4400 AERONAUTICAL RADIONAVIGATION 5.440 US261		Aviation (87)
4400-4500 FIXED MOBILE 5.440A			4400-4940 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A				4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.149 5.339 5.443			US113 US245 US342	4800-4940 US113 US342	
			4940-4990 5.339 US342 US385 G122	4940-4990 FIXED MOBILE except aeronautical mobile 5.339 US342 US385	Public Safety Land Mobile (90Y)
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149			4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		

b. Revising paragraphs (d)(182)(i), (ii), (iii)(A), and (iii)(C), and paragraph (d)(457)(i) to read as follows:

* * * * *

(d) * * *

(182) * * *

(i) Except as provided in paragraph (d)(182)(iii)(A) of this section, any currently authorized space stations serving the contiguous United States may continue to operate on a primary basis, but no applications for new space station authorizations or new petitions for market access shall be accepted for filing after June 21, 2018. Applications for extension, cancellation, replacement, or modification of existing space station authorizations in the band will continue to be accepted and processed normally.

(ii) In areas outside the contiguous United States, the band 3700–4160 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis.

(iii) * * *

(A) Incumbent use of the fixed-satellite service (space-to-Earth) in the band 3700–4160 MHz is subject to the provisions of §§ 25.138, 25.147, 25.203(n) and part 27, subpart O of this chapter.

(B) * * *

(C) In the band 4140–4160 MHz, no new fixed or mobile operations will be permitted until specified by Commission rule, order, or notice.

* * * * *

(457) * * *

(i) In the band 3700–4200 MHz, ESVs may be authorized to receive FSS signals from geostationary satellites. ESVs in motion are subject to the condition that these earth stations may not claim protection from transmissions of non-Federal stations in the fixed and mobile except aeronautical mobile services. While docked, ESVs receiving in the band 4160–4200 MHz may be coordinated for up to 180 days, renewable. Paragraph d(182) of this section applies to incumbent licensees that provide service to ESVs in the band 3700–4160 MHz.

* * * * *

PART 25 – SATELLITE COMMUNICATIONS

5. The authority citation for part 25 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

6. Section 25.138 is revised to read as follows:

§ 25.138 Earth Stations in the 3.7–4.2 GHz band.

(a) Applications for new, modified, or renewed earth station licenses and registrations in the 3.7–4.16 GHz portion of the band in CONUS are no longer accepted.

(b) Applications for new earth station licenses or registrations within CONUS in the 4.16–4.2 GHz portion of the band will not be accepted until the transition of the 4.0–4.16 GHz portion of the band is completed and upon announcement by the Space Bureau via Public Notice that applications may be filed.

(c) Fixed and temporary fixed earth stations operating in the 3.7–4.16 GHz portion of the band within CONUS will be protected from interference by licensees in the 3.7 GHz Service subject to the deadlines set forth in § 27.1412 of this chapter and are eligible for transition so long as they:

(1) Were operational as of April 19, 2018 and continue to be operational;

(2) Were licensed or registered (or had a pending application for license or registration) in the IBFS (now ICFS) database on November 7, 2018; and

(3) Timely certified the accuracy of the information on file with the Commission by May 28, 2019.

(d) Fixed and temporary earth station licenses and registrations that meet the criteria in paragraph (c) of this section may be renewed or modified to maintain operations in the 4.16–4.2 GHz band.

(e) Applications for new, modified, or renewed licenses and registrations for earth stations outside CONUS operating in the 3.7–4.2 GHz band will continue to be accepted.

7. Section 25.147 is revised to read as follows:

§ 25.147 Space Stations in the 3.7–4.2 GHz band.

The 4.0–4.16 GHz portion of the band is being transitioned in CONUS from FSS GSO (space-to-Earth) to the 3.7 GHz Service.

(a) New applications for space station licenses and petitions for market access concerning space-to-Earth operations in the 3.7–4.16 GHz portion of the band within CONUS will no longer be accepted.

(b) Applications for new or modified space station licenses or petitions for market access in the 4.16–4.2 GHz portion of the band within CONUS will not be accepted during the transition except by existing operators in the band to implement an efficient transition.

(c) Applications for new or modified space station licenses or petitions for market access for space-to-Earth operations in the 3.7–4.2 GHz band outside CONUS will continue to be accepted.

8. Amend § 25.203 by revising paragraph (n) to read as follows:

§ 25.203 Choice of sites and frequencies.

* * * * *

(n) From December 5, 2021, until December 5, 2030, consolidated telemetry, tracking, and control (TT&C) operations at no more than four locations may be authorized on a primary basis to support space station operations, and no other TT&C operations shall be entitled to interference protection in the 3.7–4.16 GHz band.

PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

9. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

10. Amend § 27.4 by revising the definition for "3.7 GHz Service" to read as follows:

§ 27.4 Terms and definitions.

* * * * *

3.7 GHz Service. A radiocommunication service licensed under this part for the frequency bands specified in § 27.5(m) (3700–4140 MHz band).

* * * * *

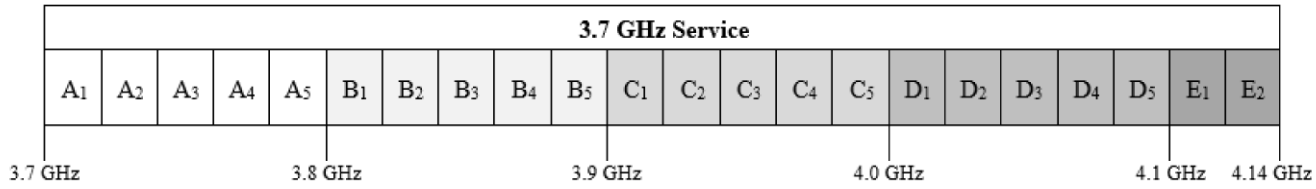
11. Amend § 27.5 by revising paragraph (m) and Figure 1 to Paragraph (m) to read as follows:

§ 27.5 Frequencies.

* * * * *

(m) *3700–4140 MHz band*. The 3.7 GHz Service is comprised of Block A (3700–3800 MHz); Block B (3800–3900 MHz); Block C (3900–4000 MHz); Block D (4000–4100 MHz); and Block E (4100–4140 MHz). These blocks are licensed as 22 individual 20-megahertz sub-blocks available for assignment in the contiguous United States on a Partial Economic Area basis, *see* § 27.6(m), as follows:

Figure 1 to Paragraph (m)



* * * * *

12. Amend § 27.6 by revising paragraph (m) and Table 3 to paragraph (m) to read as follows:

§ 27.6 Service areas.

* * * * *

(m) *3700–4140 MHz Band*. Service areas in the 3.7 GHz Service are based on Partial Economic Areas (PEAs) as defined by appendix A to this subpart (*see Wireless Telecommunications Bureau Provides Details About Partial Economic Areas*, DA 14-759, Public Notice, released June 2, 2014, for more information). The 3.7 GHz Service will be licensed in the contiguous United States, i.e., the contiguous 48 states and the District of Columbia as defined by Partial Economic Areas Nos. 1–41, 43–211, 213–263, 265–297, 299–359, and 361–411. The service areas of PEAs that border the U.S. coastline of the Gulf of Mexico extend 12 nautical miles from the U.S. Gulf coastline. The 3.7 GHz Service will not be licensed for the following PEAs:

Table 3 to Paragraph (m)

PEA Number	PEA Name
42	Honolulu, HI
212	Anchorage, AK
264	Kodiak, AK
298	Fairbanks, AK
360	Juneau, AK
412	Puerto Rico
413	Guam-Northern Mariana Islands
414	US Virgin Islands
415	American Samoa

13. Amend § 27.11 by revising paragraph (l) to read as follows:

§ 27.11 Initial authorization.

* * * * *

(l) *3700–4140 MHz band.* Authorizations for licenses in the 3.7 GHz Service will be based on Partial Economic Areas (PEAs), as specified in § 27.6(m), and the frequency sub-blocks specified in § 27.5(m).

* * * * *

14. Amend § 27.13 by revising paragraph (m) to read as follows:

§ 27.13 License period.

* * * * *

(m) *3700–4140 MHz band.* Authorizations for licenses in the 3.7 GHz Service in the 3700–4140 MHz band will have a term not to exceed 15 years from the date of issuance or renewal.

* * * * *

15. Amend § 27.14 by revising the first sentence of paragraph (a) and by adding paragraph (x) to read as follows:

§ 27.14 Construction requirements.

(a) AWS and WCS licensees, with the exception of WCS licensees holding authorizations for the 600 MHz band, Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–728 MHz band, Block C, C1 or C2 in the 746–757 MHz and 776–787 MHz bands, Block A in the 2305–2310 MHz and 2350–2355 MHz bands, Block B in the 2310–2315 MHz and 2355–2360 MHz bands, Block C in the 2315–2320 MHz band, Block D in the 2345–2350 MHz band, in the 3450–3550 MHz band, and in the 3700–4140 MHz band, and with the exception of licensees holding AWS authorizations in the 1915–1920 MHz and 1995–2000 MHz bands, the 2000–2020 MHz and 2180–2200 MHz bands, or 1695–1710 MHz, 1755–1780 MHz and 2155–2180 MHz bands, must, as a performance requirement, make a showing of "substantial service" in their license area within the prescribed license term set forth in § 27.13. * * *

* * * * *

(x) The following provisions apply to any WCS licensee holding an authorization in the 3980–4140 MHz band:

(1) Licensee shall provide reliable signal coverage and offer service within one (1) year from the relevant Transition Deadline as specified in § 27.1412(a), to at least forty-five (45) percent of the population in each of its license areas ("First Buildout Requirement"). Licensees shall provide reliable signal coverage and offer service within five (5) years from the relevant Transition Deadline as specified in § 27.1412(a), to at least eighty (80) percent of the population in each of its license areas ("Second Buildout Requirement").

(2) If a licensee fails to establish that it meets the First or Second Buildout Requirement for a particular license area, its authorization for each license area in which it fails to meet the First or Second Buildout Requirement shall terminate automatically without Commission action, and the licensee will be ineligible to regain it if the Commission makes the license available at a later date.

(3) To demonstrate compliance with the First Buildout Requirement and Second Buildout Requirement, licensees shall use the most recently available decennial U.S. Census Data at the time of measurement and shall base their measurements of population served on areas no larger than the Census Tract level. The population within a specific Census Tract (or other acceptable identifier) will be deemed served by the licensee only if it provides reliable signal coverage to and offers service within the specific Census Tract (or other acceptable identifier). To the extent the Census Tract (or other acceptable identifier) extends beyond the boundaries of a license area, a licensee with authorizations for such areas may include only the population within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license. If a licensee does not provide reliable signal coverage to an entire license area, the license must provide a map that accurately depicts the boundaries of the area or areas within each license area not being served. Each licensee also must file supporting documentation certifying the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology.

16. Amend § 27.50 by revising the introductory text of paragraph (j) and paragraphs (j)(1) through (3) to read as follows:

§ 27.50 Power limits and duty cycle.

* * * * *

(j) The following power requirements apply to stations transmitting in the 3700–4140 MHz band:

(1) The power of each fixed or base station transmitting in the 3700–4140 MHz band and located in any county with a population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to an equivalent isotropically radiated power (EIRP) of 3280 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(2) The power of each fixed or base station transmitting in the 3700–4140 MHz band and situated in any geographic location other than that described in paragraph (j)(1) of this section is limited to an EIRP of 1640 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(3) Mobile and portable stations transmitting in the 3700–4140 MHz band are limited to 4 Watts EIRP. Mobile and portable stations operating in this band must employ a means for limiting power to the minimum necessary for successful communications.

* * * * *

17. Amend § 27.53 by revising paragraph (l) to read as follows:

§ 27.53 Emission limits.

* * * * *

(l) *3.7 GHz Service*. The following emission limits apply to stations transmitting in the 3700–4140 MHz band:

(1) For any fixed and base station operations in the 3700–4140 MHz band, either the conducted power of any emission into the 4200–4400 MHz band shall not exceed -46 dBm/MHz, or the equivalent isotropically radiated power (EIRP) of any emission into the 4200–4400 MHz band shall not exceed −28.4 dBm/MHz. The conducted power of all other emissions outside of the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(2) For any mobile or portable operations in the 3700–4140 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz band immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(3) For any fixed and base stations operating in the 3980–4140 MHz band, the height of the transmitting antenna must not exceed 450 feet above ground level.

* * * * *

18. Amend § 27.55 by revising paragraph (d) to read as follows:

§ 27.55 Power strength limits.

* * * * *

(d) *Power flux density for stations operating in the 3700–4140 MHz band.* For fixed and base stations operating in the 3700–4140 MHz band in accordance with the provisions of § 27.50(j), the power flux density (PFD) at any location on the geographical border of a licensee's service area shall not exceed

−76 dBm/m^2/MHz. This power flux density will be measured at 1.5 meters above ground. Licensees in adjacent geographic areas may voluntarily agree to operate under a higher PFD at their common boundary.

* * * * *

19. Amend § 27.57 by revising paragraph (c) to read as follows:

§ 27.57 International coordination.

* * * * *

(c) Operation in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, 2180–2200 MHz, 3450–3550 MHz, and 3700–4140 MHz bands is subject to international agreements with Mexico and Canada.

20. Amend § 27.75 by revising paragraph (a)(3) to read as follows:

§ 27.75 Basic interoperability requirement.

(a) * * *

(3) Mobile and portable stations that operate on any portion of frequencies in the 3700–4140 MHz band must be capable of operating on all frequencies in the 3700–4140 MHz band using the same air interfaces that the equipment utilizes on any frequencies in the 3700–4140 MHz band.

* * * * *

21. Amend Subpart O by revising the subpart heading to read as follows:

Subpart O – 3.7 GHz Service (3700–4140 MHz)

22. Section 27.1411 is revised to read as follows:

§ 27.1411 Transition of the 3980–4160 MHz band.

(a) *Transition of the 3980–4160 MHz Band*. The 3980–4140 MHz band is being transitioned in the lower 48 contiguous states and the District of Columbia to the 3.7 GHz Service. The 4140–4160 MHz band is being transitioned in the lower 48 contiguous states and the District of Columbia to a guard band.

(b) *Definitions*–

(1) *Incumbent space station operator.* An incumbent space station operator is defined as a space station operator authorized to provide C-band service to any part of the contiguous United States pursuant to an FCC-issued license or grant of market access as of June 21, 2018.

(2) *Eligible space station operator*. An eligible space station operator may receive reimbursement for relocation costs incurred as a result of the transition of FSS operations out of the 4000–4160 MHz band. An eligible space station operator is defined as an incumbent space station operator that has demonstrated as of February 1, 2020, that it has an existing relationship to provide service via C-band satellite transmission to one or more incumbent earth stations in the contiguous United States. Such existing relationships may be directly with the incumbent earth station, or indirectly through

content distributors or other entities, so long as the relationship requires the provision of C-band satellite services to one or more specific incumbent earth stations in the contiguous United States.

(3) *Incumbent earth station.* An incumbent earth station for this subpart O is defined as an earth station that is entitled to interference protection pursuant to § 25.138(c) of this chapter. An incumbent earth station must transition out of the 4000–4160 MHz band pursuant to this subpart O. An incumbent earth station will be able to continue receiving uninterrupted service both during and after the transition.

(4) *Earth station migration.* Earth station migration includes any necessary changes that allow the uninterrupted reception of service by an incumbent earth station migrating out of the 4000–4160 MHz band.

(5) *Eligible Aircraft*. For purposes of the adjacent band radio altimeter retrofit rebates, an Eligible Aircraft is defined as:

(i) An aircraft manufactured prior to January 1, 2030 with one or more radio altimeters installed, which operates in the contiguous United States pursuant to 14 CFR part 121, and is required by the Federal Aviation Administration to retrofit such altimeters by December 30, 2030; or

(ii) An aircraft manufactured prior to July 1, 2031 and registered in the United States pursuant to 14 CFR part 48 with one or more radio altimeters installed which operates in the contiguous United States pursuant to 14 CFR part 91 and is required by the Federal Aviation Administration to retrofit such altimeters by October 31, 2034.

(6) *Eligible Aircraft Owner or Operator.* For purposes of the adjacent band radio altimeter retrofit rebates, an eligible entity is defined as:

(i) An eligible aircraft operator that holds a U.S. operating certificate under 14 CFR part 119 and operates an Eligible Aircraft; or

(ii) An eligible aircraft owner that is identified on the Federal Aviation Administration's Aircraft Registry and owns an Eligible Aircraft.

(7) *Contiguous United States* (CONUS). For the purposes of the rules established in this subpart O, contiguous United States consists of the contiguous 48 states and the District of Columbia as defined by Partial Economic Areas Nos. 1–41, 43–211, 213–263, 265–297, 299–359, and 361–411, which includes areas within 12 nautical miles of the U.S. Gulf coastline (*see* § 27.6(m)). In this context, the rest of the United States includes the Honolulu, Anchorage, Kodiak, Fairbanks, Juneau, Puerto Rico, Guam-Northern Mariana Islands, U.S. Virgin Islands, American Samoa, and the Gulf of Mexico PEAs.

(8) *Upper C-band Clearinghouse*. An Upper C-band Clearinghouse is a neutral, independent third-party to administer the cost management for the transition of the 3980–4160 MHz band and the adjacent band radio altimeter retrofit rebates.

(9) *Relocation Coordinator.* A Relocation Coordinator is a third party that will ensure that all incumbent space station operators are relocating in a timely matter, and that is selected consistent with § 27.1413. The Relocation Coordinator will have technical experience and an understanding of transition work to be performed on earth stations.

23. Section 27.1412 is revised to read as follows:

§ 27.1412 Transition Plan.

