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

In the Matter of	)	
	)	
Facilitating More Intensive Use of Upper Microwave Spectrum	)	SB Docket No. 25-305
	)	

NOTICE OF PROPOSED RULEMAKING

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By the Commission: Chairman Carr and Commissioner Trusty issuing separate statements.

I. INTRODUCTION

1. As the space economy has rapidly expanded in recent years, Fixed Satellite Service (FSS) operators' demand for spectrum to deliver broadband to the American people has far exceeded what was expected only a few years ago. And given the finite amount of available spectrum, the Commission must continue to search for ways to make sure bands are intensively used. Therefore, in this *Notice of Proposed Rulemaking* (*NPRM*), we begin a review of our rules and policies applicable to upper microwave spectrum bands above 24 GHz that are shared between the terrestrial Upper Microwave Flexible Use Service (UMFUS) and FSS. In light of technological and economic advancements and with the benefit of experience following the Commission's 2016 *Spectrum Frontiers Report and Order and Further Notice of Proposed Rulemaking* (*Spectrum Frontiers Report and Order*),[1] in which most of the rules governing bands used for UMFUS were adopted, now is an opportune time to consider how we might facilitate more intensive use of these bands. In particular, this *NPRM* seeks comment on section 25.136 of the Commission's rules,[2] which governs spectrum sharing between UMFUS and FSS operations.

II. BACKGROUND

2. The July 2016 *Spectrum Frontiers Report and Order* aimed to "take a significant step towards securing the Nation's future in the next generational evolution of wireless technology to so-called 5G."[3] While these frequencies previously had been thought best suited for satellite and fixed microwave applications, the Commission noted that "recent technological breakthroughs ha[d] newly enabled advanced mobile services in these bands, notably including very high speed and low latency services."[4] Accordingly, the chief objective of the *Spectrum Frontiers Report and Order* was to make spectrum available for advanced wireless services using the UMFUS bands.

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[1] *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, GN Docket No. 14-177, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016) (*Spectrum Frontiers Report and Order*).

[2] 47 CFR § 25.136.

[3] *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8017, para. 1.

[4] *Id* at 8017-18, para. 1.

3. *Creation of UMFUS Licensing Framework*. The *Spectrum Frontiers Report and Order* made spectrum available through both licensed and unlicensed mechanisms. The Commission created the UMFUS framework, which permitted authorization of both fixed and mobile operations in the 27.5-28.35 GHz band (28 GHz band), the 37.7-38.6 GHz (upper 37 GHz band), and the 38.6-40 GHz band (39 GHz band) using geographic area licensing.[5] In the 28 GHz band, the Commission permitted authorizations using county-sized geographic area licenses.[6] In the upper 37 and 39 GHz bands, it permitted authorization using Partial Economic Area (PEA) licenses.[7] In the 37-37.6 GHz band, it established coordinated co-primary shared access between Federal and non-Federal users.[8] The Commission also protected a limited number of Federal military sites across the full 37 GHz band and maintained the existing Federal fixed and mobile allocations throughout the band.[9]

4. The *Spectrum Frontiers Report and Order* also established licensing and operating rules for UMFUS. It granted mobile operating rights in the 28 GHz band to existing Local Multipoint Distribution Service (LMDS) licensees.[10] Similarly, the *Spectrum Frontiers Report and Order* granted mobile operating rights to existing 39 GHz band licensees.[11] The Commission revised the 39 GHz band plan to provide licensees with wider blocks of contiguous spectrum and established a mechanism for existing licensees to transition to the new band plan.[12] It adopted service and technical rules designed to facilitate full and complete use of the bands, including an operability requirement for equipment.[13] It adopted spectrum holdings policies for the 28 GHz, 37 GHz, and 39 GHz bands that apply to licenses acquired through auctions and the secondary market.[14]

5. The November 2017 *Second Spectrum Frontiers Report and Order* made an additional 1,700 megahertz of spectrum available for flexible wireless use.[15] Specifically, the *Second Spectrum Frontiers Report and Order* made spectrum available in the 24.75-25.25 GHz (24 GHz band) and the 47.2-48.2 GHz (47 GHz band).[16] The UMFUS framework was expanded to include both bands, which

[5] *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8023-61, paras. 19-124.

[6] *Id.* at 8029-30, paras. 35-36.

[7] *Id.* at 8046-47, 8059-60, paras. 82, 111-13.