(a) *Transition deadlines*. Eligible space station operators are responsible for all necessary actions to clear their transponders from the 4000–4160 MHz band and to migrate the existing services of incumbent earth stations in CONUS out of the 4000–4160 MHz band (unless the incumbent earth station opts out of the formal relocation process, per paragraph (f) of this section), in Partial Economic Areas 1–41 and 43–76 as of the Primary Transition Deadline, which is December 30, 2030. Terrestrial wireless operations may commence in the Partial Economic Areas subject to the Primary Transition Deadline as of December 31, 2030. For Partial Economic Areas 77–211, 213–263, 265–297, 299–359, and 361–411, the relevant transition deadline for eligible space station operators to clear their transponders from the 4000–4160 MHz band and to migrate the existing services of incumbent earth stations in CONUS out of the 4000–4160 MHz band (unless the incumbent earth station opts out of the formal relocation process, per paragraph (f) of this section) is the Final Transition Deadline, which is June 30, 2031. Terrestrial wireless operations may commence in the Partial Economic Areas subject to the Final Transition Deadline as of July 1, 2031, or as of the date that all eligible space station operators have had Certifications of Completion for the Final Transition Deadline validated and related incentive payments are made by the 3.7 GHz Service licensees in the 3980–4140 MHz band, whichever is sooner. Eligible space station operators that fail to clear by the transition deadlines will be in violation of the conditions of their license authorization and potentially subject to forfeitures and other sanctions.

(b) *Incentive payments.* An eligible space station operator shall qualify for an incentive payment if it clears its transponders from the 4000–4160 MHz band and migrates all associated incumbent earth stations in CONUS no later than the relevant Transition Deadline. Each eligible space station operator must file a timely Certification of Completion that certifies it has completed the necessary clearing actions to satisfy the relevant Transition Deadline. The certification must be filed once the eligible space station operator completes its obligations but no later than the relevant Transition Deadline referenced in paragraph (a) of this section. The Wireless Telecommunication Bureau will prescribe the form of such certification.

(1) The Wireless Telecommunications Bureau, Upper C-band Clearinghouse, and relevant stakeholders will have the opportunity to review the Certification of Completion and identify potential deficiencies. The Wireless Telecommunications Bureau will prescribe the form of any challenges by relevant stakeholders as to the validity of the certification.

(2) If credible challenges as to the eligible space station operator's satisfaction of the relevant Transition Deadline are made, the Wireless Telecommunications Bureau will issue a public notice identifying such challenges and render a final decision as to the validity of the Certification of Completion no later than 60 days from its filing. Absent notice from the Wireless Telecommunications Bureau of any such deficiencies within 30 days of the filing of the Certification of Completion, the Certification of Completion will be deemed validated.

(c) *Transition delays*. An eligible space station operator shall not be held responsible for transition delays due to circumstances beyond its control. An eligible space station operator must submit a notice of any incumbent earth station transition delays to the Wireless Telecommunications Bureau within seven days of discovering an inability to accomplish the assigned earth station transition task. Such a request must include supporting documentation to allow for resolution as soon as practicable and must be submitted before the relevant Transition Deadline.

(d) *Responsibility for meeting Transition Deadlines*. An eligible space station operator's satisfaction of the relevant Transition Deadline shall be determined on an individual basis.

(e) *Transition Plan.* Eligible space station operators must publicly file with the Commission no later than November 5, 2026, a Transition Plan that describes the actions that must be taken to clear 4000–4160 MHz and to migrate associated earth stations. Eligible space station operators shall have an

opportunity to make any necessary updates or resolve any deficiencies in their individual Transition Plans.

(1) The Transition Plan must detail the eligible space station operator's individual timeline and necessary actions for clearing 4000–4160 MHz, including:

(i) All existing space stations with operations that will need to be repacked;

(ii) The number of new satellites, if any, that the space station operator will need to launch to maintain sufficient capacity post-transition, including detailed descriptions of why such new satellites are necessary;

(iii) The specific grooming plan for migrating existing services into new spectrum, including the pre- and post-transition frequencies that each customer will occupy;

(iv) Any necessary technology upgrades or other solutions that the space station operator intends to implement;

(v) The number and location of incumbent earth station antennas currently receiving the eligible space station operator's transmissions that will need to be transitioned;

(vi) An estimate of the number of incumbent earth station antennas that will require retuning, repointing, or other modifications to receive content on new transponder frequencies post-transition; and

(vii) The specific timeline by which the space station operator will implement the actions described in its plan.

(2) To the extent that incumbent earth stations are not accounted for in eligible space station operators' Transition Plans, the Relocation Coordinator may assign responsibility for their transition to an eligible space station operator or ensure that migration steps and timelines are outlined in an individualized Earth Station Transition Plan as needed.

(f) *Incumbent earth station opt-out.* An incumbent earth station within the contiguous United States may opt out of the formal relocation process and accept a lump sum payment equal to the average estimated, reasonable costs of transitioning existing FSS C-band service out of 4000–4160 MHz, as determined by the Wireless Telecommunications Bureau, in lieu of actual relocation costs. An incumbent earth station that accepts a lump sum payment is responsible for coordinating with the relevant space station operator(s) as necessary and performing all relocation actions on its own, including switching to a new distribution technology. An incumbent earth station that accepts a lump sum payment will not receive further reimbursement for any costs exceeding the lump sum payment.

(g) *Space station status reports*. On a quarterly basis, beginning March 31, 2027: Each eligible space station operator must provide a status report of its clearing efforts. Eligible space station operators may file joint status reports.

(h) *Delegated authority*. The Wireless Telecommunications Bureau is delegated the role of providing clarifications or interpretations to eligible space station operators and other transition stakeholders of the Commission's orders for all aspects of the transition, overseeing the Upper C-band Clearinghouse and the FSS transition cost reimbursement program and radio altimeter rebates, and taking such measures as are necessary to ensure the timely and efficient transition of the Upper C-band.

24. Section 27.1413 is revised to read as follows:

§ 27.1413 Relocation Coordinator.

(a) *Selection committee and selection process*. Each eligible space station operator shall be eligible to appoint one member to a selection committee that will seek proposals for a third party with technical experience in understanding and working on earth stations to serve as a Relocation Coordinator and to manage the transition of incumbent earth stations.

(1) The selection committee should proceed by consensus; however, if a vote on selection of a Relocation Coordinator is required, it shall be by a majority.

(i) The selection committee shall notify the Commission of its choice of Relocation Coordinator.

(ii) The Wireless Telecommunications Bureau shall issue a Public Notice inviting comment on whether the entity selected satisfies the selection criteria established in paragraph (b) of this section and issue a final order announcing whether the selection criteria has been satisfied;

(iii) Should the Wireless Telecommunications Bureau be unable to find that the selection criteria have been satisfied, the search process will start over and the selection committee will submit a new proposed entity.

(2) In the event that the selection committee fails to select a Relocation Coordinator and to notify the Commission by January 1, 2027:

(i) The selection committee will be dissolved without further action by the Commission.

(ii) The Commission will initiate a procurement of a Relocation Coordinator to facilitate the transition. Specifically, the Office of the Managing Director will initiate the procurement, and the Wireless Telecommunications Bureau will take all other necessary actions to meet the relocation deadline.

(3) If the eligible space station operators select a Relocation Coordinator, they shall be responsible for paying its costs on a pro rata basis based on the total amount of incentives detailed in § 27.1422(b). In the case that the Wireless Telecommunications Bureau selects the Relocation Coordinator via procurement, the 3.7 GHz Service licensees in the 3980–4140 MHz band will, collectively, pay for the reasonable costs of the Relocation Coordinator and its staff. The Relocation Coordinator shall submit its own reasonable costs to the Relocation Payment Clearinghouse, who will then collect payments from the 3.7 GHz Service licensees in the 3980–4140 MHz band. The Relocation Coordinator shall also provide additional financial information as requested by the Wireless Telecommunications Bureau to satisfy the Commission's oversight responsibilities and/or agency specific/government-wide reporting obligations.

(b) *Relocation Coordinator selection criteria*. The Relocation Coordinator must be able to demonstrate that it has the requisite expertise to perform the duties required, per paragraph (c) of this section.

(c) *Relocation Coordinator duties*. The Relocation Coordinator shall:

(1) Review the Transition Plans filed by all eligible space station operators and recommend any changes to those plans to the Commission to the extent needed to ensure a timely transition;

(2) Assign responsibility to an eligible space station operator, or include incumbent earth stations in individualized Transition Plans, to the extent that such incumbent earth stations are not accounted for in the eligible space station operators' Transition Plans.

(3) Coordinate the schedule for clearing the 4000–4160 MHz band;

(4) Perform engineering analysis, as necessary, to determine necessary earth station migration actions;

(5) Assign obligations, as necessary, for earth station migrations;

(6) Coordinate with the Upper C-band licensees throughout the transition process;

(7) Assess and track the completion of the transition in each PEA and determine the Upper C-band wireless licensees' ability to commence operations;

(8) Mediate scheduling disputes;

(9) Be responsible for receiving notice from earth station operators or other satellite customers of any disputes related to the comparability of facilities, workmanship, or preservation of service during the transition, for subsequently notifying the Wireless Telecommunications Bureau of the dispute, and for providing recommendations for resolution; and

(10) Disclose in real time the content of, timing of, and parties to any communications from or to applicants to participate in the competitive bidding, as defined by § 1.2105(c)(5)(i) of this chapter whenever the prohibition in § 1.2105(c) of this chapter applies to competitive bidding for licenses in the 3.7 GHz Service.

(d) *Cooperation with the Relocation Coordinator*. Eligible space station operators and incumbent earth station operators must cooperate in good faith with the Relocation Coordinator and vice versa throughout the transition.

(e) *Status reports*. On a quarterly basis, beginning after its selection is confirmed by the Wireless Telecommunications Bureau, the Relocation Coordinator must provide a report on the overall status of clearing efforts.

(f) *Information requests*. The Relocation Coordinator shall provide to the Wireless Telecommunications Bureau additional information upon request.

25. Section 27.1414 is revised to read as follows:

§ 27.1414 Upper C-band Clearinghouse.

(a) *Selection committee and selection process.* Representatives of the following seven entities shall be eligible to appoint one member to a selection committee for the Upper C-band Clearinghouse: Airlines for America, Aircraft Owners and Pilots Association, Competitive Carriers Association, Eutelsat, National Association of Broadcasters, NCTA, and SES. Representatives of CTIA shall be eligible to appoint two members to a selection committee for the Upper C-band Clearinghouse. The selection committee will seek proposals for a third-party clearinghouse to administer the cost-related aspects of the Upper C-band transition and the adjacent band radio altimeter retrofit rebates in a fair, transparent manner, pursuant to Commission rules and oversight, to mitigate financial disputes among stakeholders, and to collect and distribute payments in a timely manner.

(1) The selection committee shall convene no later than **[**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]** and shall notify the Commission of the specific selection process and criteria it has established no later than 30 days after the date of the selection committee's first meeting. The selection criteria must be consistent with that established in paragraph (b) of this section. The Wireless Telecommunications Bureau is directed, on delegated authority, to issue a Public Notice notifying the public that the selection committee has established a selection process and criteria, outlining submission requirements, and providing the closing dates for the submission of applications and the source (i.e., web page).

(2) The selection committee should proceed by consensus; however, if a vote on selection of a Upper C-band Clearinghouse is required, it shall be by a majority.

(i) The selection committee shall notify the Commission of its choice of Upper C-band Clearinghouse.

(ii) The Wireless Telecommunications Bureau shall issue a Public Notice inviting comment on whether the entity selected satisfies the selection criteria in paragraph (b) of this section and issue a final order announcing whether the selection criteria have been satisfied.

(iii) Should the Wireless Telecommunications Bureau be unable to find that the selection criteria have been satisfied, the search process will start over, and the search committee will submit a new proposed entity.

(3) In the event that the selection committee fails to select an Upper C-band Clearinghouse and to notify the Commission by December 15, 2026:

(i) The selection committee must drop two members, as determined by a majority vote of the original members, and the remaining members shall select a Clearinghouse by majority vote by January 17, 2027.

(ii) Should the selection committee subsequently fail to select a Clearinghouse and to notify the Commission by January 17, 2027, the search committee will be dissolved without further action by the Commission.

(iii) The Commission will then initiate a procurement of an Upper C-band Clearinghouse to facilitate the transition. Specifically, the Office of the Managing Director will initiate the procurement, and the Wireless Telecommunications Bureau will take all other necessary actions to meet the relocation deadline.

(iv) During the course of the Upper C-band Clearinghouse's tenure, the Commission will take such measures as are necessary to ensure the Upper C-band Clearinghouse's timely compliance with its duties, including, should it become necessary, issuing subsequent public notices to select a new Upper C-band Clearinghouse(s).

(4) The costs of the Upper C-band Clearinghouse shall be allocated pursuant to § 27.1418.

(b) *Upper C-band Clearinghouse selection criteria*. The Upper C-band Clearinghouse must be able to demonstrate that it has the requisite expertise to perform the duties required, per paragraph (c) of this section.

(c) *Upper C-band Clearinghouse duties*. The Upper C-band Clearinghouse shall:

(1) Be a neutral, independent entity with no conflicts of interest (organizational or personal) on

the part of the organization or its offices, directors, employees, contractors, or significant subcontractors.

(i) Organizational conflicts of interest means that because of other activities or relationships with other entities, the Upper C-band Clearinghouse, its contractors, or significant subcontractors are unable or potentially unable to render impartial services, assistance, or advice; the Upper C-band Clearinghouse's objectivity in performing its functions is or might be otherwise impaired; or the Upper C-band Clearinghouse might gain an unfair competitive advantage.

(ii) Personal conflicts of interest means a situation in which an employee, officer, or director of the Upper C-band Clearinghouse, the Upper C-band Clearinghouse's contractors or significant subcontractors has a financial interest, personal activity, or relationship that could impair that person's ability to act impartially and in the best interest of the transition when performing their assigned role, or is engaged in self-dealing.

(2) Have the requisite expertise to perform the duties required, which will include: determining reimbursable costs; processing reimbursement, lump sum, and rebate claims; administering reimbursement and rebate funds; collecting and distributing all required payment obligations as well as auditing incoming and outgoing estimates; mitigating cost disputes among parties; and generally acting as a clearinghouse.

(3) Meet relevant best practices and standards in its operations to ensure an effective and efficient transition. In administering the transition, it shall:

(i) Engage in strategic planning and adopt goals and metrics to evaluate its performance;

(ii) Adopt internal controls for its operations;

(iii) Utilize enterprise risk management practices;

(iv) Use best practices to protect against improper payments and to prevent fraud, waste, and abuse in its handling of funds; and

(v) Create written procedures for its operations, using the Government Accountability Office's Green Book to serve as a guide in satisfying such requirements.

(4) Adopt robust privacy and data security best practices in its operations, given that it will receive and process information critical to ensuring a successful and expeditious transition, including:

(i) When the prohibition in § 1.2105(c) of this chapter applies to competitive bidding for licenses in the 3.7 GHz Service, the Upper C-band Clearinghouse must disclose in real time the content of, timing of, and the parties to and communications from or to applicants to participate in the competitive bidding, as defined by § 1.2105(c)(5)(i) of this chapter.

(ii) The Upper C-band Clearinghouse shall comply with, on an ongoing basis, all applicable laws and Federal Government guidance on privacy and information security requirements such as relevant provisions in the Federal Information Security Management Act, National Institute of Standards and Technology publications, and Office of Management and Budget guidance.

(iii) The Upper C-band Clearinghouse must hire a third-party firm to independently audit and verify, on an annual basis, the Upper C-band Clearinghouse's compliance with privacy and information security requirements, to provide recommendations based on any audit findings, to correct any negative audit findings, and to adopt any additional practices suggested by the auditor.

(d) *Cooperation with the Upper C-band Clearinghouse*. Claimants seeking payments from the Upper C-band Clearinghouse must comply with § 27.1415 and cooperate in good faith with the Upper C-band Clearinghouse during the claims submission and review process.

(e) *Reports and information requests*.

(1) The Upper C-band Clearinghouse must provide quarterly reports that detail the status of reimbursement funds available for clearing obligations, the relocation payments issued, and the amounts collected from the 3.7 GHz Service licensees in the 3980–4140 MHz band. Such reports shall also detail similar information for the adjacent band radio altimeter retrofit rebates. The reports must account for all funds spent in both contexts, including the Upper C-band Clearinghouse's own expenses, e.g., salaries and fees paid to law firms, accounting firms, and other consultants. The reports shall include descriptions of any disputes and the manner in which they were resolved.

(2) The Upper C-band Clearinghouse shall provide to the Office of the Managing Director and Wireless Telecommunications Bureau, by March 1 of each year, an audited statement of funds expended to date, including salaries and expenses of the Upper C-band Clearinghouse.

(3) The Upper C-band Clearinghouse shall report the results of the annual third-party information security audit required in paragraph (c)(4)(iii) of this section to the Wireless Telecommunications Bureau.

(4) The Upper C-band Clearinghouse shall provide to the Wireless Telecommunications Bureau additional information upon request.

26. Section 27.1415 is revised to read as follows:

§ 27.1415 Documentation of claims and expenses.

Parties submitting reimbursement, lump sum, or rebate claims to the Upper C-band Clearinghouse must document their claims, including where appropriate actual expenses, and the Upper C-band Clearinghouse, or a third-party on behalf of the Upper C-band Clearinghouse, may conduct audits related to such claims. Entities submitting claims must make available all relevant documentation upon request from the Upper C-band clearinghouse or its contractor.

27. Section 27.1416 is revised to read as follows:

§ 27.1416 Claims processing and payment procedures.

(a) *Processing actual cost claims and determining reimbursable costs*. The Upper C-band Clearinghouse shall review actual cost reimbursement claims related to the clearing of the 3980–4160 MHz band to determine whether they are reasonable and to ensure they comply with the requirements adopted in this sub-part O. Reimbursement claims that fall within the estimated range of costs in the cost catalog schedule issued by the Wireless Telecommunications Bureau shall be presumed reasonable. If the Upper C-band Clearinghouse determines that the amount sought for reimbursement is unreasonable, it shall notify the party of the amount it deems eligible for reimbursement. The Wireless Telecommunications Bureau shall make further determinations related to reimbursable costs, as necessary, throughout the transition process. All actual cost reimbursement claims must be submitted to the Upper C-band Clearinghouse no later than six months after the Final Transition Deadline, unless otherwise established by the Wireless Telecommunications Bureau.

(b) *Processing lump sum claims*. The Upper C-band Clearinghouse shall review lump sum claims related to the clearing of the 3980–4160 MHz band made by incumbent earth station operators that elect the lump sum to determine whether such claims comply with the requirements adopted in this sub-

part O and the cost catalog schedule issued by the Wireless Telecommunications Bureau. All lump sum claims must be submitted to the Upper C-band Clearinghouse no later than six months after the Final Transition Deadline, unless otherwise established by the Wireless Telecommunications Bureau.

(c) *Processing radio altimeter retrofit rebate claims*. The Upper C-band Clearinghouse shall review rebate claims related to the retrofits of radio altimeters in the 4200–4400 MHz band made by eligible entities to determine whether such claims comply with the requirements adopted in this sub-part O and the public notice on rebates issued by the Wireless Telecommunications Bureau. All rebate claims must be submitted to the Upper C-band Clearinghouse no later than six months after the relevant deadline established in either 14 CFR § 91.220 or 14 CFR § 121.326, unless otherwise established by the Wireless Telecommunications Bureau.

(d) *Payment procedures*. Following a determination on a reimbursement, lump sum, or rebate claim, the Upper C-band Clearinghouse shall incorporate approved claims into invoices, which it shall issue to each relevant licensee in the 3980–4140 GHz portion of the 3.7 GHz Service. The Upper C-band Clearinghouse shall pay approved claims within 30 days of invoice submission. The Upper C-band Clearinghouse shall also include its own reasonable costs in invoices to licensees in the 3980–4140 GHz portion of the 3.7 GHz Service indicating the amount to be paid.

28. Section 27.1417 is revised to read as follows:

§ 27.1417 Reimbursement and rebate funds.

After an auction for licenses in the 3980–4140 MHz portion of the 3.7 GHz Service concludes, the Upper C-band Clearinghouse will establish and administer separate accounts to fund both the in-band transition of incumbent services out of the 3980–4160 MHz band and the adjacent band radio altimeter retrofit rebates. Licensees in the 3980–4140 MHz portion of the 3.7 GHz Service shall pay their *pro rata* share of three months' worth of estimated costs into each account administered by the Upper C-band Clearinghouse shortly after grant of their licenses and then every three months until completion of the reimbursements and rebates. The Upper C-band Clearinghouse shall draw from each account to pay approved, invoiced claims consistent with § 27.1416. If either account does not have sufficient funds to pay approved claims before a three-month replenishment, the Upper C-band Clearinghouse shall provide licensees in the 3980–4140 MHz portion of the 3.7 GHz Service with 30 days' notice of the additional *pro rata* shares they must contribute. At the end of the reimbursements and rebates, the Upper C-band Clearinghouse shall refund any unused amounts in each fund to licensees in the 3980–4140 MHz portion of the 3.7 GHz Service according to their *pro rata* share.

29. Section 27.1418 is revised to read as follows:

§ 27.1418 Payment obligations.

(a) Each eligible space station operator is responsible for the payment of its own satellite transition costs until the auction winners have been announced.

(b) Pursuant to the cost sharing formulas in § 27.1420, licensees in the 3980–4140 GHz portion of the 3.7 GHz Service shall pay their *pro rata* share of:

(1) The reasonable costs of the Upper C-band Clearinghouse and, in the event the Wireless Telecommunications Bureau selects the Relocation Coordinator, the services of the Relocation Coordinator and its staff;

(2) The actual relocation costs, provided that they are not unreasonable, for eligible space station operators; and the actual transition costs, provided they are not unreasonable, associated with the

necessary migration of incumbent earth stations;

(3) Any lump sum payments, if elected by incumbent earth station operators in lieu of actual relocation costs;

(4) Any adjacent band radio altimeter retrofit rebates for Eligible Aircraft to Eligible Aircraft Owners or Operators; and

(5) Specified incentive payments for space station operators that clear by the Transition Deadlines in § 27.1412(a).

(c) If a license in the 3980–4140 MHz portion of the 3.7 GHz Service is relinquished to the Commission prior to all relocation cost reimbursements, lump sums, rebate claims, and incentive payments being paid, the remaining payments will be distributed among other similarly situated licensees in 3980–4140 MHz portion of the 3.7 GHz Service. If a new license is issued for the previously relinquished rights prior to final payments becoming due, the new licensee in the 3980–4140 MHz portion of 3.7 GHz Service will be responsible for the same *pro rata* share of relocation costs, lump sums, rebate claims, and incentive payments as the initial licensee in the 3980–4140 MHz portion of 3.7 GHz Service. If a licensee in the 3980–4140 MHz portion of 3.7 GHz Service sells its rights on the secondary market, the new licensee in the 3980–4140 MHz portion of 3.7 GHz Service will be obligated to fulfill all payment obligations associated with the license.

30. Section 27.1419 is revised to read as follows:

§ 27.1419 Lump sum payment for incumbent earth station opt out.

The Wireless Telecommunications Bureau shall announce a lump sum that will be available per each incumbent earth station that elects to opt out from the formal relocation process as well as the process for electing lump sum payments. Incumbent earth station owners must make the lump sum payment election no later than 45 days after the Bureau announces the lump sum payment amounts, and must indicate whether each incumbent earth station for which it elects the lump sum payment will retain fixed satellite services or will discontinue such services.

31. Section 27.1420 is revised to read as follows:

§ 27.1420 Cost-sharing formula.

(a) For eligible space station transition and Upper C-band Clearinghouse costs, eligible space station operator incentive payments, adjacent band radio altimeter retrofit rebates, and in the event the Wireless Telecommunications Bureau selects a Relocation Coordinator pursuant to § 27.1413(a), Relocation Coordinator costs, the *pro rata* share of each flexible-use licensee will be the sum of the final clock phase prices (*P*) for the set of all license blocks (I) that a bidder wins divided by the total final clock phase prices for all *N* license blocks sold in the auction. To determine a licensee's reimbursement obligation (*RO*), that *pro rata* share would then be multiplied by the total eligible reimbursement costs (*RC*). Mathematically, this is represented as:

$$RO = \left(\frac{\sum_{i \in I} P_i}{\sum_{j=1}^{N} P_j} \right) \times RC$$

(b) For incumbent earth station transition costs, a flexible-use licensee's *pro rata* share will be determined on a PEA-specific basis, based on the final clock phase prices for the license blocks it won in each PEA. To calculate the *pro rata* share for incumbent earth station transition costs in a given PEA, the same formula identified in paragraph (a) of this section will be used, except *I* is the set of licenses a

bidder won in the PEA, *N* is the total blocks sold in the PEA and *RC* is the PEA-specific earth station and fixed service relocation costs.

32. Section 27.1421 is revised to read as follows:

§ 27.1421 Disputes over costs and cost-sharing.

(a) Parties disputing a cost estimate, approved claim invoice, or payment or cost-sharing obligation, including with respect to the Upper C-band Clearinghouse's own costs, must file an objection with the Upper C-band Clearinghouse.

(b) The Upper C-band Clearinghouse shall establish procedures for the resolution of such objections. The Upper C-band Clearinghouse may mediate any third-party disputes regarding cost estimates or approved claim invoices, or refer the disputant parties to alternative dispute resolution fora.

(1) Any dispute submitted to the Upper C-band Clearinghouse, or other mediator, shall be decided within 30 days after the Upper C-band Clearinghouse has received a submission by one party and a response from the other party.

(2) Thereafter, any party may seek expedited non-binding arbitration, which must be completed within 30 days of the recommended decision or advice of the Upper C-band Clearinghouse or other mediator.

(3) The parties will share the cost of the non-binding arbitration if it is before the Upper C-band Clearinghouse.

(c) Should any issues still remain unresolved, they may be referred to the Wireless Telecommunications Bureau within ten days of the recommended decision or advice of the Upper C-band Clearinghouse or other mediator and any decision of the Upper C-band Clearinghouse can be appealed to the Chief of the Wireless Telecommunications Bureau.

(1) When referring an unresolved issue to the Wireless Telecommunications Bureau, the Upper C-band Clearinghouse shall forward the entire record on any disputed issues, including such dispositions thereof that the Upper C-band Clearinghouse has considered.

(2) Upon receipt of such record and advice, the Wireless Telecommunications Bureau will decide the disputed issues based on the record submitted. Any party to the dispute wishing to appeal the Wireless Telecommunications Bureau decision may do so by filing with the Commission, within ten days of the effective date of the initial decision, a petition for *de novo* review.

(3) Parties seeking *de novo* review of a decision by the Wireless Telecommunications Bureau are advised that the Commission may require complete documentation relevant to any disputed matters and, where necessary, require expert engineering, economic or other reports or testimony. Parties may therefore wish to consider possibly less burdensome and expensive resolution of their disputes through means of alternative dispute resolution.

33. Section 27.1422 is revised to read as follows:

§ 27.1422 Incentive payments.

(a) Eligible space station operators that meet the Transition Deadlines in § 27.1412(a), as confirmed in their Certifications of Completion set forth in § 27.1412(b), will be eligible for their respective incentive payments.

(b) The Upper C-band Clearinghouse will distribute the incentive payments accordingly:

Table 1 to Paragraph (b)

Allocation of Incentive Payments		*Total Incentive Payment Amount*	*Primary Deadline Incentive Amount*	*Final Deadline Incentive Amount*
SES	{[XX]}%	${[XX]}	${[XX]}	${[XX]}
Eutelsat	{[XX]}%	${[XX]}	${[XX]}	${[XX]}
Telesat	{[XX]}%	${[XX]}	${[XX]}	${[XX]}

(c) The Upper C-band Clearinghouse shall promptly notify licensees in the 3980–4140 GHz portion of the 3.7 GHz Service following validation of the Certification of Completion as set forth in § 27.1412(b). Licensees in the 3980–4140 GHz portion of the 3.7 GHz Service shall pay the incentive payments to the Clearinghouse within 60 days of the notice that eligible space station operators have met their clearing benchmark. The Clearinghouse shall disburse incentive payments to relevant space station operators within seven days of receiving the payment from the licensees in the 3980–4140 GHz portion of the 3.7 GHz Service.

(d) For eligible space station operators that fail to meet the Primary Transition Deadline in § 27.1412(a), the incentive will be reduced according to the following schedule of declining incentives for the six months following the Primary Transition Deadline:

Table 1 to Paragraph (d)

Date of Completion	*Incremental Reduction*	*Incentive Payment Percentage*
By Deadline	0%	100%
1-30 days late	10%	90%
31-60 days late	10%	80%
61-90 days late	10%	70%
91-120 days late	15%	55%
121-150 days late	15%	40%
151-180 days late	20%	20%
181+ days late	20%	0%

34. Amend § 27.1423 by revising paragraphs (a), (b), and (e) to read as follows:

§ 27.1423 Protection of incumbent operations.

(a) To protect incumbent earth stations from out-of-band emissions from fixed stations, base stations, and mobile and portable stations, the power flux density (PFD) of any emissions within the 4160–4200 MHz band must not exceed −124 dBW/m^2/MHz as measured at the earth station antenna.

(b) To protect incumbent earth stations from blocking, the power flux density (PFD) of any emissions within the 3700–4140 MHz band must not exceed −16 dBW/m^2/MHz as measured at the earth station antenna.

* * * * *

(e) To protect incumbent TT&C earth stations from blocking, the power flux density (PFD) of any emissions within the 3700–4140 MHz band must not exceed −16 dBW/m^2/MHz as measured at the TT&C earth station antenna.

35. Section 27.1424 is revised to read as follows:

§ 27.1424 Agreements between 3.7 GHz Service licensees and C-Band earth station operators.

The PFD limits in § 27.1423 may be modified by the private agreement of licensees of the 3.7 GHz Service and entities operating earth stations in the 4160–4200 MHz band or TT&C operations in the 3700–4140 MHz band. A licensee of the 3.7 GHz Service who is a party to such an agreement must maintain a copy of the agreement in its station files and disclose it, upon request, to prospective license assignees, transferees, or spectrum lessees, and to the Commission.

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Federal Communications Commission (Commission) incorporated an Initial Regulatory Flexibility Analysis (IRFA) in the *Upper C-band (3.98 to 4.2 GHz) Notice of Proposed Rulemaking* (*NPRM*), released in November 2025.[2] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. While no comments were filed in response to the NPRM specifically addressing the IRFA, comments were filed regarding potential impacts of the proposed rules on small entities. The comments received are addressed below. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA and it (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Rules

2. With today's *Report and Order, Order of Proposed Modification, and Order on Reconsideration* (*Report and Order*), the Commission adopts rules to expand next-generation wireless services in the 3.7–4.2 GHz band (C-band). As a means of furthering its objective of optimizing use of the C-band's versatile coverage, capacity, and propagation characteristics, the Commission in 2020 repurposed the 3.7–3.98 GHz portion of the band (Lower C-band) for flexible use in the contiguous United States. As a result of that effort, newly deployed operations brought wireless services to countless communities, including rural, remote, and underserved areas. Building on the Lower C-band transition, the *Report and Order* takes another step by putting vital mid-band spectrum to more intensive, flexible use that will support robust connectivity, spur economic growth, and advance American security interests, in furtherance of the One Big Beautiful Bill Act (OBBB Act).[4]

3. The *Report and Order* adopts rules that will enable terrestrial wireless operations in the 3.98–4.14 GHz portion of the C-band (Upper C-band) in the contiguous United States and will generally apply the part 27 licensing and operating rules that presently govern wireless operations in the Lower C-band to new, full-power commercial operations in the Upper C-band. In July 2025, as part of the OBBB Act, Congress reinstituted the Commission's general authority to grant licenses through systems of competitive bidding through September 2034 and established a path forward for the eventual repurposing of 800 megahertz to be licensed through competitive bidding, including at least 500 megahertz for full-power commercial licensed use cases.[5] The OBBB Act also specifically directed the Commission to "grant licenses through systems of competitive bidding, before the expiration of the general auction authority[,] . . . for not less than 300 megahertz, including by completing a system of competitive bidding not later than 2 years after the date of enactment of this Act for not less than 100 megahertz in the band between 3.98 gigahertz and 4.2 gigahertz."[6]

4. Pursuant to this statutory directive, the *Report and Order* adopts rules that reconfigure 160 megahertz of the Upper C-band for terrestrial wireless uses and transitions in-band incumbent Fixed Satellite Service (FSS) operations in the contiguous United States. The *Report and Order* also takes into account ongoing technical advancements with adjacent band radio altimeters that will further enhance

[1] 5 U.S.C. §§ 601 *et seq*., as amended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA), Pub. L. No. 104-121, 110 Stat. 847 (1996).

[2] *Upper C-band (3.98–4.2 GHz)*, GN Docket No. 25-59, Notice of Proposed Rulemaking, FCC 25-78, 2025 WL 4060705, Appendix (Nov. 21, 2025).

[3] 5 U.S.C. § 604.

[4] Pub. L. No. 119-21, § 40002, 139 Stat. 72 (2025) (OBBB Act). The law, as passed, does not have an express "short title" but while under debate commonly was known as the One Big Beautiful Bill Act.

[5] OBBB Act, § 40002(b)(1); *see also* 47 U.S.C. § 309(j)(11).

[6] OBBB Act, § 40002(b)(2).

their signal rejection capabilities and bolster the existing successful spectral co-existence environment. We will generally apply the existing Lower C-band Service rules to any newly authorized terrestrial wireless operations. As discussed in further detail below, any other rules and requirements, including those relating to the transition process, are modeled to the extent possible on those that applied to the Lower C-band transition, with some modifications to account for the unique characteristics of the Upper C-band.

5. Thus, the *Report and Order* will enable more intensive flexible use of key mid-band spectrum for small and other entities by retaining many elements of the successful Lower C-band transition, and, where appropriate, leveraging the lessons learned from that process by adopting an improved process for transitioning the Upper C-band.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

6. Comments regarding the impact of the *Report and Order* on small entities were filed by the Competitive Carriers Association (CCA) and WISPA — The Association for Broadband Without Boundaries (WISPA).[7] CCA contends that the existing bidding credit thresholds and caps are outdated due to subsequent inflation and changed market conditions.[8] WISPA similarly asks the Commission to increase the caps on bidding credits in order to account for inflation.[9]

C. Response to Comments by the Chief Counsel for the Small Business Administration Office of Advocacy

7. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA,[10] the Commission is required to respond to any comments filed by the Chief Counsel for the Small Business Administration (SBA) Office of Advocacy, and also provide a detailed statement of any change made to the proposed rules as a result of those comments.[11] The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

8. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the adopted rules.[12] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[13] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[14] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[15] The SBA establishes small business size standards that

[7] *See* CCA Reply at 2–3; WISPA Comments at 1, 5.

[8] *See* CCA Reply at 2–3.

[9] WISPA Comments at 1, 5.

[10] Small Business Jobs Act of 2010, Pub. L. No. 111-240, 124 Stat. 2504 (2010).

[11] 5 U.S.C. § 604 (a)(3).

[12] 5 U.S.C. § 604.

[13] *Id*. § 601(6).

[14] *Id*. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[15] 15 U.S.C. § 632.

agencies are required to use when promulgating regulations relating to small businesses; agencies may establish alternative size standards for use in such programs, but must consult and obtain approval from SBA before doing so.[16]

9. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe three broad groups of small entities that could be directly affected by our actions.[17] In general, a small business is an independent business having fewer than 500 employees.[18] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses.[19] Next, "small organizations" are not-for-profit enterprises that are independently owned and operated and are not dominant in their field.[20] While we do not have data regarding the number of non-profits that meet that criteria, over 99 percent of nonprofits have fewer than 500 employees.[21] Finally, "small governmental jurisdictions" are defined as cities, counties, towns, townships, villages, school districts, or special districts with populations of less than fifty thousand.[22] Based on the 2022 U.S. Census of Governments data, we estimate that at least 48,724 out of 90,835 local government jurisdictions have a population of less than 50,000.[23]

10. The rules adopted in the *Report and Order* will apply to small entities in the industries identified in the chart below by their six-digit North American Industry Classification System (NAICS)[24] codes and corresponding SBA size standard.[25] Based on currently available U.S. Census data regarding the estimated number of small firms in the identified industry, we conclude that the adopted rules will impact a substantial number of small entities. Where available, we also provide additional information regarding the number of potentially affected entities in the identified industries below.

[16] 13 CFR 121.903.