[8] *Id.* at 8059-60, paras. 111-13. Because the Commission has a separate proceeding addressing the 37-37.6 GHz band, *see Lower 37 GHz Band; Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, WT Docket. No. 24-243 and WT Docket No. 24-243, Report and Order, Sixth Report and Order, and Further Notice of Proposed Rulemaking, 40 FCC Rcd 3413(2025), that band is outside the scope of this proceeding. Note that FSS is not allocated in the 37-37.5 GHz portion of the band. In the 64-71 GHz band, the Commission authorized unlicensed operations under Part 15 based on the rules for the adjacent 57-64 GHz band. *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8064-65, para. 130. This action provided more spectrum for unlicensed uses such as Wi-Fi-like "WiGig" operations and short range devices for interactive motion sensing. *Id.* at 8018, 80654, paras. 4, 130.

[9] *Id.* at 8070-71, paras. 148-51.

[10] *Id.* at 8031, para. 41.

[11] *Id.* at 8048, para. 86.

[12] *Id.* at 8053-56, paras. 95-96, 98-100.

[13] *Id.* at 8127, paras. 321-24.

[14] *Id.* at 8081-84, paras. 183-90.

[15] *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.,* GN Docket No. 14-177, *et al.*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order, 32 FCC Rcd 10988, 10990, para. 2 (2017) (*Spectrum Frontiers Second Report and Order*).

[16] *Id.*

could be licensed geographically for fixed and mobile use on a PEA basis.[17]

6. In the *V-band First Report and Order* in 1998, the Commission designated the 50.4-51.4 GHz segment for use by fixed and mobile services.[18] In 2019, the *Spectrum Frontiers Fifth Report and Order* authorized licensing of individual FSS earth stations in the 50.4-51.4 GHz (50 GHz band), applying the UMFUS licensing criteria adopted by the Commission for the 24.75-25.25 GHz band—that is, applying the permitted aggregate population limits within the specified earth station power flux density contour on a per-county basis and adopting constraints on the number of permitted earth stations on both a per county and a per PEA basis.[19]

7. In 2019, the Commission held three spectrum auctions (Auctions 101, 102, and 103) through which it awarded licenses for fixed and mobile services in UMFUS spectrum.[20] Through these auctions, a total of 20,011 licenses were awarded in the 24 GHz, 28 GHz, 37 GHz, 39 GHz, and 47 GHz bands, with total net bids of $10,283,281,951.[21]

8. *UMFUS-FSS Sharing.* Each of the 24 GHz, 28 GHz, upper 37 GHz, 39 GHz, 47 GHz, and 50 GHz bands (the UMFUS bands) is also allocated for FSS, in addition to fixed and mobile services, in the U.S. Table of Frequency Allocations.[22] In the 28 GHz band, FSS is allocated on a secondary basis. In the other bands, FSS is allocated on a co-primary basis with fixed and mobile services.[23] In the upper 37 GHz band and the 39 GHz band, FSS is allocated in the space-to-Earth direction, while in the other bands, FSS is allocated in the Earth-to-space direction.[24]

[17] *Spectrum Frontiers Second Report and Order*, 32 FCC Rcd at 10994-98, 11002-04 paras. 15-28, 43-50.

[18] *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands, et al.*, IB Docket No. 97-95, RM-8811, First Report and Order, 13 FCC Rcd 24649, 24651, para. 2 (1998) (jointly referring to fixed and mobile services as "wireless service").

[19] *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, *et al.,* GN Docket No. 14-177, Fifth Report and Order, 34 FCC Rcd 2556, 2560-61, paras. 10-12 (2019) (*Spectrum Frontiers Fifth Report and Order*).

[20] *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 (OEA 2020) (*Auction 103 Winning Bidders Public Notice*); *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 (OEA 2019) (*Auction 101 Winning Bidders Public Notice*); *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 (OEA 2019).

[21] *See id.*; *Auction 103 Winning Bidders Public Notice*; *Auction 101 Winning Bidders Public Notice*.

[22] 47 C.F.R. § 2.106.