[17] 5 U.S.C. § 601(3)–(6).

[18] *See* SBA, Office of Advocacy, *Frequently Asked Questions About Small Business* (July 23, 2024), https://advocacy.sba.gov/wp-content/uploads/2024/12/Frequently-Asked-Questions-About-Small-Business_2024-508.pdf.

[19] *Id*.

[20] 5 U.S.C. § 601(4).

[21] *See* SBA, Office of Advocacy, *Small Business Facts, Spotlight on Nonprofits* (July 2019), https://advocacy.sba.gov/2019/07/25/small-business-facts-spotlight-on-nonprofits/.

[22] 5 U.S.C. § 601(5).

[23] *See* U.S. Census Bureau, 2022 Census of Governments–Organization, https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html, tables 1–11.

[24] The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. *See* www.census.gov/NAICS for further details regarding the NAICS codes identified in this chart.

[25] The size standards in this chart are set forth in 13 CFR 121.201, by six digit NAICS code.

Table 1. 2022 U.S. Census Bureau Data by NAICS Code

Regulated Industry (Footnotes specify potentially affected entities within a regulated industry where applicable)	NAICS Code	SBA Size Standard	Total Firms[26]	Total Small Firms[27]	% Small Firms
Wireless Telecommunications Carriers (except Satellite)[28]	517112	1,500 employees	1,184	1,081	91.30%
Satellite Telecommunications[29]	517410	$44 million	332	195	58.73%

Table 2. Telecommunications Service Provider Data

2024 Universal Service Monitoring Report Telecommunications Service Provider Data[30] (Data as of December 2023)	SBA Size Standard (1500 Employees)		
Affected Entity	**Total # FCC Form 499A Filers**	**Small Firms**	**% Small Entities**
Wireless Telecommunications Carriers (except Satellite)[31]	585	498	85.13
Wireless Telephony[32]	326	247	75.77

[26] *U.S. Census Bureau*, "*Selected Sectors: Employment Size of Firms for the U.S.: 2022*." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEEMPFIRM, 2025, "*Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2022*." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEREVFIRM, 2025.

[27] *Id.*

[28] Affected Entities in this industry include Wireless Broadband Internet Access Service Providers, Wireless Carriers and Service Providers, Wireless Communications Services, and Wireless Telephony.

[29] Affected Entities in this industry include Fixed Satellite Very Small Aperture Terminal (VSAT) Systems and Mobile Satellite Earth Stations.

[30] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2024), https://docs.fcc.gov/public/attachments/DOC-408848A1.pdf.

[31] Affected Entities in this industry include all reporting wireless carriers and service providers.

[32] Affected Entities in this industry include Cellular/PCS/SMR — Specialized Mobile Radio Licensees and SMR (Dispatch).

E. Description of Economic Impact and Projected Reporting, Recordkeeping and Other Compliance Requirements for Small Entities

11. The RFA directs agencies to describe the economic impact of adopted rules on small entities, as well as projected reporting, recordkeeping and other compliance requirements, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.[33]

12. The rules adopted in the *Report and Order* may require small entities to hire attorneys, engineers, consultants, or other professionals to comply. Although the Commission cannot quantify the cost of compliance, we note that several of the adopted rules are consistent with and mirror existing policies and requirements used for other part 27 flexible-use licenses. Therefore, small entities with existing licenses in other bands may already be familiar with such policies and requirements and may already have the processes and procedures in place to facilitate compliance, resulting in minimal incremental costs to comply with our requirements for the Upper C-band. Below is an overview of areas discussed in the *Report and Order* that may lead to modified or additional compliance requirements for small entities.

13. *Reconfiguration and Allocation of the Upper C-band*. The *Report and Order* reconfigures 160 megahertz of the Upper C-band for terrestrial wireless uses in 3.98–4.14 GHz in the contiguous United States. Correspondingly, the *Report and Order* reserves 40 megahertz of the Upper C-band for repacked FSS operations in 4.16–4.20 GHz, with a 20-megahertz guard band in 4.14–4.16 GHz. The *Report and Order* finds that making an additional 160 megahertz of Upper C-band spectrum available for terrestrial wireless use in the contiguous United States will satisfy our Congressional mandate, uphold the public interest, and meet the Commission's policy goals for the efficient use of spectrum.

14. Additionally, the *Report and Order* adds a primary, non-Federal mobile, except aeronautical mobile, allocation to the reconfigured 4.0–4.16 GHz band in the contiguous United States. This approach harmonizes the allocations in the Upper C-band with those in 3.7–4.0 GHz and thus makes a wider band of contiguous mid-band spectrum available for next-generation wireless services. The *Report and Order* also retains exclusive non-Federal allocations for FSS and Fixed Service (FS) in the portion of the Upper C-band that is not repurposed for terrestrial commercial wireless use in the contiguous United States, recognizing that FS operations have been sunset in those areas, and preserves the status quo regarding FSS and FS allocations and operations outside of the contiguous United States. Our reconfiguration approach is also sensitive to the importance of coexistence between advanced wireless services in the Upper C-band and nearby radio altimeters operating in the 4.2–4.4 GHz band by providing meaningful spectral separation between those operations. We therefore find that maintaining 60 megahertz of separation between new terrestrial wireless operations and the radio altimeter band will promote the efficient and predictable use of spectrum by supporting coexistence after the radio altimeter retrofit process is complete.

15. *Competitive Bidding Procedures*. The *Report and Order* will make 160 megahertz of spectrum available by conducting an auction of licenses in the Upper C-band in conformity with the general competitive bidding rules set forth in part 1, subpart Q, of the Commission's rules.[34] As we have in all recent previous Commission spectrum auctions, we will employ the part 1 rules governing competitive bidding design, designated entity preferences, unjust enrichment, application and certification procedures, payment procedures, reporting requirements, and the prohibition on certain communications between auction applicants. Should the Commission subsequently modify its part 1 general competitive bidding rules, those modifications would apply here, as well.

[33] 5 U.S.C. § 604(a)(5).

[34] *See* 47 CFR §§ 1.2101–1.2114.

16. The *Report and Order* applies the two small business definitions with higher average gross revenue thresholds for bidding credit eligibility, as we have consistently done in all auctions of licenses likely to be used to provide 5G services in a variety of bands since the part 1 schedule of bidding credits was updated in 2015.[35] We believe that this two-tiered approach, which has been successful in the past, will provide small businesses with a simple, consistent, and predictable avenue for facilitating access to capital, thereby increasing participation and competition in an Upper C-band auction. Furthermore, this approach is consistent with our decision to align the Upper and Lower C-bands and consolidate them within a single, cohesive 3.7 GHz Service.[36] Two commenters urge the Commission to adjust the gross revenue thresholds to account for inflation since their adoption in 2015.[37] The *Report and Order* noted that those commenters do not provide a data-driven justification for why auctions of licenses for Upper C-band spectrum should be treated differently from other auctions for licenses likely to be used to provide 5G services.[38] Based on the Commission's prior experience with bidding credits in spectrum auctions and the lack of sufficient justification in the record for using any proposed alternative approach, the *Report and Order* declined to adopt small business size standards for Upper C-band spectrum that differ from those used in auctions for other 5G-ready services. Further, the *Report and Order* will offer rural service providers a designated entity bidding credit for Upper C-band licenses. While we remain committed to exploring opportunities which promote connectivity in historically unserved or underserved areas including Tribal lands, we ultimately do not believe that a Tribal licensing window is viable in this context given how the Upper C-band differs from the 2.5 GHz band in several key respects, including the statutory deadline and licensing requirements in the OBBB Act, as well as the use here of the *Emerging Technologies* framework to facilitate the transition of incumbent FSS operations.

17. *The Transition of FSS Operations*. While the *Report and Order* adopts many of the Lower C-band transition framework elements for the Upper C-band transition of incumbent FSS operations, we also refine and tailor our approach based on input from stakeholders that were involved in the Lower C-band transition, as well as the specific Upper C-band transition proposals advanced in the instant record. First, the *Report and Order* finds that "incumbent space station operators" whose authorizations would be impacted will generally include all space station operators authorized to provide C-band service to any part of the contiguous United States pursuant to a Commission-issued license or grant of market access as of June 21, 2018. The *Report and Order* also defines an "eligible space station operator" as an incumbent space station operator that, as of February 1, 2020, has demonstrated that it has an existing relationship to provide service via C-band satellite transmission to one or more incumbent earth stations in the contiguous United States. Today, the remaining entities that qualify under this definition and continue to provide service to one or more incumbent earth stations within the contiguous United States are: Eutelsat, SES, and Telesat. In addition, the *Report and Order* defines "incumbent earth stations" for the Upper C-band transition to include fixed and temporary fixed earth stations that were operational as of April 19, 2018, and that: (1) continue to be operational; (2) were licensed or registered in the IBFS (now ICFS) database on November 7, 2018; and (3) timely certified the accuracy of the information on file with the Commission by May 28, 2019.

18. We find that the public interest benefits of continuity and administrative efficiency that result from restarting where the Lower C-band transition left off in terms of the relevant scope of

[35] 47 CFR § 1.2110(f)(2)(i)(A)–(C) (defining small business entities using average gross revenue thresholds of $4 million, $20 million, and $55 million); *see also* 47 CFR § 27.1301(a), (c)(1) (600 MHz Service); *id*. § 27.1601(a) (3.45 GHz Service); *id*. § 27.1402(a) (3.7 GHz Service); *id*. § 27.1219(a)–(b) (Educational Broadband Service); *id*. § 30.302(a)–(b) (Upper Microwave Flexible Use Service); *id*. § 96.30(a), (c)(1) (Citizens Broadband Radio Service).

[36] Because the 3.7 GHz Service now encompasses both the Upper and Lower C-bands, section 27.1401 of the Commission's rules concerning competitive bidding for licenses in the 3.7 GHz Service applies to Upper C-band licenses without revision. *See* 47 CFR § 27.1401.

[37] WISPA Comments at 4–5; CCA Reply at 3.

[38] *See* WISPA Reply at 5; CCA Reply at 3.

incumbent earth stations outweighs any potential change in course at this point in time. Given our statutory requirement to quickly complete an Upper C-band auction pursuant to the OBBB Act, potential bidders in the forthcoming auction need to have clarity in the short term about the costs they will incur as a condition of their licenses pursuant to our *Emerging Technologies* precedent. In a similar vein, we also recognize that the three eligible space station operators involved in the Upper C-band transition need to quickly ascertain the scale and scope of any required work in order to finalize their Transition Plans. This certainty can be most rapidly achieved by repurposing the Lower C-band definitional standard and incumbent earth station list for Upper C-band purposes, as any reopening of incumbent earth station eligibility would take time to adjudicate, and thus inject uncertainty into the auction and transition planning process. We will also maintain the earth station application freeze throughout the Upper C-band transition in order to maintain a stable spectrum environment.

19. The *Report and Order* also exercises our authority under section 316 of the Communications Act, as amended (Act) to modify, as needed, the existing licenses, market access authorizations, and registrations currently held by FSS C-band incumbents to clear 4.0–4.16 GHz. Specifically, we modify the authorizations of all C-band incumbent space station operators to limit FSS operations to 4.16–4.2 GHz in the contiguous United States. We find that modifying the authorizations of all C-band incumbent space station operators to clear 4.0–4.16 GHz and confining any FSS operations to 4.16–4.2 GHz within the contiguous United States is within the Commission's statutory authority, consistent with prior Commission practice, and will promote the public interest, convenience, and necessity. The *Report and Order*'s decision aligns with the clearing approach that the Commission took in carrying out the Lower C-band transition.

20. Regarding the transition schedule, the *Report and Order* sets specific transition deadlines to ensure that all incumbent FSS operations are cleared in a timely manner to facilitate the introduction of terrestrial wireless services in the Upper C-band, and to provide potential auction bidders with some certainty as to when they will be able to obtain access to Upper C-band spectrum. Specifically, the *Report and Order* finds that a Primary Transition Deadline of December 30, 2030, for the relocation of all incumbent FSS operations in the top 75 PEAs in the contiguous United States—PEAs 1–41 and 43–76—that will align with the FAA's first radio altimeter retrofit deadline, is appropriate here. The *Report and Order* also deems appropriate a Final Transition Deadline of June 30, 2031, for all remaining PEAs in the contiguous United States—PEAs 77–211, 213–63, 265–97, 299–359, and 361–411.

21. As with the Lower C-band transition, the *Report and Order* requires new terrestrial wireless licensees in the Upper C-band to reimburse the reasonable transition costs incurred by eligible FSS space station and incumbent earth station operators and to allocate the responsibility for those costs among the new terrestrial wireless licensees on a *pro rata* basis. As with the Lower C-band transition, we will once again employ our broad spectrum management and licensing authority under section 303 of the Act to condition the grant of new terrestrial wireless licenses in the Upper C-band on the payment of all reasonable and necessary transition costs incurred by eligible space station and incumbent earth station operators to clear existing FSS C-band services from 4.0–4.16 GHz in the contiguous United States. We again offer incumbent earth station operators the choice of either accepting reimbursement for their actual reasonable transition costs or accepting a lump sum reimbursement for all of their incumbent earth stations based on the average, estimated cost of transitioning those facilities. This lump sum mechanism will provide incumbent space station operators the option to either: (1) perform their own transition work to maintain FSS service; (2) migrate to an alternative distribution technology; or (3) discontinue service altogether. Any incumbent earth station operators electing the lump sum will be responsible for their own transition work for the relevant sites from that point forward, and must comply with the relevant Transition Deadline for the PEA where they are located.

22. Consistent with the Lower C-band approach, the *Report and Order* requires all actual transition costs needed to clear existing Upper C-band operations in the contiguous United States to be both reasonable and necessary in order to qualify for reimbursement, and we will not permit reimbursement for equipment upgrades beyond what is necessary to clear the band. Incumbents may not "gold-plate" their systems and will not receive more reimbursement than is necessary and reasonable.

The *Report and Order* also states that incumbents will not be reimbursed for the speculative value of any business opportunities they claim they would lose as a result of the transition. Similarly, claims for "lost revenues" are not compensable, as we find that the eligible space station operators will be able to continue providing substantially the same service to that which they provide today throughout and after the transition. The *Report and Order* also finds that any "soft costs" (e.g., transactional expenses directly attributable to relocation) would again be subject to a rebuttable presumption for a cap of 2% of the hard costs involved in the transition, consistent with past Commission practice.

23. To allocate the transition-related financial responsibilities of new Upper C-band wireless licensees, the *Report and Order* again generally bases the share for each Upper C-band wireless licensee on that licensee's *pro rata* share of gross winning bids in the underlying auction, with specific allocation formulas governing each type of payment obligation. The *Report and Order* also adopts a modified incentive structure that is based on our Lower C-band precedent to facilitate expeditious clearing of the Upper C-band, but tailored to suit the specific parameters of the Upper C-band transition. The modified incentive structure is based on the estimated value of earlier access to the cleared Upper C-band spectrum for winning bidders in the forthcoming auction, and takes into account space station operators' voluntary statements with respect to their ability to meet the Transition Deadlines. In the event that eligible space station operators do not meet the Primary Transition Deadline, we establish an incremental reduction plan based on that used in the Lower C-band transition to enable the receipt of reduced inventive payments associated with that deadline based upon a sliding scale. To the extent that an eligible space station operator fails to meet the Final Transition Deadline, they will not receive any incentive payment associated with that deadline and may be subject to penalties. Each eligible space station operator's satisfaction of the Transition Deadlines and eligibility to receive incentives will be determined by the timely filing with the Commission, no later than each Transition Deadline, of a Certification of Completion demonstrating in good faith that the eligible space station operator has completed all necessary clearing actions pursuant to its Transition Plan. These certification procedures are modeled on those used in the Lower C-band transition.

24. In order to carry out a successful and timely repurposing of the Upper C-band for terrestrial wireless use, the *Report and Order* finds that it is in the public interest, given the unique circumstances present here, to provide rebates to adjacent band stakeholders to support their efforts to comply with the FAA's radio altimeter retrofit deadlines. Specifically, we rely on our broad Title III spectrum management and licensing authority to condition the grant of new terrestrial wireless licenses in the Upper C-band on providing rebates to defined classes of eligible aircraft owners and operators to facilitate their compliance with the FAA's radio altimeter retrofit requirements. The *Report and Order* delegates broad authority to the Wireless Telecommunications Bureau (WTB) to determine the appropriate rebate categories, dollar amounts, documentation requirements, and any other relevant procedures that may be necessary to administer the rebates.

25. In light of the successful Lower C-band transition, as well as the record received in response to the *Upper C-band NPRM*, the Commission will once again employ an independent, third-party clearinghouse to oversee the cost-related aspects of the in-band FSS transition, using a similar selection process and imposing the same broad responsibilities as in the Lower C-band transition. While we largely model the selection process and define the clearinghouse's duties along the lines of those in the Lower C-band transition, we also modify certain aspects of those existing rules with a view towards greater efficiencies while maintaining protections to prevent fraud, waste, and abuse in the reimbursement program. The *Report and Order* establishes a search committee that will use selection criteria based upon the clearinghouse's duties, rather than asking the committee to establish those criteria itself. For the Upper C-band transition, we also adopt a process broadly similar to that used to select the clearinghouse for the Lower C-band transition, with some modifications. Additionally, we will again use an updated Cost Catalog to establish ranges of presumptively reasonable transition costs. We again delegate to the WTB broad oversight over the clearinghouse and its transition cost reimbursement program generally, as well as specific authority to establish those and any other deadlines, guidance, or policies that may be, in WTB's judgment, necessary to ensure the successful and efficient administration of the program. We will

also require enhanced transparency by the Upper C-band Clearinghouse both in terms of providing target timelines for the processing of complete claims in its claims processing handbook, and on the pendency of claims as part of its quarterly status reports

26. In order to relocate incumbent FSS operations out of the reconfigured portion of the Upper C-band, the *Report and Order* adopts requirements similar to those that governed the transition of FSS operations out of the Lower C-band. These requirements include that eligible space station operators must prepare and submit their own Transition Plans by a set deadline and also submit quarterly status reports on their efforts. While we believe that affording transparency for all stakeholders through these Transition Plans is important and will serve the public interest, particularly for potential auction bidders who will ultimately be responsible for related transition cost reimbursements, we do not agree with proposals for the Commission to formally approve these Transition Plans. As in the Lower C-band transition, we decline to find that technology choices made by the eligible space station operators and included in the Transition Plans are deemed presumptively reasonable. We do not wish to prejudge the public review and input process, nor do we seek to unnecessarily constrain the clearinghouse in its independent review of the reasonableness and necessity of specific transition costs. We will again establish a Relocation Coordinator to oversee the FSS transition and utilize its expertise to track and supplement these transition efforts across all eligible space station operators to ensure a timely and coordinated relocation process.

27. *Band Plan*. As with the Lower C-band, the *Report and Order* will license the Upper C-band in 20-megahertz blocks using an unpaired spectrum block configuration, and on an exclusive, Partial Economic Area (PEA) basis. We will license the Upper C-band only within the contiguous United States and the District of Columbia, consistent with our approach in the Lower C-band.

28. *Licensing and Operating Rules*. The *Report and Order* adopts licensing and operating rules that largely align new licenses in the Upper C-band with existing licenses in the Lower C-band, which are already governed by part 27 of the Commission's rules. We find that this approach will harmonize terrestrial wireless operations across the entire C-band to create a single 3.7 GHz Service and help facilitate rapid deployment of advanced wireless services nationwide. Specifically, we extend to the Upper C-band rules that are applicable to all part 27 services, including those relating to the assignment of licenses by competitive bidding, flexible use, regulatory status, foreign ownership reporting, compliance with construction notification requirements, renewal criteria, permanent discontinuance of operations, partitioning and disaggregation, and spectrum leasing.[39] We likewise generally extend service-specific rules that already apply to terrestrial wireless operations in the Lower C-band, including eligibility, license term, and other licensing and operating rules, to the Upper C-band.[40] With respect to performance requirements, we adopt a more forward-leaning approach consistent with the accelerated timelines for all stakeholders involved in the Upper C-band transition. We adopt a 15-year license term for Upper C-band and find that a 15-year license term will, given the clearing and relocation that must occur before terrestrial wireless operations can commence, promote investment in the Upper C-band.

29. In addition, the *Report and Order* adopts an open eligibility standard for Upper C-band licenses. We find—as in the Lower C-band and other services—that open eligibility appropriately relies on market forces and will help to ensure efficient use of this spectrum. The open eligibility standard that we adopt does not affect citizenship, character, or other generally applicable qualifications that may apply, under our rules, to licenses for flexible use of the Upper C-band. Further, any person who has been, for reasons of national security, barred by any agency of the federal government from bidding on a contract, participating in an auction, or receiving a grant is ineligible to hold a license in the Upper C-

[39] 47 U.S.C. §§ 303(y), 309(j), 310; 47 CFR §§ 1.949, 1.950, 1.953, 1.2101–1.2114, 1.9001 *et seq*., 27.2, 27.10, 27.12, 27.14(k).

[40] 47 CFR §§ 1.949, 27.12, 27.13, 27.14.

band..[41]

30. Regarding mobile spectrum holding policies, the *Report and Order* finds that it is in the public interest to apply a post-auction, case-by-case review of mobile spectrum holdings we make available through auction in the Upper C-band when applications for initial licenses are filed with the Commission. We will incorporate into the spectrum screen the 160 megahertz of spectrum that we make available in the Upper C-band and will perform post-auction, case-by-case review of the long-form license applications filed as a result of the auction. We find that it is not in the public interest to impose a pre-auction bright-line limit on acquisitions of spectrum in the Upper C-band.

31. *Performance Requirements*. The *Report and Order* concludes that Upper C-band licensees must provide reliable signal coverage and offer service to at least: (1) 45% of the population in each license area no later than one year after the relevant Transition Deadline; and (2) 80% of the population in each license area no later than five years after the relevant Transition Deadline. These population-based coverage metrics match the Lower C-band's requirements for mobile and point-to-multipoint services. While the performance deadlines we adopt differ from those adopted for the Lower C-band and proposed in the *Upper C-band NPRM*, the Lower C-band performance deadlines ran from license grant and were designed to anticipate a lengthy transition to clear incumbent FSS operations before terrestrial wireless operations could commence. We observe that in practice the rapid speed of Lower C-band deployments reflects that a different, more forward-leaning approach is merited here. For the Upper C-band, the relevant performance timeframe will start at the relevant Transition Deadline, which is when Upper C-band licensees are able to access the reconfigured and cleared spectrum in a given PEA. In light of the transition timeline prior to those dates, there is no need for a lengthy lead time prior to the interim deadline. Given the expected desirability of Upper C-band spectrum, we nonetheless anticipate that new Upper C-band licensees will begin deploying facilities and constructing their networks in advance during the transition process, as was the case during the Lower C-band transition, so that they can commence operations as soon as possible after the relevant Transition Deadline.

32. We recognize that in the Lower C-band context, carrier deployments have largely focused on the provision of 5G and other advanced mobile broadband services to consumers and enterprises. On this basis, for the Upper C-band, the *Report and Order* declines to adopt alternative performance requirements for Internet of Things or fixed point-to-point operations, nor will we consider private internal operations in demonstrating buildout compliance. Under our flexible-use policies, licensees may still conduct these types of operations in the Upper C-band, but they will not be options for meeting a licensee's performance requirements, as they were in the *2020 C-band R&O*. We find that the performance requirements we adopt herein will provide certainty for licensees, ensure investment, and encourage timely deployment of services that best serve the public interest, in furtherance of the United States' wireless policy goals.

33. Regarding penalties for failure to meet performance requirements, we adopt a rule requiring that, in the event a licensee fails to meet the first performance benchmark (i.e., providing reliable signal coverage and offering service to at least 45% of the population in the license area no later than one year after the relevant Transition Deadline), or the second performance benchmark (i.e., providing reliable signal coverage and offering service to at least 80% of the population in the license area no later than five years after the relevant Transition Deadline) in any license area, its authorization for that particular license area will terminate automatically without Commission action. Although the penalty for missing the first performance benchmark differs from what the Commission adopted in the *2020 C-band R&O* and proposed in the *Upper C-band NPRM*, we reiterate that the performance requirement deadlines are tied to the relevant Transition Deadline. We therefore expect that Upper C-band licensees will work and plan in advance to commence their operations as soon as possible after the transition, and the penalties we adopt reflect that expectation.

[41] *See* 47 CFR § 27.12(b) (citing 47 U.S.C. § 1404(c)).

34. *Compliance Procedures*. In addition to the compliance procedures applicable to all part 27 licensees, including the filing of electronic coverage maps and supporting documentation, the *Report and Order* requires that the electronic coverage maps must accurately depict: (1) the boundaries of each license area and the coverage boundaries of the actual areas to which the licensee provides service; and (2) if a licensee does not provide reliable signal coverage to its entire license area, the boundaries of the area(s) within each license area not being served. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and signal strength necessary to provide reliable coverage and offer service with the licensee's technology. We find that these compliance procedures will encourage timely, robust deployment of Upper C-band spectrum, consistent with our goals in this proceeding.

35. *License Renewal and Renewal Term Construction Obligations.* We will apply the general renewal requirements applicable to all Wireless Radio Services (WRS) licensees to licensees in the Upper C-band.[42] In applying our general part 27 renewal requirements, each Upper C-band licensee will be required to comply with section 1.949 of our rules by demonstrating that, over the course of its license term, it provided and continues to provide service to the public.[43] Licensees can demonstrate compliance either through the renewal showing in section 1.949(f) or the relevant safe harbor in section 1.949(e)(2).[44] We find that applying these part 27 requirements to the Upper C-band will promote consistency across the Upper and Lower C-band as well as other WRS and help promote the continued deployment of next-generation wireless technologies.

36. *Technical Rules*. The *Report and Order* finds that the technical rules we adopt will encourage maximum potential use of the Upper C-band for next-generation wireless technologies, encourage efficient use of spectrum resources, and promote investment in the Upper C-band while protecting any residual incumbent users in the band and promoting coexistence with operations in adjacent bands. We adopt technical rules that are generally aligned with the rules applicable to the Lower C-band with a view towards creation of a single 3.7 GHz Service, although we make certain modifications that are applicable across the entire C-band to reinforce a successful co-existence environment with adjacent band radio altimeters. We believe that this approach will produce significant economies of scale, improve affordability for consumers, encourage rapid operational expansion, and facilitate deployment of high-powered terrestrial wireless networks in the band. As described in greater detail below, we deviated from this approach only with regard to antenna height limits due to specific technical and operational considerations unique to the Upper C-band.

37. The *Report and Order* permits fixed and base stations in non-rural areas to operate at power levels up to 1640 watts per megahertz EIRP and base stations in rural areas to operate at power limits up to 3280 watts per megahertz EIRP. The *Report and Order* will therefore apply section 27.50(j)(1)–(2) and (4)–(5) of the Commission's rules to both fixed and base stations operating in the Upper C-band.[45] The *Report and Order* also adopts a 4 Watt EIRP power limit for mobile and portable devices. To create consistency between the Lower and Upper C-bands, we apply this limit to the Lower C-band so that the same power limits apply throughout the 3.7–4.14 GHz band.

38. For base station out-of-band emissions (OOBE), the *Report and Order* requires fixed and base stations to suppress their emissions beyond the edge of their authorization to wireless licensees in both the Lower and Upper C-band to comply with an OOBE limit into the 4.2–4.4 GHz band of *either* an EIRP level of -28.4 dBm/MHz or a conducted power level of -46 dBm/MHz. The relevant OOBE limit into other spectrum bands will remain at a conducted power level of -13 dBm/MHz. For mobile and

[42] *See* 47 CFR § 1.949 (Application for renewal of authorization).

[43] 47 CFR § 1.949(d).

[44] *See* 47 CFR § 1.949(e)(2), (f).

[45] 47 CFR § 27.50(j)(1)–(2) (Lower C-band power limits).

portable units, the *Report and Order* requires that operators suppress their conducted emissions to no more than -13 dBm/MHz outside their authorized frequency band, i.e., at the authorized channel edge as measured at the antenna terminals. This requirement is consistent with the mobile OOBE limit that governs the Lower C-band, as is the requirement to adopt a relaxation of the emission limit within the first five megahertz of the channel edge by varying the resolution bandwidth used when measuring the emission. For emissions within 1 megahertz from the channel edge, the minimum resolution bandwidth would be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kilohertz. In the bands between one and five megahertz removed from the licensee's authorized frequency block, the minimum resolution bandwidth would be 500 kilohertz. Finally, the *Report and Order* adopts our proposal to otherwise model our approach to OOBE issues based on that used in the Lower C-band transition, subject to the adopted OOBE emissions limits, and to extend section 27.53(i) to the Upper C-band, which provides that the Commission may, in its discretion, require greater attenuation than specified in the rules if an emission outside of the authorized bandwidth causes harmful interference. We find that this approach will further harmonize wireless operations across the entire C-band.

39. Based on the record received, the *Report and Order* adopts an antenna height limit for 3.98–4.14 GHz wireless operations of no greater than 450 feet above ground level. To foster coexistence between radio altimeters operating at 4.2–4.4 GHz and terrestrial wireless operations in the Upper C-band, aviation and wireless industry stakeholders report reaching cross-industry consensus on this antenna height limit for wireless operations. As with the Lower C-band, the *Report and Order* also adopts a -76 dBm/m^2/MHz power flux density (PFD) limit at a height of 1.5 meters above ground at the border of the licensees' service area boundaries.

40. In addition, the *Report and Order* will apply section 27.57(c) of the Commission's rules to terrestrial licensees in the Upper C-band; this rule requires all part 27 operations to comply with international agreements for operations near the Mexican and Canadian borders.[46] Consistent with our Lower C-band approach, the *Report and Order* also adopts several additional technical rules that apply to all part 27 services, including sections 27.51 (Equipment authorization), and part 1, subpart BB, of the Commission's rules (Disturbance of AM Broadcast Station Antenna Patterns) for new terrestrial commercial wireless operations in the Upper C-band.

41. To safeguard incumbent FSS earth stations that remain in 4.16–4.2 GHz post-transition, the *Report and Order* adopts a PFD limit of -124 dBW/m^2/MHz in 4.16–4.2 GHz, as measured at the incumbent earth station antenna; this PFD limit is consistent with the Lower C-band and would apply to all emissions within the earth station's authorized band of operation from fixed stations, base stations, and mobile and portable stations. To protect incumbent earth stations from receiver blocking, we will require a PFD limit of -16 dBW/m^2/MHz to emissions within 3.98–4.14 GHz, as measured at the registered incumbent earth station antenna. Finally, the *Report and Order* states that once the instant transition is complete, all remaining incumbent earth stations will operate above 4.16 GHz, and we will allow full band/full arc use of their authorized band of operation.

42. Based on the record, we see no reason to modify the Commission's earlier decisions with respect to unprotected gateway and other fixed earth stations at the consolidated Telemetry, Tracking, and Command (TT&C) sites, particularly given their remote locations, or to extend the TT&C protection timeline. We accordingly find once again that coordination and negotiation between the relevant FSS operators and wireless licensees best serves the public interest for potential operations beyond the 2030 timeframe.[47] We also decline to adopt new protections for teleport or gateway sites in locations apart from the consolidated TT&C locations, which would disrupt existing and future wireless deployments and run counter to the Commission's earlier decision to consolidate TT&C sites and limit protections to those necessary to facilitate the Lower C-band transition. In order to protect TT&C operations against co-

[46] 47 CFR § 27.57(c).

[47] *See* 47 CFR § 25.203(n).

channel interference, the *Report and Order* requires new terrestrial licensees to ensure that the aggregated power from their operations meet an interference-to-noise ratio (I/N) of -6 dB as received by the TT&C earth station, and that they coordinate their co-channel operations within 70 km of TT&C earth stations that continue to operate in the Upper C-band. The *Report and Order* also extends protections against adjacent channel interference, including: (1) aggregated power from adjacent 3.7 GHz Service operations must meet a -6 dB I/N ratio, and the limit applies to all emissions removed from the TT&C's center frequency by more than 150% of the TT&C's necessary emission bandwidth; (2) we do not require prior coordination between adjacent operations, but new terrestrial wireless licensees and TT&C earth station operators are expected to cooperate in good faith and make reasonable efforts to anticipate and resolve technical problems that may inhibit effective and efficient use of the spectrum; and (3) TT&C operators are expected to make available pertinent technical information about their systems upon request by the new terrestrial wireless licensees, and licensees of stations suffering or causing harmful interference are expected to cooperate and resolve the problem by mutually satisfactory arrangements. In addition, we require a PFD limit of -16 dBW/m^2/MHz, as measured at the TT&C earth station antenna, to protect against potential receiver overload.[48] This blocking limit applies to all emissions within the new terrestrial wireless licensee's authorized band of operation. All TT&C earth stations will be protected based on the assumption that robust filters have been installed at the facilities, like other incumbent FSS earth stations. TT&C filter quality must provide a minimum of 60 dB of rejection, and the frequency at which the filter must meet this 60 dB of rejection will vary with the bandwidth. TT&C filters must meet 60 dB of rejection for all frequencies removed from the center frequency by more than 150% of the TT&C's emission bandwidth, both above and below the channel, and the filter must provide 70 dB of rejection for all frequencies removed from the TT&C's center frequency by more than 250% of the TT&C's emission bandwidth, both above and below the channel.

F. Discussion of Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

43. The RFA requires an agency to provide "a description of the steps the agency has taken to minimize the significant economic impact on small entities . . . including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected."[49]

44. In the *Report and Order*, the Commission broadly reconfigures the Upper C-band for more intensive, next-generation wireless use by generally deploying the procedures used in—and the lessons learned from—the successful, similar transition of the Lower C-band. Throughout that proceeding, the Commission contemplated how its adopted rules would uniquely affect small entities and calibrated its determinations accordingly. The approach taken towards considering the effect of our rules on small entities in that proceeding largely informs our process in this one. For example, we considered the potential economic hardship or compliance burdens on small entities with respect to the information collection, such as whether they would require certain accommodations or additional time to comply. We also considered whether small entities face any special or unique concerns regarding this issue, such as disparate economic hardship in relation to their larger counterparts. Similarly, in adopting its proposals, the Commission considered the effect of making modifications to our rules regarding administrative processes that would reduce the economic impacts of adopted rules on small entities. In addition, the Commission also considered the approach that would be most cost-effective and minimize the economic impact on small entities while also fulfilling the Commission's statutory mandate.

45. Specifically, the *Report and Order* adopts 15-year license terms for new licenses in the Upper C-band. Such terms provide small entities with the benefit of long-term operational certainty as

[48] *See* 47 CFR § 27.1423(e).

[49] 5 U.S.C. § 604(a)(6).

well as a longer period to develop and deploy innovative wireless services. The *Report and Order* also anticipates potential issues that small entities might encounter in meeting the performance requirements for new Upper C-band licensees. To that end, similar to its approach to information collection, the *Report and Order* considered whether our coverage and service benchmarks might necessitate that we grant small entities certain accommodations or additional time to comply. Similarly, the *Report and Order* considered offering small entities additional time to fulfill compliance procedures. Finally, the competitive bidding procedures implement familiar designated entity preferences in an auction of Upper C-band licenses. The *Report and Order* adopts bidding credits for small and very small businesses, as well as a rural service provider credit. This approach will potentially benefit small entities by providing such entities with meaningful opportunities to participate in spectrum auctions and promote competition in the provisioning of various wireless services.

46. The Commission finds an overriding public interest in encouraging investment in wireless networks, facilitating access to scarce spectrum resources, and promoting the rapid development of mobile services to Americans. All licensees, including small entities, play a crucial role in achieving these goals. Therefore, the *Report and Order* considered alternative obligations, timing for implementation, and other measures that would accommodate the needs and resources of small entities. The Commission carefully considered the effects of its proposals on small entities before adopting final rules in this proceeding.