[23] *Id.*

[24] *Id.*

Band	FSS Sharing Status	Direction	25.136 Criteria	Other Rights
24 GHz (24.75-25.25)	Co-primary	Earth-to-space	25.136(e), (f)-(h)	
28 GHz (27.5-28.35)	Secondary	Earth-to-space	25.136(a), (f)-(h)	
Upper 37 GHz (37.5-38.6)	Co-primary	37.5-38 (space-to-Earth) 38-38.6 (space-to-Earth)	25.136(b)-(c), (f)-(h)	Certain federal military sites specifically protected (US151) federal co-primary across the band
39 GHz (38.6-40)	Co-primary	space-to-Earth	25.136(b)-(c), (f)-(h)	39.5-40 GHz: federal co-primary
47 GHz (47.2-48.2)	Co-primary	Earth-to-space	25.136(d), (f)-(h)	
50 GHz (50.4-51.4)	Co-primary	Earth-to-space	25.136(e), (f)-(h)	

9. In the *Spectrum Frontiers Report and Order* in 2016, the Commission first adopted section 25.136, which specified conditions under which FSS earth stations could coexist with UMFUS operations in the 28 GHz, Upper 37 GHz, and 39 GHz bands.[25] The Commission later adopted similar requirements for the 24 GHz, 47 GHz, and 50 GHz bands.[26] While the specific requirements vary from band to band, section 25.136 defines four circumstances under which individually licensed FSS earth stations could be authorized to operate, conducting Earth-to-space operations, without providing interference protection to UMFUS stations.[27] An FSS operator may operate an earth station in such a manner if: (1) the FSS operator holds an UMFUS license covering the frequencies and location where its proposed earth station would generate a power flux density (PFD), at 10 meters above ground level, of greater than or equal to -77.6 dBm/m^2/MHz;[28] (2) the earth stations was authorized before the effective date of the relevant coexistence rule;[29] (3) the earth station's application was filed and pending before the

[25] *See Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8031-38, 8048-8052, 8200-02, paras. 43-60, 88-93, Appendix A.

[26] *See*, *e.g.*, *Spectrum Frontiers Second Report and Order*, 32 FCC Rcd at 11005-06, 11080-82, paras. 54-56, Appendix A; *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, *et al.*, GN Docket No. 14-177, WT Docket No. 10-112, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, 33 FCC Rcd 5576, 5585-86, 5646-48, paras. 22-25, Appendix A (2018); *Spectrum Frontiers Fifth Report and Order*, 34 FCC Rcd at 2561-2562, 2568-2571, para. 5-7, Appendix A.,

[27] *See* 47 CFR § 25.136(a) (setting forth criteria for licensees operating in the 27.5-28.35 GHz band); *id.* §§ 25.136(b), (c) (setting forth criteria for licensees operating in the 37.5-40 GHz band); *id.* § 25.136(d) (setting forth criteria for licensees operating in the 47.2-48.2 GHz band); *id.* § 25.136(e) (setting forth criteria for licensees operating in the 24.75-25.25 GHz and 50.4-51.4 GHz bands).

[28] *Id.* §§ 25.136(a)(1), (d)(1), (e)(1).

[29] *Id.* §§ 25.136(a)(2), (d)(2), (e)(2) (governing earth stations in the 28 GHz, 47 GHz, and 24 GHz and 50 GHz bands, respectively, and specifying grandfathering dates in 2016, 2018, and 2019, depending on the band).

effective date of the coexistence rule;[30] and (4) the earth station satisfies certain requirements (UMFUS Protection Criteria) discussed immediately below.

10. Under the UMFUS Protection Criteria, a proposed FSS earth stations may operate without providing protection to UMFUS stations if it satisfies four criteria. First, the earth station must not cause the total number of earth stations in the relevant area to exceed a numerical cap. The number of earth stations within each county is capped at three.[31] Operations between 37.5-40 GHz also are limited to fifteen earth stations per PEA.[32] Second, the earth station must be sited in a location such that it complies with limits on the population that may be covered by the aggregate areas of operation of earth stations in the license area.[33] In bands allocated for Earth-to-space operations, the relevant area of operations is the area within which the earth station generates a power flux density (PFD), at 10 meters above ground level, of greater than or equal to -77.6 dBm/m^2/MHz.[34] In bands allocated for space-to-Earth operations, earth stations operate in protection zones that are self-defined using reasonable engineering methods.[35] Third, the earth station's area of operation may not cover certain defined types of infrastructure or major roads.[36] Finally, in areas where there is a co-channel UMFUS licensee, the FSS operator must successfully coordinate the proposed earth station with the UMFUS licensee using the coordination processes contained in part 101 of the Commission's rules.[37] When first announcing what would become the UMFUS Protection Criteria, the Commission stated that "[t]hese conditions are designed to provide FSS licensees with substantial opportunities to expand their limited use of the [spectrum] to deploy earth stations that do not have to protect terrestrial services, while minimizing the impact on terrestrial operations."[38]

11. *UMFUS Coverage and Buildout Requirements.* In the *Spectrum Frontiers* proceeding, the Commission adopted UMFUS buildout and coverage requirements[39] to comply with the statutory obligation to prevent spectrum warehousing and to create a regulatory scheme that promoted the

[30] *Id.* §§ 25.136(a)(3), (d)(3), (e)(3) (grandfathering earth stations based on the band and application filing dates).

[31] *Id.* §§ 25.136(a)(4)(i), (c)(1), (d)(4)(i), (e)(4)(i).

[32] *Id.* § 25.136(c)(1).

[33] *Id.* §§ 25.136(a)(4)(ii), (c)(2), (d)(4)(ii), (e)(4)(ii).

[34] *Id.* §§ 25.136(a)(4)(ii), (d)(4)(ii), (e)(4)(ii).

[35] *Id.* § 25.136(b).

[36] *Id.* §§ 25.136(a)(4)(iii), (c)(3), (d)(4)(iii), (e)(4)(iii). The specific types of protected infrastructure are major event venues, urban mass transit routes, passenger railroads, or cruise ship ports. In addition, the area shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR § 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. *Id.*

[37] 47 CFR § 25.136(a)(4)(iv), (c)(4), (d)(4)(iv), (e)(4)(iv) (each citing 47 CFR § 101.103(d)).

[38] *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8039, para. 55.

[39] *See* 47 CFR § 30.104. These requirements vary, and involve providing reliable signal coverage and service to a certain portion of the population within the licensee's service area, providing reliable signal coverage to a certain percentage of the licensee's geographic area, constructing a certain number of links, or deploying transmitters or receivers in a sufficient percentage of census tracts within the license area. *Id.* § 30.104 (a), (b). The Commission evaluates showings that rely on a combination of multiple types of service on a case-by-case basis, but licensees may not combine population-based showings with geographic area-based showings. *Id.* § 30.104(c). If an UMFUS licensee that is also a FSS licensee uses the spectrum covered under its UMFUS license in connection with a satellite earth station, it can demonstrate compliance with buildout and coverage requirements by showing that the earth station in question is in service, operational, and using the spectrum associated with the license, but only to demonstrate compliance for the county in which the earth station is located. *Id.* § 30.104(d).

widespread deployment of wireless broadband.[40] Operators with 28 GHz band LMDS licenses that were converted to UMFUS licenses in the *Spectrum Frontiers Report and Order* had until June 1, 2024 to fulfill these requirements.[41] Because initial authorizations have a term not to exceed ten years from the date of initial issuance or renewal,[42] the buildout deadlines for licenses obtained in 2019 and 2020 in Auctions 101, 102, and 103 are in 2029 and 2030[43]. Failure to meet buildout requirements results in cancellation of the UMFUS license, except in bands licensed on a PEA basis, where licensees have the option of partitioning a license on a county basis in order to reduce the population or land area within the license area to a level where the licensee's buildout would meet one of the requirements.[44]

III. DISCUSSION

A. Introduction

12. The Commission adopted the *Spectrum Frontiers Report and Order* in 2016, and the technical restrictions contained therein, against the background of three predictive assumptions. First, the Commission anticipated that the spectrum at issue would be used intensively as a part of terrestrial 5G networks. Second, the Commission believed that earth station deployment in the UMFUS bands would be relatively light consistent with past experience.[45] At that time, the boom in space operations, including the deployment of large non-geostationary orbit (NGSO) satellite constellations and high throughput geostationary orbit (GSO) satellites delivering high-speed broadband and other services, was still several years away. Third, the Commission believed that the technical rules adopted in section 25.136 were necessary to protect terrestrial UMFUS operations but not too onerous to chill FSS earth station siting.

13. Today, however, we have reason to believe that all three of these predictive assumptions were incorrect in meaningful ways. The UMFUS bands have not turned out to be core terrestrial wireless spectrum. As of today, there has been less emphasis on incorporating upper microwave spectrum into 5G networks than the Commission anticipated. Wireless operators have struggled with the short range and poor penetration of signals in the UMFUS bands. As a result, outside of a few urban hotspots, there do not appear to be many dense 5G deployments to protect. Even in urban areas, building loss appears to be the primary impediment to 5G deployment, not interference from other operations in the bands. Instead, 5G deployments have been largely focused on mid-band spectrum. AT&T and T-Mobile have traditionally remained focused on the mid-band spectrum.[46] Verizon rolled out ultra-wideband base stations very rapidly at first and had deployed more than 30,000 such nodes in at least 82 cities and 60 stadiums and arenas by the end of 2021, with upper microwave fixed wireless access (FWA) provided to homes in 57 cities.[47] Verizon later slowed its upper microwave mobile service deployments, however, in

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[40] *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8085-90, paras. 196-210 (citing 47 U.S.C. § 309(j)(4)(B)).