G. Report to Congress

47. The Commission will send a copy of the *Report and Order*, including this Final Regulatory Flexibility Analysis, in a report to Congress pursuant to the Congressional Review Act.[50] In addition, the Commission will send a copy of the *Report and Order*, including this Final Regulatory Flexibility Analysis, to the Chief Counsel for the SBA Office of Advocacy and will publish a copy of the *Report and Order*, and this Final Regulatory Flexibility Analysis (or summaries thereof) in the Federal Register.[51]

[50] 5 U.S.C. § 801(a)(1)(A).

[51] *Id.* § 604(b).

APPENDIX C

List of Commenters

Comments in GN Docket No. 25-59

Above Promotions

Air Line Pilots Association, International

Airlines for America

America's Communications Association

ARCTEK Satellite Productions, LLC

AT&T Services, Inc.

Aviation Spectrum Resources, Inc.

The Boeing Company

Cisco Systems, Inc.

Citizens Against Government Waste

Coalition of Rural Wireless Carriers

Competitive Carriers Association

Comsearch

CTIA

Cunningham Communications, Inc.

Digital Progress Institute

Ericsson

Eutelsat Communications S.A.

Frank Sanders

Garmin International, Inc.

Information Technology Industry Council

Information Technology and Innovation Foundation

International Air Transport Association

Jackson Energy Authority

Joint Aviation Community Comments

LinkUp Communications Corporation

Lockheed Martin Corporation

LTN Global Communications, Inc.

National Association of Broadcasters

National Public Radio, Inc.

National Radio Astronomy Laboratory

National Telecommunications and Information Administration

Navajo Nation

Navajo Nation Telecommunications Regulatory Commission

NCTA

Nokia

North American Spectrum Alliance

Open Technology Institute and Public Knowledge

OQ Technology

Planet Labs PBC

Professor Monisha Ghosh et al.

PSSI Global Services, LLC

Public Knowledge et al.

Qualcomm

Roberson and Associates, LLC

Rural Wireless Association, Inc.

Samsung Electronics America, Inc.

SES Americom, Inc.

Society of Broadcast Engineers

Space Exploration Holdings, LLC

Summit Ridge Group, LLC

Synamedia Ltd

T-Mobile USA, Inc.

Thales

U.S. Electrodynamics, Inc.

Verizon

WISPA

Zixi LLC

Reply Comments in GN Docket No. 25-59

ABC, CBS, FBC, NBC Television Affiliates Associations

A+E Global Media, FOX Corp., NBCUniversal Media, LLC, et al.

Air Line Pilots Association, International

Airlines for America

American Astronomical Society

America's Communications Association

ARCTEK Satellite Productions, LLC

AST & Science, LLC

AT&T Services, Inc.

Collins Aerospace
Competitive Carriers Association
CTIA
Dynamic Spectrum Alliance
Ericsson
Eutelsat Communications S.A.
GCI Communications Corp.
Harmonic Inc.
Honeywell International Inc.
International Center for Law & Economics
Internet Society and Indigenous Connectivity Institute
InterTECH Corporation
Joint Aviation Community
Kraus Electronic Systems, Inc.
Local Broadcasters (Gray, Nexstar, and E.W. Scripps)
LTN Global Communications, Inc.
Lumen
National Academy of Sciences Committee on Radio Frequencies
National Association of Broadcasters
National Business Aviation Assoc. and National Air Transportation Assoc.
NCTA
North American Spectrum Alliance
Optimum Communications, Inc.
OQ Technology
Pioneer Telephone Cooperative, Inc. et al.
Professor Monisha Ghosh et al.
Relocation Payment Clearinghouse LLC
Rural Wireless Association, Inc.
SES Americom, Inc.
Space Exploration Holdings, LLC
Starz Entertainment, LLC
T-Mobile USA, Inc.
U.S. Electrodynamics, Inc.
Utility Broadband Alliance
Verizon
Vertical Aviation International

Wireless Infrastructure Association

WISPA

Zixi LLC

Record Refresh Comments in GN Docket Nos. 18-122 and 25-59

AT&T Services, Inc.

Aviation Spectrum Resources, Inc.

CTIA

Eutelsat Communications S.A.

Joint Aviation Community

SES Americom, Inc.

Verizon

APPENDIX D

Regulatory Impact Analysis

Upper C-band (3.98–4.2 GHz) Auction Report and Order, Order of Proposed Modification, and Order on Reconsideration

I. EXECUTIVE SUMMARY

A. Summary

1. In the *Upper C-band (3.98–4.2 GHz) Report and Order, Order of Proposed Modification, and Order on Reconsideration (Upper C-band Report and Order* or *Report and Order)*, the Federal Communications Commission (Commission) reallocates 160 megahertz of the 3.98–4.2 GHz band (Upper C-band), specifies competitive bidding procedures, establishes a framework for transition of FSS operations, and supports a harmonious spectral environment between terrestrial wireless operations throughout the entire C-band and adjacent band radio altimeters.

2. This economically significant regulatory action is submitted to the Office of Information and Regulatory Affairs (OIRA) for interagency review. This regulatory impact analysis (RIA) presents an assessment of the regulatory compliance costs and benefits associated with the Commission's action and is consistent with Executive Order 12866. Comparing the adopted rules with other alternative policy options, we conclude that the adopted rules will result in significant benefits that outweigh the associated costs. This regulatory action is considered a deregulatory action under Executive Order 14192.

B. Table of Benefits and Costs

3. *Summary of Benefits and Costs*. We find that the present value of benefits discounted over ten years would be ${[XX]} billion to ${[XX]} billion using a 3% discount rate and ${[XX]} billion to ${[XX]} billion using a 7% discount rate. The present value of costs discounted over ten years would be ${[XX]} billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate. As a result, we find that the overall benefits of the regulatory action outweigh the total costs.

		Present Value (3% Discount Rate)			Present Value (7% Discount Rate)	
	Category	**Lower Bound**	**Upper Bound**		**Lower Bound**	**Upper Bound**
Benefits ($ Billions) (2026–2035)	Consumer Surplus	${[XX]}	${[XX]}		${[XX]}	${[XX]}
	Producer Surplus	${[XX]}	${[XX]}		${[XX]}	${[XX]}
	Total	${[XX]}	${[XX]}		${[XX]}	${[XX]}
Costs ($ Billions) (2026–2035)	FSS Transition Payments	${[XX]}	${[XX]}		${[XX]}	${[XX]}
	FSS Incentive Payments	${[XX]}	${[XX]}		${[XX]}	${[XX]}
	RA Retrofit Payments	${[XX]}	${[XX]}		${[XX]}	${[XX]}
	Auction Participation	*Each entry less than $10 million.*				
	Auction Operation					
	Total	${[XX]}	${[XX]}		${[XX]}	${[XX]}
Net Impact ($ Billions) (2026–2035)	**Total**	${[XX]}	${[XX]}		${[XX]}	${[XX]}

II. NEED FOR REGULATORY ACTION

4. The One Big Beautiful Bill (OBBB) Act directed the Commission to "grant licenses through systems of competitive bidding, . . . including by completing a system of competitive bidding not later than 2 years after the date of enactment of this Act for not less than 100 megahertz in the band between 3.98 gigahertz and 4.2 gigahertz."[1] Reallocation of mid-band spectrum will help support rapidly increasing mobile Internet usage driven by growing demand for wireless services.[2] The 4.0–4.2 GHz portion of the Upper C-band is currently allocated for non-Federal use on a primary basis for FSS,[3] and is used mainly to deliver programming content to television and radio broadcasters throughout the country, as well as telephone, data, and satellite communications services to customers, including federal customers, on a contractual basis.[4] In the *2020 C-band R&O*, the Commission authorized flexible use terrestrial operations in the 3.7 GHz Service from 3.7–3.98 GHz, reserved 3.98–4.0 GHz as a guard band, and migrated incumbent operations into the 4.0–4.2 GHz portion throughout the contiguous United States.[5] The relocation of incumbent services was completed in 2023, and Lower C-band licensees are now providing 5G service using these frequencies in markets throughout the contiguous United States.[6] The success of the lower C-band transition as well as the record in this proceeding suggest that further reallocation of the Upper C-band is both feasible and in the public interest.[7]

III. REGULATORY ACTION

5. The *Report and Order* adds a primary non-Federal mobile (except aeronautical mobile) allocation to the 4.0–4.16 GHz band nationwide and removes the band's FSS allocation within the contiguous United States. The Commission will hold an auction for flexible use licenses for the 160 megahertz of spectrum from 3.98–4.14 GHz by July 4, 2027, and it will reserve 4.14–4.16 GHz as a guard band.[8] The *Report and Order* also adopts appropriate licensing and technical rules to govern these new flexible use operations that align the licensing rules for the Lower and Upper C-bands to create a single 3.7 GHz Service. In addition, the *Report and Order* establishes a framework to relocate impacted incumbent FSS operations within the contiguous United States. Similar to the *2020 C-band R&O*, the framework relies on the Commission's *Emerging Technologies* framework to require that Upper C-band licensees reimburse eligible FSS incumbents' reasonable and necessary transition costs and incentivize SSOs to expedite their transition to align with the FAA's radio altimeter retrofits.[9] Finally, the *Report and Order* establishes rebates to support defined classes of eligible aircraft owners and operators with retrofitting their existing radio altimeters in compliance with the FAA's radio altimeter retrofit requirements. This will promote a successful coexistence environment and allow new Upper C-band

[1] *See* OBBB Act, § 40002(b)(2).

[2] *See, e.g.*, AT&T Comments at 1; CTIA Comments at 1; T-Mobile Comments at 1.

[3] 47 CFR § 2.106(c)(182), (c)(457); *id.* § 101.147(a)(8), (14), (25); *id.* § 101.803(d)(1); *see also 2020 C-band R&O*, 35 FCC Rcd at 2371, 2463–66, paras. 56, 321–28. Incumbent point-to-point FS operations in the entire C-band were sunset in the contiguous United States as of Dec. 5, 2023. *See 2020 C-band R&O*, 35 FCC Rcd at 2463–66, paras. 321–28; *see also* 47 CFR § 2.106(c)(182(iii)(B)); *id.* § 101.147(a)(8), (14), (25); *id.* § 101.803(d)(1).

[4] *Upper C-band NOI,* 40 FCC Rcd at 1808–09, para. 5; *see also* NTIA Comments at 7–8.

[5] *2020 C-band R&O*, 35 FCC Rcd at 2370–72, paras. 54, 56–58; *see also* 47 CFR § 2.106(d)(182), (d)(457).

[6] *See, e.g.*, Verizon Comments at 4; Press Release, SES, SES Completes FCC's C-Band Transition Clearing and Relocation Plan in the U.S. (Aug, 10, 2023), https://www.ses.com/press-release/ses-completes-fccs-c-band-transition-clearing-and-relocation-plan-us; *see also*, *Wireless Telecommunications Bureau Announces Wind Down of the 3.7–4.2 GHz Relocation Payment Clearinghouse*, GN Docket 18-122 and WT Docket 21-333, Public Notice, 40 FCC Rcd 6003, & n.4 (WTB 2025).

[7] *See* AT&T Comments at 1–2; CTIA Comments at 1–2; DPI Comments at 1–2; Ericsson Comments at 1.

[8] OBBB Act, § 40002(b)(2).

[9] *See generally 2020 C-band R&O*, 35 FCC Rcd at 2391–463, paras. 110–320 (transitioning FSS operations).

licensees to deploy on a predictable timeline.

IV. BENEFITS

6. We estimate that the *Report and Order* will generate ${[XX]} billion to ${[XX]} billion in welfare gains using a 3% discount rate and ${[XX]} billion to ${[XX]} billion in welfare gains using a 7%.[10] discount rate over the time period of 2026 to the end of 2035..[11] Gains are split between increases in consumer surplus from improved and additional terrestrial wireless services and producer surplus from sales of those services..[12] We estimate ${[XX]} billion to ${[XX]} billion of consumer surplus using a 3% discount rate and ${[XX]} billion to ${[XX]} billion of consumer surplus using a 7% discount rate. We estimate ${[XX]} billion to ${[XX]} billion of producer surplus using a 3% discount rate and ${[XX]} billion to ${[XX]} billion of producer surplus using a 7% discount rate.

7. No commenter submitted a quantitative estimate of the total dollar benefits of the adopted reallocation, but one study estimates that reallocating 100 megahertz of mid-band spectrum to mobile use would generate $388 billion in consumer surplus, $264 billion in GDP, and 1.5 million new jobs (*NERA Study)*..[13] Another study claims that not meeting demand for mobile spectrum will result in GDP losses of $1.4 trillion over 10 years..[14] While we agree qualitatively with these two studies, we conduct our own assessment under assumptions that are tailored to this proceeding. For our own estimates, we adapt the NERA methodology to estimate consumer surplus under the proposals adopted in this Order. We decline to adopt NERA's estimate of additional GDP but rather we estimate additional producer surplus..[15]

A. Consumer Surplus

8. Allocating more spectrum to flexible use will increase consumer surplus by increasing mobile and fixed wireless services capacity and throughput, which in turn should lower prices and improve service quality of existing wireless services and products. It should also allow for the potential creation of new, innovative services and products.

9. NERA calculates two components of consumer benefits. First, for consumer benefits from mobile wireless use, NERA uses an approach we will refer to as "consumer surplus multipliers." Previous studies have estimated the ratio between one year's worth of consumer surplus and the auction

[10] In line with the guidance Circular A-4, we use a 3% for discounting with regards to personal consumption and 7% to represent discounting with regards to cost of capital. For some calculations that use expectations economic value, we will use one or the other depending on whether the predicting agents are consumers (3%) or firms (7%). To report valuations for the public interest, we will report present values for both discount rates to reflect a range of possible valuation approaches. Office of Management and Budget, *Circular A-4: Regulatory Analysis,* (Sep. 17, 2003) at 33, https://www.whitehouse.gov/wp-content/uploads/2025/08/CircularA-4.pdf (*Circular A-4*).

[11] To avoid extrapolating beyond the predictive capacity of the record and public sources, we do not calculate any costs and benefits beyond the end of 2035.

[12] Consumer surplus is the economic gain that consumers derive from buying goods and services at prices below their willingness to pay for those goods and services. Producer surplus is the economic gain that firms derive from selling goods and services at prices that exceed their costs.

[13] Hector Lopez & Julien Martin, National Economic Research Associates, Inc., The Economic Impact of Each Additional 100 MHz of Mid-band Spectrum for Mobile, Prepared for CTIA at 1 (Jan. 22, 2025), https://api.ctia.org/wp-content/uploads/2025/01/The-economic-impact-of-allocating-mid-band-spectrum-to-mobile.pdf (*NERA Study*).

[14] Securing the Future of U.S. Wireless Networks: The Looming Spectrum Crisis, Accenture, at 3 (Mar. 2025), https://api.ctia.org/wp-content/uploads/2025/03/Looming-Spectrum-Crisis-Accenture.pdf (*Accenture Study*).

[15] Jobs may be double counted in the GDP figures, and there is no simple way to translate jobs into dollar amounts. We therefore decline to consider jobs separately from GDP in our benefit estimates.

proceeds.[16] NERA multiplies these ratios over their estimates of the auction proceeds to estimate yearly consumer surplus, and for total consumer surplus, assumes an indefinite stream of these year amounts, and calculates the present value at a 10% discount rate.[17] This can result in consumer welfare that is multiples of the proceeds over time even though they may be less than the proceeds in one year. NERA estimates a MHz-weighted average auction price of $1.07/MHz-Pop in the Lower C-band and 3.45 GHz auctions, which NERA assumes is the best comparable spectrum valuation for all mid-band spectrum.[18] Using their favored consumer surplus multipliers, NERA calculates annual mobile wireless consumer welfare benefits of $128 to $192 billion assuming 400 megahertz of mid-band spectrum is reallocated to terrestrial wireless.[19] The *NERA Study* calculates the present value of continuing the each annual estimates indefinitely into the future using a 10% discount rate.[20] Taking the average of the estimated present values and dividing by four to estimate the economic impact of reallocating 100 megahertz, NERA estimates $385 billion in total mobile wireless consumer surplus under this scenario.[21] Second, the *NERA Study* refers to a separate estimate of over $6.3 billion in annual benefits from fixed wireless access using 2 gigahertz of spectrum.[22] Taking the present value of these benefits using a 10% discount rate and dividing by 20 to again estimate the impact of reallocating an additional 100 megahertz, yields NERA's additional estimate of $3 billion in total consumer benefits due to improved fixed wireless access.[23]

10. While we accept NERA's general approach, we make certain adjustments. While we acknowledge that mobile and fixed wireless can theoretically represent two different sources of consumer surplus, we do not believe that we can cleanly separate them while using the consumer surplus multiplier approach. Moreover, the Lower C-band spectrum was designated for flexible use, so bidders' valuations would encompass both mobile and fixed use. We therefore assume that our consumer surplus estimates are inclusive of all services from which consumers derive surplus and do not attempt to separately estimate fixed wireless consumer surplus. Further, NERA's approach assumes benefits will be immediate and identical every year, but benefits associated with the Upper C-band transition will occur at different points in time. In our analysis, we account for the various transition deadlines by appropriately discounting future benefits.

11. To use the consumer surplus multipliers approach, we must first estimate expected

[16] *NERA Study* at 10–12, Table 5. The *NERA Study* constructs multipliers by dividing estimates of consumer surplus of spectrum, by estimates of corresponding auctions proceeds found in the following papers: Gregory L. Rosston, *The Long and Winding Road: the FCC Paves the Path With Good Intentions,* 27 Telecom. Pol. 501–515 (2003) (Rosston (2003)); Thomas W. Hazlett & Roberto E. Muñoz, *A Welfare Analysis of Spectrum Allocation Policies,* Joint Center: AEI-Brookings Joint Center for Regulatory Studies Working Paper (2004) (Hazlett and Muñoz (2004)); Thomas W. Hazlett & Roberto E. Muñoz, *A Welfare Analysis of Spectrum Allocation Policies*, 40(3) The RAND Journal of Economics 424–454 (2009) (Hazlett and Muñoz (2009)).

[17] *NERA Study* at 12, Table 6.

[18] *NERA Study* at 11.

[19] *NERA Study* at 12, Table 5.

[20] *NERA Study* at 12, Table 6.

[21] *NERA Study* at 12, Table 6.

[22] *NERA Study* at 14, Table 7; Hal Singer & Augustus Urschel, *Competitive Effects of a Fixed Wireless Access on Wireline Broadband Technologies*, econONE Working Paper at 13–14 (2023), https://api.ctia.org/wp-content/uploads/2023/06/Competitive-Effects-of-Fixed-Wireless-Access-on-Wireline-Broadband-Technologies-FINAL.pdf (*econONE Study*); GSM Association, Estimating the Mid-Band Spectrum Needs in the 2025–2030 Time Frame: A Report by Coleago Consulting at 37 (2021), https://www.gsma.com/spectrum/wp-content/uploads/2021/07/Estimating-Mid-Band-Spectrum-Needs.pdf.

[23] *NERA Study* at 14, Table 8. We note that the *NERA Study* divides $6.3 billion by five, computes the present value for 400 megahertz, and then divides by four.

proceeds from the Upper C-band auction. We assume different dollar per MHz-pop auction values based on the closest comparable recently auctioned spectrum. As the Upper C-band is adjacent to the Lower C-band, we view the Lower C-band prices from Auction 107 as the closest comparables. As part of the Lower C-band auction, winning bidders were required to fund clearing costs and accelerated relocation payments that are not accounted for in the nominal auction prices.[24] Adjusting the final auction prices for these additional payments and accounting for subsequent inflation since the auction, we estimate an average price between $1.25/MHz-POP and $1.28/MHz-POP.[25] Mid-band spectrum has also been sold at other recent auctions and secondary market transactions.[26] In 2022, we estimate that Auction 110 sold 100 megahertz of 3.45 MHz spectrum at a price of $0.79/MHz-POP.[27] EchoStar also recently agreed to sell 40 megahertz of AWS-4 spectrum, and 10 megahertz of H-Block spectrum for a combined value of $19 billion in cash, equity and interest repayments, which we estimate is approximately $1.11/MHz-POP.[28] EchoStar further agreed to lease 30 megahertz of 3.45 GHz spectrum and sell 20 megahertz of

[24] *2020 C-band R&O*, 35 FCC Rcd at 2415, para. 178.

[25] Auction 107 yielded $81,168,677,645 in gross proceeds. FCC, *Auction 107: 3.7 GHz Service*, https://www.fcc.gov/auction/107 (accessed Apr. 15, 2026). Winning bidders were responsible for $9.7 billion of acceleration payments, split into Phase I payments of $2.4 billion and Phase II payments of $7.3 billion. *2020 C-band R&O*, 35 FCC Rcd at 2433, para. 219, at 2438, para. 232. We discount the Phase I payment by one year and the Phase II payment by three years using a discount rate of 7% since the deadlines of Phase I and II were about one and three years after the auction respectively. *2020 C-band R&O*, 35 FCC Rcd at 2413, para. 168. The present value of this amount is then $8.2 billion. Realized total relocation cost payments were approximately $3.4 billion, but it is unclear if bidders had a precise estimate of what costs would be before the auction. *July 2025 RPC Quarterly Report* at 2. To account for uncertainty, we assume the bidders expected costs to be the range of relocation payments the FCC estimated, between $3.3 to $5.2 billion, which contains the actual payment total of $3.4 billion. *2020 C-band R&O*, 35 FCC Rcd at 2430–31, para. 210. As a simplifying assumption, we assume these payments are made evenly across the three years of the transition and then calculate the present value of the payments using a 7% discount rate: $\sum_{i=2021}^{2023}(Total\ Relocation\ Payments \div 2 \div 1.07^{i-2021})$. This results in a range between $3.1 billion and $4.9 billion. We assume the population of the contiguous United States (the relevant population for the auctioned C-band licenses) to be the 2021 Census estimate of 329,918,667. U.S. Census, *Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia and Puerto Rico: April 1, 2020 to July 1, 2025 (NST-EST2025-POP) [< 1.0 MB]* (Jan. 13, 2026), https://www2.census.gov/programs-surveys/popest/tables/2020-2025/state/totals/NST-EST2025-POP.xlsx (*U.S. Census Population*). The rate of inflation between the closing date of February 2021 and March 2026, the date with the latest available information, is 25%. Federal Reserve Bank of St. Louis, *Consumer Price Index for All Urban Consumers: All Items in U.S. City Average*, https://fred.stlouisfed.org/series/CPIAUCSL (accessed Apr. 15, 2026) (*FRED CPI*). Taking these numbers together, we predict auction prices in 2026 dollars between ($81.1 billion + $8.2 billion + $3.1 billion) × 125% / (280 MHz × 329,918,667) = $1.25/MHz-POP or ($81.1 billion + $8.2 billion + $4.9 billion) × 125% / (280 MHz × 329,918,667) = $1.28/MHz-POP.

[26] While Auctions 105 and 108 also sold rights to mid-band spectrum (3.5 GHz and 2.5 GHz, respectively), we find those auctions to be less relevant as the licenses at stake required sharing in some form rather than full exclusive use of the spectrum and the 3.5 GHz licenses had much lower power limits. *See Auction of Priority Access Licenses for the 3550–3650 MHz Band, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 105, Bidding in Auction 105 Scheduled to Begin June 25, 2020*, AU Docket No. 19-244, Public Notice, 35 FCC Rcd 2140, 2144, para. 8 (2020); *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Report and Order, 34 FCC Rcd 5446, 5473, para. 77 (2019).

[27] Auction 110 yielded $22,513,601,811 in gross proceeds. FCC, *Auction 110: 3.45 GHz Service*, https://www.fcc.gov/auction/107 (accessed Apr. 15, 2026). We assume the population of the contiguous United States (the relevant population for the auctioned 3.45 GHz licenses) to be the 2022 Census estimate of 331,824,833. *U.S. Census Population.* Further, we estimate the rate of inflation between closing date of January 2022 and March 2026, the date with the latest available information, to be 17%. *FRED CPI.* Taking these numbers together, we predict auction prices in 2026 dollars of $22.5 billion × 117% / (100 MHz × 331,824,833) = $0.79 / MHz-POP.

[28] EchoStar Corporation, SEC Form 8-K at 3, (filed Sept. 8, 2025), https://ir.echostar.com/static-files/1d978538-a035-4ac1-9ffe-f230db411d2a. With total payments of $8.5 billion in cash, $8.5 billion in stock and $2.0 billion in

(continued….)

600 MHz spectrum to AT&T for $23 billion, which market analysts have estimated to be valued at a price of $1.40/MHz-POP.[29] {[XX]},[30] {[XX]}.[31] We use ${[XX]}/MHz-POP as our upper bound upper C-band valuation estimate but use {[XX]}, or ${[XX]}/MHz-POP, as a conservative lower bound that reflects possible lower demand from increased availability of mid-band spectrum since Auction 107.

12. We use 0.3 and 1.0 for our annual consumer surplus multipliers, based on previous studies and considerations specific to the Upper C-band. The *NERA Study* uses 0.9, 1.0 and 1.35 as multipliers based on Hazlett and Muñoz (2004), Hazlett and Muñoz (2009), and Rosston (2003), respectively.[32] We note that the 1.35 estimate used in the *NERA Study* is the midpoint of 1.0 and 1.7 constructed from estimates reported in Rosston (2003). Because the estimates from Rosston (2003) are for the entire value of the original U.S. cellular phone system supported by the 850 MHz Cellular Band, using 1.7 is likely to be an overestimate given that the incremental benefits of Upper C-band spectrum will be to supplement existing capacity rather than to enable the deployment of any wireless services as in the Rosston study (i.e., a marginal rather than inframarginal change). We therefore use 1.0—which is the Rosston (2003) lower bound and the Hazlett and Muñoz (2009) estimate—as the upper bound for our consumer surplus multiplier baseline. For the lower bound multiplier, we note that the Commission has indicated that total consumer surplus could be more than ten times greater than auction proceeds.[33] At a 3% discount rate,[34] annual consumer surplus that is 29.1% as large as the auction proceeds would result

(Continued from previous page)
payments to service EchoStar's debt, the total consideration for this transaction amounts to $19.0 billion. We assume the total 2025 US population of 341,784,857 is the relevant population. *U.S. Census Population.* Given the low amount of inflation from the second half 2025 to now we do not adjust for inflation. We estimate that the 50 megahertz of spectrum is being bought at a price of at least $19.0 billion / (50 MHz × 341,784,857) = $1.11 / MHz-POP.

[29] Davis Herbet, CFA, Joshua Kramer, Mark Lightner, Esq., Hunter Martin, CFA, Savannah Buzzeo, & Brian Mckenna, CreditSights, *AT&T/EchoStar: Mega-MHz Deal* (Sep. 5, 2025), https://know.creditsights.com/insights/att-echostar-mega-mhz-deal/. Precise calculation is not straightforward in this case because payments between leased and sold portions are apportioned to specific bands and because AT&T will also lease certain 700, 1760–1765, and 2160–2165 MHz bands. *See* Letter from Maureen Jeffreys, Counsel to AT&T, and Pantelis Michalopoulos, Counsel to EchoStar, to Marlene H. Dortch, Secretary, Attach. (AT&T's Purchase of EchoStar Spectrum, Submission by AT&T to US Department of Justice (Antitrust Division), September 30, 2025) (filed Nov. 24, 2025) (on file in WT Docket No. 25-303) (AT&T-EchoStar Letter to DOJ); and AT&T and EchoStar, Description of Transaction, Public Interest Showing, and Related Demonstrations, WT Docket No. 25-303 (Sept. 25, 2025) (AT&T-EchoStar Application).

[30] *3.45 GHz Band 2d Report and Order* 36 FCC Rcd at 5997, para 20–21.

[31] AT&T-EchoStar Application.

[32] Hazlett and Muñoz at 17 (2004); Hazlett and Muñoz at 433–34 (2009); Rosston at 513 (2003). Note that we do not use Hazlett and Muñoz (2004) because it is the working paper version of Hazlett and Muñoz (2009) which supersedes it.

[33] FCC, Connecting America: The National Broadband Plan at 79 (2010), https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf (citing Rosston (2003) and Bazelon (2009)). Rosston at 513 (2003); Coleman Bazelon, *The Need for Additional Spectrum for Wireless Broadband: The Economic Benefits and Costs of Reallocations* (Oct. 23, 2009) at 2, https://techliberation.com/wp-content/uploads/2009/11/Upload809.pdf (Bazelon (2009)). The National Broadband Plan states that "consumer welfare gains from spectrum may be 10 times the private value to the spectrum holder." Because auction revenue does not account for information rents to spectrum holders, which we discuss below, this indicates that welfare gains are more than 10 times the auction revenue.

[34] We use a 3% discount rate because conceptually, consumer surplus should reflect consumer expectations. However, relative to the other studies that we discuss above, 3% is a conservative value that implies lower annual consumer surplus because consumers are more patient. By comparison, Bazelon (2009) uses 5%, Hazlett & Muñoz (2009) use 5%, Bazelon & McHenry (2015) use 5% and 10%. Bazelon at 21 (2009); Hazlett & Muñoz (2009) at 433, n. 26; and Colemon Bazelon & Giulia McHenry, Mobile Broadband Spectrum: A Vital Resource for the U.S. (continued….)

in a net present value approximately 10 times as large the auction proceeds.[35] We therefore use 0.30 as the baseline for our consumer surplus multiplier lower bound.

13. Combining the range of multipliers (0.3 to 1.0) with the range of predicted revenues per MHz-POPs (${[XX]} to ${[XX]}), we calculate the range of undiscounted annual consumer surplus from enhanced wireless services to be between ${[XX]} billion and ${[XX]} billion.[36] Because FSS operations will transition out of the band in two phases, we estimate that approximately 72% of Americans will see consumer surplus gains starting at the beginning of 2031 and 100% of Americans will see consumer gains starting in the middle of 2031.[37] Using the range of annual consumer benefits of ${[XX]} billion and ${[XX]} billion, we find consumer surplus estimates vary between ${[XX]} billion and ${[XX]} billion using a 3% discount rate, and between ${[XX]} and ${[XX]} billion using a 7% discount rate.[38]

B. Producer Surplus

14. We derive our estimate of additional producer surplus from predicted auction revenues.[39] The price paid for spectrum in an auction should reflect the PDV of the future stream of profits the license holder expects to gain from holding it.[40] As a general matter, auction-based valuations may understate producer surplus because they do not account for information rents to the winning bidder—that is, the difference between the expected net present value of the winning bidder, and the actual auction payment that we observe.[41] Thus, producer surplus benefits will have two components: the auction revenues that

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Economy, Brattle Group Report at 16, https://api.ctia.org/docs/default-source/default-document-library/brattle_spectrum_051115.pdf (2015).

[35] The present value of a perpetuity at a 3% discount rate with discounting beginning in the second period is 1 + 1 / 3% = 34.33 times the annual payout. If the auction proceeds are 10 times the present value of the perpetuity, then the ratio between proceeds and perpetuity must be (10 × payouts) / (34.33 × payouts) = 29.1%.

[36]
$$[Lower\ /\ Upper]\ Bound\ Consumer\ Surplus\ =\ [Lower\ /\ Upper]\ Bound\ Multiplier\ \times\ [Lower\ /\ Upper]\ Bound\ Auction\ Price.$$

[37] As of 2020, 72.1% of Americans lived in the 75 PEAs subject to the first deadline.

[38] Given our deadlines, we calculate total surplus with an annual discount rate of d,

$$\{[(1+d)^{-4.5} - (1+d)^{-5}] \times 72.1\% + [(1+d)^{-5} - (1+d)^{-10}]\} \times (1+d^{-1}) \times Annual\ Consumer\ Surplus$$

Given our discount rates are all at an annual level, for simplicity, we conservatively assume that no consumer benefits accrue to 72.1% of the population before the initial deadline and that benefits do not accrue to the remaining population until the second deadline. Because the first deadline of December 30, 2030 is about four and half years after the release of this order, we discount by 4.5 years. In the equation above, we substitute the discount rates of 3% or 7% discount rates into *d* and the estimates of annual consumer benefit of ${[XX]} to ${[XX]} billion (*Multiple Deadlines Present Value Calculation*).

[39] We decline to estimate GDP effects, including to industries that rely on mobile connectivity, as done in the *NERA Study*, because we lack precise information to fully characterize the complex interactions—including payments to upstream suppliers and other third parties—that would allow us to properly tease out the portions of GDP gains that are not captured by consumer or producer surplus. *NERA Study* at 12–27. As such, we view our benefits calculations as underestimating the benefits of the *Report and Order*.

[40] *See, e.g.*, Bazelon & McHenry at 5 (2015).

[41] *See, e.g.*, Brett Katzman, Julian Reif, Jesse A. Schwartz, The Relation Between Variance and Information Rent in Auctions, 28 *International Journal of Industrial Organization* 127 (2010) ("[T]he expected price paid in a standard (continued….)

are transferred to the Treasury, and some amount of additional profit retained by the winning bidders. The record lacks information about how to estimate the latter, so we focus solely on auction revenues as a conservative estimate.

15. We estimate auction proceeds in the range of ${[XX]} billion to ${[XX]} billion.[42] Assuming that winning bidders use a 7% discount rate when valuing future profits that may be derived from holding rights to additional spectrum,[43] our auction revenue range implies ${[XX]} billion to ${[XX]} billion of annual profit after the second deadline.[44] Taking into account the clearing periods and limiting our analysis to the next 10 years, we estimate total producer surplus between ${[XX]} billion to ${[XX]} billion using a 3% discount rate and ${[XX]} billion to ${[XX]} billion using a 7% discount rate.[45]

V. COSTS

16. We estimate that the *Report and Order* will incur costs of ${[XX]} billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate. Winning bidders will have to pay 1) incentive payments to FSS operators in light of their unique role in expediting clearing by the relevant Transition Deadlines, 2) transition costs reimbursements, and 3) radio altimeter retrofit rebates.[46] We estimate the present value of transition costs to be ${[XX]} billion under a 3% discount rate and ${[XX]} billion under a 7% discount rate. We estimate the present value of incentive payments to be approximately ${[XX]} billion under a 3% discount rate and ${[XX]} billion under a 7% discount rate. We estimate the present value of rebates to be ${[XX]} billion under a 3% discount rate and ${[XX]} billion under a 7% discount rate. We estimate industry costs of participating in the auction to be $9.2 million and government costs of running the auction to be $2.4 million.

A. Costs of the FSS Transition.

17. Reallocation of the Upper C-band will require relocation of the services provided by the incumbent space station operators currently active in this band, SES, Eutelsat and Telesat. SES's proposed transition would maintain services on either the C-band or on a hybrid solution that cross-straps

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auction equals the expectation of the second-highest bidder value . . . whenever bidder beliefs are independent . . . . The winning bidder's expected surplus is often referred to as *information rent*."); *see also* Roger B. Myerson, Optimal Auction Design, 6 Mathematics of Operations Research (1981).

[42] As discussed above, we use a range of ${[XX]}/MHz-POP to ${[XX]}/MHz-POP to value a MHz-POP of upper C-band spectrum. Multiplying each of these figures by the 160 MHz of spectrum to be auctioned and the 2025 contiguous U.S. population estimate of 339,614,767 implies a range of ${[XX]} billion to ${[XX]} billion in auction proceeds. *U.S. Census Population*.

[43] In this case, profits are derived from estimates by firms about the future profits. The relevant discount rate is then the cost of capital, which Circular A-4 sets to 7%. *Circular A-4* at 33.

[44] Assuming that after the deadline, 72.1% of annual profits start to accrue after the first deadline and 27.9% of annual profits start to accrue after the second deadline:

$$Total\ Profits = (1.07^{-4.5} \times 72.1\% + 1.07^{-5} \times 27.9\%) \times (1 + 7\%^{-1}) \times Annual\ Profits$$
$$= 25.66 \times Annual\ Profits.$$

Long run annual profits then range from ${[XX]} billion (= ${[XX]} billion / 25.66) to ${[XX]} billion (= ${[XX]} billion / 25.66).

[45] We can use the formula for the present value of consumer surplus by replacing the *Annual Consumer Surplus* with *Annual Profits*. Our producer surplus estimates result from the use of 3% and 7% discount rates as *d* and the estimates of annual profit of ${[XX]} billion to ${[XX]} billion. *See Multiple Deadlines Present Value Calculation.*

[46] Incentive payments encourage eligible space station to clear FSS C-band operations from 4.0–4.16 GHz and maintain substantially the same service by the Transition Deadlines we establish herein.