[41] *Id.* at 8092, para. 220.

[42] *See* 47 CFR § 30.103.

[43] *See supra,* para. 7.

[44] 47 CFR § 30.104(e).

[45] For example, in 2015, there were 15 FSS applications filed to operate in the 28 GHz band.

[46] AT&T spent $23 billion in the 2021 C-band auction to secure 80 megahertz of mid-band spectrum. *Wireless Telecommunications Bureau Grants Auction 107 Licenses*, Public Notice, 36 FCC Rcd 10,972 (WTB 2021). AT&T invested far less to acquire 39 GHz spectrum in 2020. *Wireless Telecommunications Bureau Grants Auction 103 Upper Microwave Flexible Use Service Licenses*, Public Notice, 35 FCC Rcd 8824 (WTB 2020). T-Mobile holds significant spectrum in the 2.5 GHz band—with significantly less emphasis on the millimeter wave bands.

[47] Qualcomm Japan, "Proposal for Promoting the Utilization of 5G and Millimeter Waves," February 7, 2023, p. 33, https://www.soumu.go.jp/main_content/000860192.pdf (last visited Oct. 22, 2025). By the end of 2023, Verizon was using millimeter wave base stations in more than 1,500 cities across the U.S., with more than 40,000 base stations installed in locations such as stadiums, train stations, and other dense urban areas.

favor of mid-band 5G, and announced plans to make use of upper microwave bands to deliver FWA to apartments and office buildings in high-density urban areas.[48] A review of compliance with the June 1, 2024 performance requirement deadline for incumbent 28 GHz licenses indicates that terrestrial use of upper microwave spectrum appears to be light. T-Mobile, which had held 550 incumbent 28 GHz licenses, voluntarily turned in 516 of those licenses for cancellation.[49] Two other licensees voluntarily turned in 52 licenses for cancellation.[50]

14. On the other hand, as both the space marketplace and the relevant technology have developed, there is now considerably more satellite interest in using the upper microwave bands, particularly the 28 GHz band. We have seen the growth of large NGSO constellations alongside the deployment of next-generation GSO satellites, and a corresponding nearly 400 percent increase in the number of earth station applications submitted to operate in these bands over the most recent five year period. Specifically, over the five-year period from January 2016 to December 2020, 164 applications were filed for earth stations in the UMFUS bands.[51] By contrast, from January 2021 through August 2025, 607 earth station applications were filed for operations in these bands. Finally, the restrictions on earth station deployment contained in section 25.136 have proven needlessly burdensome on FSS operators, particularly given the light deployment by UMFUS licensees.

15. In the *Spectrum Frontiers Proceeding*, ViaSat, a satellite communications provider that provides satellite broadband services to customers, including in the Ka-band (27-40 GHz), encouraged the Commission to allow greater satellite access to "core" spectrum bands premised on the reliable availability of other "non-core" spectrum, on an interference-protected basis, for widely-deployed satellite user terminals.[52] O3b Limited urged the Commission to ensure the development of rational policies for spectrum use and spectrum sharing by addressing the possible future 5G policies in parallel with proceedings addressing incumbent satellite services above 24 GHz.[53] SpaceX asks that the Commission ensure the availability of adequate spectrum for existing and future satellite requirements as it considers possible 5G services in these higher bands.[54]

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[48] Dan Jones, Fierce Network, *Verizon doubles down on FWA* (Oct. 23, 2024), https://www.fierce-network.com/wireless/verizon-doubles-down-fwa-q3-call.

[49] *See* license cancellation applications filed by T-Mobile License, LLC between May 7, 2024, and February 24, 2025. T-Mobile did meet the buildout requirements for 12 full licenses and 18 partitioned licenses where it returned a portion of the license to the Commission and then met the performance requirement for the smaller area. *See*, *e.g.*, T-Mobile License, LLC, Notification of Construction, 28 GHz Waiver Request, ULS File No. 0011088151 (filed July 16, 2024).

[50] *See* Central Texas Communications, Inc., File Nos. 0011623327- 0011623333, 0011623335- 00116265 (filed June 25, 2025, granted June 26, 2025). Louisiana Competitive Telecommunications, Inc., File Nos. 0011623712-0011623725 (filed June 25, 2025, granted June 26, 2025).

[51] This figure is based on Commission staff review of ICFS data.

[52] Comments of Viasat, Inc., GN Docket No. 14-177 at 2, 9 (rec. Sep. 30, 2016). Viasat explains that satellite networks require access to "core" spectrum bands, in which satellite services can operate unimpeded by the operation of terrestrial services, as well as spectrum in which they can operate on a non-interference, non-protected, or other opportunistic basis. *Id.*at 9. In "non-core" bands, satellite networks can significantly expand network capacity by operating on a shared basis with terrestrial wireless services through more limited operations, such as individually-licensed, interference-protected earth stations, and opportunistic, non-interfering user terminals operating at locations and times when co-channel wireless operations are not occurring. *Id.* at 9-10; *see also,* Cnet.com, Viasat Home Internet Review: Plans, Pricing, Speed and Availability, https://www.cnet.com/home/internet/viasat-internet-review/ (describing the plans, data rates, and costs of Viasat Unleashed broadband service, which was introduced in March of 2024) (last visited Oct. 22, 2025).

[53] Comments of O3B Limited, GN Docket 14-177 at 11-12 (rec. Jan. 15, 2015).

[54] Reply Comments Space Exploration Technologies Corp., GN Docket 14-177 *et al.* at 4-6 (rec. Feb. 18, 2015).

16. Given the intervening ramp up in space economy activity and the increased volume of applications for FSS earth station licenses, particularly in the 28 GHz band, the complex technical criteria contained in section 25.136 have posed challenges to the timeliness of the Commission's processing of earth station applications in the bands used for UMFUS and, therefore, to industry.[55] For example, in comments filed in the *Delete, Delete, Delete* proceeding, Astranis Space Technologies Corp. (Astranis) suggests that the complex showings required under section 25.136 inhibited timely spectrum access by delaying the processing of earth station applications.[56] Astranis also indicates that "lack of certainty regarding access to the 27.5-28.35 GHz frequency band (due to the complex siting requirements of [s]ection 25.136 of the Commission's rules) forces [U.S.] companies like Astranis to consider locating their tracking, telemetry and control or gateway earth stations in other countries."[57] Meanwhile, the Satellite Industry Association also states that "[o]ther countries are recognizing that mmWave spectrum is underutilized and are revising their rules to enable more use by FSS earth stations."[58]

17. In light of the Commission's experience with the existing section 25.136 rules, developments in the space economy, including increased demand for spectrum resources, this *NPRM* seeks comment on a variety of ways to encourage more intensive use of spectrum in the UMFUS bands and to ensure the Commission's licensing processes scale with the demand for licenses. The first set of questions and proposals we discuss involve replacing the section 25.136 criteria and part 101 manual coordination framework with a light-licensing approach. Next, we discuss market-based approaches to encourage increased usage of the UMFUS bands. Then, we seek input on changes to section 25.136 and on revising regulatory showings applicants are required to make to demonstrate compliance with section 25.136 during the application process. Finally, we seek comment on alternative frameworks that might replace the rule in order to modernize the Commission's overall approach to licensing earth stations in these bands. What are the costs and benefits of our proposals, and any alternatives commenters may advocate? How do we ensure that the proposals in this *NPRM* do not adversely affect or degrade federal government operations or capacity? When responding to the questions and proposals contained in this *NPRM*, parties are encouraged to be as specific as possible and to provide input concerning the potential impact on small entities and any alternatives that would better serve the needs of small entities.

B. Light Licensing

18. Many commenters have suggested "light licensing" as a way to expedite earth station siting in the UMFUS bands. As envisioned, light licensing would replace the section 25.136 criteria and the part 101 manual coordination framework through a two-step process.[59] First, holders of a nationwide,

[55] Space Bureau application speed of disposal times for earth station applications seeking to operate in these bands has nearly doubled over the last five years. Some of this additional time has been due to the sheer volume of additional applications; the complexity of the technical requirements may also lead to significant back-and-forth with applicants. In other cases, applications seeking waiver of parts of the section 25.136 technical criteria require additional staff analysis. Currently, there are 75 pending applications for operations in these bands.

[56] *See* Astranis Space Technologies Corp. Comments, GN Docket No. 25-133, at 5-6 (rec. Apr. 14, 2025); s*ee also* Astranis Space Technologies Corp. Reply Comments, GN Docket No. 25-133, at 3 (rec. Apr. 29, 2025) (noting that an application for an earth station to operate in the 28 GHz band has been pending for more than 2 years).