C-band uplink with Ku-band downlink and adds a terrestrial recovery network in the areas most susceptible to rain fade.[47] If the Commission were to transition only 100 megahertz of upper C-band spectrum, SES claims that no new satellites would be required and all services could be maintained in the C-band, but that 160 megahertz requires investment and innovation to reconfigure its network and additional satellites.[48] We find SES's projections to be reasonable.

18. {[XX]}. The Commission estimated transition costs of the Lower C-band would be between $3.3 billion to $5.2 billion.[49] According to the Relocation Payment Clearinghouse, total realized payments were $3.4 billion.[50] {[XX]}.

19. We separate costs of transition into new satellite costs and non-satellite costs. SES projects that they will need to build and launch up to 7 additional satellites as part of a shift towards a hybrid solution.[51] Eutelsat predicts it will need up to 2 new satellites.[52] Adjusting for inflation, the Commission's estimate of the cost of one satellite is approximately ${[XX]} million,[53] so the total costs of 9 new satellites would be ${[XX]} billion.[54] Some non-satellite costs will come from repacking into the Upper C-band, similar to the Lower C-band. Most remaining operations would need migration to a hybrid solution using Ku-band downlinks, requiring antenna replacement and other modifications to the Earth Station, as well as a terrestrial backup network in certain areas. {[XX]}. We therefore use {[XX]}, and we estimate total undiscounted, non-satellite repacking cost to be ${[XX]} billion.[55]

20. Taking all transition costs together, we estimate undiscounted transition costs will be ${[XX]} billion (= ${[XX]} billion + ${[XX]} billion). We expect these costs to be incurred over five years, so we divide the cost evenly between years to allow us to calculate a total PV cost ${[XX]} billion using a 3% discount rate and a range of ${[XX]} billion using a 7% discount rate.[56]

B. Incentives

21. Potential incentive payments to incumbent space station operators to make spectrum available earlier for flexible use licensees are ${[XX]} billion in total. We estimate the split of the payments paid at the Primary and Final clearing deadlines as proportional to the population of PEAs subject to each deadline. Payments for meeting the Primary Deadline are then 72.1% of ${[XX]} billion, or approximately ${[XX]} billion, and payments for meeting the Final Deadline are then {[XX]}% of ${[XX]} billion, or approximately ${[XX]} billion. Incentive payments have a present value of ${[XX]}

[47] SES Comments at 13–14.

[48] SES Comment at 8–14.

[49] *2020 C-band R&O,* 35 FCC Rcd 2430–31, para. 210.

[50] *July 2025 RPC Quarterly Report* at 2.

[51] SES Comments at 10–14, Eutelsat Comments at 5.

[52] Eutelsat Reply Comments at 11–12.

[53] {[XX]}.

[54] The lower bound of satellites costs in 2026 dollars is ${[XX]} billion = ${[XX]} million × (7+2) satellites.

[55] {[XX]}.

[56] To properly discount five years of constant cost with 3% and 7% discount rates, we multiply by 4.72 and 4.39, respectively. *Discount Multipliers*. With a 3% discount rate, the range of PV costs is ${[XX]} billion = ${[XX]} billion / 5 × 4.72 and ${[XX]} billion = ${[XX]} billion / 5 × 4.72. With a 7% discount rate, the range of PV costs is ${[XX]} billion = ${[XX]} billion / 5 × 4.39 and ${[XX]} billion = ${[XX]} billion / 5 × 4.39. (*Transition Cost Calculations*).

billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate.[57]

C. Radio Altimeter Retrofit Rebates

22. We estimate that the FAA's retrofit requirements will affect approximately {[XX]} radio altimeter (RA) units on domestic part 121 airplanes, {[XX]} RA units on domestic part 91 and part 135 airplanes, and {[XX]} RA units on domestic part 91 and part 135 rotorcraft.[58] To support the retrofit efforts by the aviation industry, we estimate that aircraft rebates will be ${[XX]} billion to ${[XX]} billion.[59] We project a point estimate of ${[XX]} billion in rebates, with approximately ${[XX]} billion of this total, attributable to aircraft subject to the first FAA retrofit deadline, and approximately ${[XX]} billion for those aircraft subject to the second FAA retrofit deadline. We estimate the present value of the rebates to be between ${[XX]} billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate.[60]

D. Auction Participation Costs

23. Participating in the auction will involve a variety of tasks beyond the actual act of bidding, including rule familiarization, government filings, business and strategy planning, and specialized systems training.[61] The Lower C-band auction had 57 qualified bidders, so we assume approximately 60 bidders will participate in the Upper C-band auction.[62] We assume that a team of five people with diverse expertise will be required to effectively bid in the auction,[63] including lawyers, engineers, and other business specialists, some with senior experience.[64] We estimate the average annual compensation of a team member to be $211,306, based on the 90th percentile of wages in the

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[57] We discount the payments for meeting the first deadline using an annual discount rate of d by multiplying by $(1+d)^{-4.5}$, since it is about four and half years until the first deadline. We discount the payments for meeting the second deadline by multiplying by $(1+d)^{-5}$ since that deadline is about five years from now.

[58] FAA staff estimates of fleet size in 2030 and 2031, which use data from the MITRE Corporation. These have been adjusted relative to the figure reported in the *FAA NPRM*. *FAA NPRM*, 91 Fed. Reg. at 479.

[59] FAA staff estimates of aircraft subject to each deadline.

[60] We estimate annual rebates subject to the first deadline to the range of the undiscounted amounts by assuming a uniform distribution of rebates over time. We divide total rebates by 4.5, the approximate number of years between the *Report and Order* and the first deadline of December 30, 2030. We then calculate the present value of all rebates subject to the first deadline using the formula:

$$First\ Deadline\ Annual\ Rebates \times (1-(1+d)^{-4.5}) \times (1+d^{-1})$$

For the second deadline, we assume all rebates subject to it are requested after the first deadline and are uniformly distributed. We then divide total rebates subject to the second deadline by 3.84 = 8.34 – 4.5, the approximate number of years between the first deadline and the second deadline of October 31, 2034. We then calculate the present value of all rebates subject to the first deadline using the formula:

$$Second\ Deadline\ Annual\ Rebates \times ((1+d)^{-4.5}-(1+d)^{-8.34}) \times (1+d^{-1})$$

[61] Winning bidders in the auction must also pay application fees, but as fees are generally only a few thousand dollars each we consider these *de minimis* relative to labor costs.

[62] FCC, Auction 107: 3.7 GHz Service, https://www.fcc.gov/auction/107 (accessed Apr. 7, 2026).

[63] Our assumption could account for a team of more than five by decreasing the average time that any one team member works on the auction.

[64] Chris Doyle, Johnathan Mirlees-Black, & Chris Sutcliffe, CEPA, Spectrum Auctions: Thirty Years In The Making (Jan. 2023), at 10, https://www.cepa.co.uk/images/uploads/documents/Spectrum_auction_note_by_CEPA_LLP.pdf ("The significance of spectrum auctions is such that these often comprise senior management and appointed experts").

telecommunication industry.[65] Given the approximate time until the deadline of July 4, 2027, to run the auction, we assume it will require each team member to devote 20% of their work hours over one year to participate in the auction. Assuming an average team size of five people and 60 teams in total, we estimate the total costs of all bidders in the auction to be $9.2 million.[66]

E. Government Costs

24. We estimate the auction will require one year of work for a team of approximately twenty Commission employees to produce necessary documentation, to instruct the participants, and to conduct the auction. The auction will require significant legal and technical expertise, so we assume that each employee will on average have a relatively high level of total compensation annually of $238,132.[67] Given that Commission employees will also work over the next year on auction-related activities, we assume that these Commission employees will spend 50% of the next year working on the Upper C-band Auction. Total compensation of all 20 employees would then be approximately $2.4 million (= 20 × 50% × $ 240,000).

VI. ALTERNATIVE POLICIES

25. We compare the net benefits of our adopted policy against the following three alternatives that assume different amounts of auctioned spectrum: none, 100 megahertz, and 180 megahertz. No reallocation is the status quo, 100 megahertz is the minimum amount of spectrum required to be auctioned by the *OBBBA*,[68] and 180 megahertz is the maximum amount of spectrum considered in the *Upper C-Band NRPM*.[69] We also note that the reallocation of 160 megahertz adopted by the Commission is the maximum amount of spectrum that could be reallocated while still maintaining at least one transponder for C-band FSS service.[70]

A. Alternative A — Status Quo

26. In this scenario, no action would be taken by the Commission to reallocate spectrum in the C-band. We treat this case as the baseline for our analysis, in which no additional benefits or costs are incurred.

B. Alternative B — Reallocation and Auction of 100 Megahertz

27. We estimate auctioning 100 megahertz would result in consumer surplus ranges of ${[XX]} billion to ${[XX]} billion using a 3% discount rate and ${[XX]} billion to ${[XX]} billion using a 7% discount rate. Producer surplus ranges from ${[XX]} billion to ${[XX]} billion using a 3%

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[65] The Bureau of Labor Statistics reports May 2024 mean annual wages 75th percentile of workers in the telecommunications industry is $144,730. Bureau of Labor Statistics (BLS), *Occupational Employment and Wage Statistics Query System*, https://data.bls.gov/oes/#/industry/517000 (accessed April 22, 2026). According to the Bureau of Labor Statistics, as of December 2025, civilian wages and salaries averaged $33.45/hour and benefits averaged $15.33/hour. Using these figures, benefits constitute a markup of $15.33/$33.45 ~ 46%. Taking 46% for cost of benefits, we arrive at an annual compensation of $211,306 = ($144,730 × $146%). *See* Press Release, Bureau of Labor Statistics, Employer Costs for Employee Compensation—December 2025 (March 20, 2025), https://www.bls.gov/news.release/pdf/ecec.pdf (*Benefit Markup*).

[66] $12.1 million = $201,306 × 5 team members × 20% time × 1 year × 60 bidders.

[67] A Washington DC area employee of the pay grade level GS-14 step 5 earns $163,104 annually. Office of Personnel Management, Salary Table 2026-DCB, https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2026/DCB.pdf (accessed Apr. 22, 2026). Adding 46% for benefits, we find total compensation to be $238,132 = $163,104 × 146%. *Benefits Markup.*

[68] *See* OBBB Act, § 40002(b)(2) and *Upper C-band NPRM*, 40 FCC Rcd at 9468, para. 15.

[69] *Upper C-band NPRM,* 40 FCC Rcd at 9468, para. 15.

[70] *See* OBBB Act, § 40002(b)(2).

discount rate and ${[XX]} billion to ${[XX]} billion using a 7% discount rate.[71] With less spectrum reallocated compared to our adopted 160 megahertz alternative, the corresponding benefits are also lower.

28. With less potential gain from faster clearing, the necessary incentive payments would be lower. As a rough estimate, we assume the incentive payments are smaller than in the 160 MHz case in proportion to the amount of spectrum, offered in this scenario, i.e., by 37.5%. Incentive payments would only be ${[XX]} billion (=${[XX]} billion × 62.5%), with present values of ${[XX]} billion (=${[XX]} billion × 62.5%) and ${[XX]} billion (=${[XX]} billion × 62.5%), using 3% and 7% discount rates, respectively.

29. Transition costs will also be lower, as reallocating only 100 megahertz would require no additional satellites.[72] We therefore find undiscounted costs of the transition to be only non-satellite costs, or ${[XX]} billion. SES claims that 100 megahertz can be cleared in 30 months, so we assume clearing costs are distributed evenly over a period of 2.5 years.[73] Under this assumption, the present value of transition costs is still about ${[XX]} billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate.[74]

30. Other costs include the retrofit rebates, and labor costs involved with participating in and holding the auction. Changes to radio altimeters would still be required in this scenario, such that every plane would still need to be retrofitted. The activities required for participating in and holding the auction are largely invariant to the amount of spectrum in the auction, so bidder and government auction costs are also assumed not to change. Adding all these costs together, we estimate total costs would be ${[XX]} billion assuming a 3% discount rate and ${[XX]} billion assuming a 7% discount rate.[75]

C. Alternative C — Reallocation and Auction 180 Megahertz

31. An alternative proposal explored in the *C-band NPRM* was to auction 180 megahertz of the upper C-band.[76] While auctioning more spectrum would raise benefits, we estimate that reallocating more spectrum would have far higher potential costs, which lead us to conclude that the net benefits of this option are lower than reallocating 160 megahertz. Reallocating more spectrum would leave only a 40 megahertz guard band between new terrestrial wireless operations and radio altimeters, which could increase the difficulty of sustaining spectrum coexistence. We find that this could significantly delay the transition timeline by increasing the complexity of the transition. To take this into account we add one additional year to all transition deadlines, increasing the necessary discounting of new surplus from additional spectrum.[77] An auction of 180 megahertz then produces consumer surplus of between ${[XX]} billion to ${[XX]} billion with a 3% discount rate and ${[XX]} billion to ${[XX]} billion with a 7% discount rate and producer surplus ranges of ${[XX]} billion to ${[XX]} billion with a 3% discount

[71] All consumer and producer surplus calculations are multiplicative in the number of number of megahertz auctioned so determining the new surplus from an alternative of 100 megahertz of spectrum simply requires multiplying by the ratio 62.5% =100 / 160.

[72] SES Comments at 8–10.

[73] SES Comments at 3.

[74] We estimate *Annual Costs* = *Total Costs* / 2.5. Using a discount rate of *d*, we calculate present value as

$$Annual\ Costs \times (1 - (1 + d)^{-2.5}) \times (1 + d^{-1})$$

[75] *Present Value of Total Costs* = *Incentive Payments* + *Transition Costs* + *Retrofit Rebates* + *Auction Participation Costs* + *Auction Operation Costs*.

[76] *Upper C-band NPRM*, 40 FCC Rcd at 9468, para. 15.

[77] To make an equivalent comparison to other scenarios, we also increase the end date of our analysis to June 30, 2037, so that in practice, we retain a window of 10 years.

rate and ${[XX]} billion to ${[XX]} billion with a 7% discount rate.[78]

32. With greater potential gain, the necessary incentive payments to expedite clearing would likely be higher. As a rough estimate, we assume the incentive payments are greater than the 160 megahertz case in proportion to the amount of spectrum offered in this scenario, i.e., by 12.5%. Incentive payments would then increase to ${[XX]} billion (=${[XX]} billion × 112.5%) with present values of ${[XX]} billion (=${[XX]} billion × 112.5% ÷ 103%) and ${[XX]} billion (=${[XX]} billion × 112.5%÷ 107%), using 3% and 7% discount rates, respectively. Reallocating 180 megahertz also effectively precludes any repacking into the C-band given a full C-band transponder would no longer be in use, and would therefore require all C-band services to be relocated to a different transmission method.[79] Satellite costs would increase, as at least two additional satellites must be launched compared to the 160 megahertz alternative.[80] We therefore predict ${[XX]} million additional satellite costs increasing transition costs to ${[XX]} billion, resulting in present values of ${[XX]} billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate.[81] As with the 100 megahertz alternative, we estimate the costs of auction participation and operation costs would remain the same as the 160 megahertz alternative.

33. The lack of a single full C-band transponder would also mean that critical services would not have access to the C-band. The record does not detail the specific nature of these services in the C-band, so we cannot quantitatively estimate the effect of such a change. We estimate present values of the remaining total quantifiable cost to be between ${[XX]} billion using a 3% discount rate and ${[XX]} billion using a 7% discount rate.[82]

D. Alternative D (Adopted Rules) — Reallocation and Auction of 160 Megahertz

34. The alternative of a 160 megahertz auction, adopted in these rules, yields benefits of ${[XX]} billion to ${[XX]} billion with a 3% discount rate, and ${[XX]} billion to ${[XX]} billion with a 7% discount rate; and yields costs of ${[XX]} billion with a 3% discount rate, and ${[XX]} billion with a 7% discount rate.

VII. JUSTIFICATION DETERMINATION

A. Benefits Exceed Costs

35. We calculate the range of net benefits as the lower bound of benefits minus the upper bound of costs and the upper bound of benefits minus the lower bound of costs. Accordingly, we estimate a range of net benefits for our primary alternative of auctioning 160 megahertz of spectrum to be ${[XX]} billion to ${[XX]} billion with a 3% discount rate and ${[XX]} billion to ${[XX]} billion with a 7% discount rate. As net benefits are positive for both ranges, we conclude that benefits will exceed costs under the adopted rules.

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[78] Within the 10 year window, consumer and produce surplus are both multiplicative with the amount of spectrum and the amount of time discounting. With 180 megahertz, both increase by a factor over the 160 megahertz alternative by 112.5% =180 megahertz / 160 megahertz and decrease by a factor of either 97.09% (= 100% / 103%) or 93.46% = (100% / 107%). So consumer and product surplus increases by 109.22% = 112.5% × 97.09% with a 3% discount rate or by 105.14% = 112.5% × 93.46% with a 7% discount rate.

[79] SES Comments at 16.

[80] SES Comment at 8. Eutelsat reports no increase in the number of needed satellites after the reallocated spectrum reaches 130 megahertz. Eutelsat Reply Comments at 11–12.

[81] We modify our 160 megahertz present value transition costs by adding ${[XX]} million = 2 × ${[XX]} million of additional satellite costs. *Transition Cost Calculations.*

[82] *See supra* n.76.

B. Highest Net-Benefit Alternative

36. We estimate a range of net benefits for the alternative of auctioning 100 megahertz of spectrum to be between ${[XX]} billion to ${[XX]} billion with a 3% discount rate and ${[XX]} billion to ${[XX]} billion with a 7% discount rate. These bounds are strictly lower than those associated with the 160 megahertz alternative, so the 160 megahertz alternative yields a higher net benefit. Given our inability to estimate the costs of C-band unavailability on critical services for the 180 megahertz alternative, we cannot perform a similar direct quantitative comparison. However, we judge the importance of critical services to be high enough that we should reject the 180 megahertz option. We therefore find the 160 megahertz alternative to be the highest net-benefit alternative.