[57] *See* Letter from Kimberly M. Baum, Head of Regulatory, Astranis Space Technologies Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 25-133, at 2 (filed Apr. 21, 2025).

[58] *See* Letter from Tom Stroup, President, Satellite Industry Association. to Marlene Dortch, Secretary, FCC, IB Docket Nos. 17-95 and 18-315, at 5 (filed May 7, 2025).

[59] *See* Letter from Michael Calabrese, Director, Wireless Future Open Technology Institute at New America to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 1 (filed Oct. 21, 2025) (OTI Oct. 21 *Ex Parte* Letter); Letter from Dave Cavossa, President, Commercial Space Federation to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 5 (filed Oct. 21, 2025) (CSF Oct. 21 *Ex Parte* Letter); Letter from Angela Simpson, General Counsel/SVP, Competitive Carriers Association to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 1-2 (filed Oct. 21, 2025) ("A new light-licensing approach in these bands could dramatically reduce transaction costs, (continued….)

non-site earth station licenses would register sites in a common, automated database(s) alongside terrestrial licensees.[60] As part of the registration process, the database would run an automated check to determine if a proposed earth station would interfere with previously registered base stations, calculated using deployment information in the database.[61] Second, depending on the results of this automated interference check, an operator might be permitted to register its proposed site ("green light"), it might be blocked from registration ("red light"), or it might be required to coordinate further with existing site(s) to resolve any potential interference issues prior to registration ("yellow light").

19. The Commission recently sought comment on incorporating earth station gateways in the light-licensing database currently used for terrestrial fixed links under subpart Q of part 101, such that the database could serve as a unified portal for operations in the 70/80/90 GHz bands that are licensed under a nationwide, non-exclusive license.[62] We seek comment on whether such a portal could support deconfliction of satellite and terrestrial operations in the UMFUS bands.

20. We note differences between the 70/80/90 GHz and UMFUS bands, and we seek comment on their relevance as to light licensing. For one, terrestrial licenses in 70/80/90 GHz are not authorized on a geographic basis, unlike terrestrial licenses in the UMFUS band. Is light licensing consistent with the character and design of geographic-area, terrestrial UMFUS licenses? Would a link-registration obligation create the kind of undue burden for terrestrial operators that geographic licensing was intended to avoid? Does a registration requirement, without more, change the nature of the terrestrial licenses purchased at auction, even if the licensee can provide the same level of service afterwards? On the other hand, could a light-licensing database better help terrestrial licensees protect their investments from interference? For another, federal users operate across the entire 70/80/90 GHz bands, whereas federal users only operate in 37.5-38.6 GHz and 38.6-40 GHz. The current 70/80/90 GHz registration databases connect to the NTIA federal user system, which generate green, yellow, and red lights based on an initial interference check of site parameters. Should a similar approach be pursued for UMFUS bands that are shared with federal users? For UMFUS bands without federal users, could a similar light-licensing framework similarly coordinate non-federal users?

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accelerate fixed rural wireless and backhaul deployment, and make valuable spectrum immediately usable by competitive carriers without the need for new auctions.").

[60] In the *Space Modernization for the 21st Century* Notice of Proposed Rulemaking the Commission seeks comment on questions related to the establishment of a nationwide, non-site license broadly and not specific to any frequency bands. *See In The Matter of Space Modernization for the 21st Century*, Notice of Proposed Rulemaking, SB Docket No. 25-306, FCC-CIRC 2510-01 (2025) (*Modernization NPRM*). For the purposes of establishing a fulsome record, our discussion in this proceeding presupposes the establishment of the proposals regarding the nationwide, non-site license made in the *Modernization NPRM*. However, we recognize that the *Modernization NPRM* is an ongoing proceeding and the outcome of the issues raised in that proceeding have not been determined and are subject to notice and comment procedures. Therefore, in this proceeding we do not invite comment or re-open any of the inquires made in the *Modernization NPRM* nor do we incorporate the open *Modernization NPRM* docket into this proceeding.

[61] *See* Letter from Joseph Bissonette, Space Exploration Technologies Corp. to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 4-5 (filed Oct. 22, 2025) (SpaceX Oct. 22 Ex Parte Letter); Letter from Fredrich Lamprecht, President, Micronet Communications, Inc. to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 1 (filed Oct. 21, 2025) (Micronet Oct. 21 Ex Parte Letter).

[62] Federal Communications Commission, Millimeter Wave 70/80/90 GHz Service, https://www.fcc.gov/wireless/bureau-divisions/broadband-division/microwave-services/millimeter-wave-708090-ghz-service-0 (last visited October 22, 2025). SpaceX has asked the Commission to amend its rules to also allow registration of FSS earth stations in the third-party link registration database for the 70 GHz and 80 GHz bands, and the Commission has sought comment on this request. *See* Modernizing and Expanding Access to the 70/80/90 GHz Bands, WT Docket No. 20-133, Report and Order and Further Notice of Proposed Rulemaking, 39 FCC Rcd 886, 916, 917-919, paras. 82, 87-91 (2024). See also OTI Oct. 21 Ex Parte Letter at 1.

21. We seek comment on the costs and benefits of light licensing in the UMFUS bands. Would an initial, automated check at the point of registration make interference deconfliction faster and more efficient while preserving Commission resources? To what extent would that initial check eliminate the need for unnecessary manual coordination that occurs today in the UMFUS bands? We also seek comment on whether a light-licensing database helps operators to understand the interference environment more quickly and accurately. What is the value of aggregating terrestrial and satellite sites in a single database? Would a single database help terrestrial licensees ensure that their rights are protected by providing greater visibility into later-in-time earth stations? Would it reduce burden by allowing parties to accurately observe buildout? Some commenters in the Commission's *Delete, Delete, Delete* proceeding favored such an approach.[63] We seek comment on this approach.

22. We seek comment on all aspects of how such a database should operate. Should the Commission operate such a database or should one or more third-parties, like Comsearch, be used instead? Irrespective of who administers the database, is there a separate need for a third-party frequency coordinator? To the extent we retain the UMFUS Protection Criteria, could the database administrator serve as a frequency coordinator that ensures compliance with the criteria? Alternatively, could a database automatically enforce compliance with certain UMFUS Protection Criteria, such as the geographic cap on earth stations, without the need for a dedicated frequency coordinator?[64]

23. We seek comment on requirements to ensure that the initial step of registration and automated deconfliction minimizes errors, particularly false negatives that might magnify the risk of harmful interference. What parameters should a registrant be required to disclose during link registration? To what extent should they be modeled after the 70/80/90 GHz database? Next, we seek comment on appropriate criteria to inform a red, yellow, or green light determination. Should the Commission apply an interference-to-noise (I/N) protection threshold to trigger proactive interference mitigation or good-faith coordination, as warranted? Should we use -6 dB interference-to-noise (I/N) as the threshold, as in 70/80/90 GHz, or would another value be more appropriate for the UMFUS bands?[65] To the extent I/N is either underprotective or overprotective, we seek comment on alternative thresholds that more accurately facilitate an initial, automated interference check.

24. We also invite comment on procedures to govern good-faith coordination after the light-licensing database returns a yellow light.[66] At what point should coordination be considered complete,

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[63] *See, e.g.*, Comments of Space Exploration Holdings, LLC, GN Docket No. 25-133 at 3 ("Replace outdated pre-coordination and site-by-site licensing rules with an efficient, self-coordinated 'light-licensing' framework for upper millimeter-wave spectrum bands shared on a co-primary basis between satellite and terrestrial operators."); Comments of The Commercial Space Federation, GN Docket No. 25-133 at 3 ("Delete time-consuming and paperwork-intensive Earth station pre-coordination and individual licensing requirements in bands allocated on a co-primary basis between terrestrial and space services in bands (i.e., above 24 GHz) in favor of database-assisted self-coordination and 'light-licensing.'").

[64] *See infra* para. 37 for more discussion of the slot concept. In addition, the database presumably would reflect in real-time which geographic areas have no current UMFUS licensees. *See* OTI Oct. 21 Ex Parte Letter at 2 ("[t]he automated interference analysis would inevitably conclude there is no risk of harmful interference to an UMFUS licensee.").

[65] *See* 47 CFR §101.1523(b)(2); 47 CFR §101.105(a)(5)). *See* also Letter from Jameson Dempsey, Director, Space Policy, Space Exploration Technologies Corp., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-133, at 3 (filed July 29, 2025).

[66] In the *Space Modernization for the 21st Century* Notice of Proposed Rulemaking the Commission seeks comment generally on questions related to coordination procedures. *See Modernization NPRM*. The inquires related to coordination discussed in this proceeding are specific only to the frequency bands and operations discussed in this proceeding and not the general questions raised in the *Modernization NPRM*. Therefore, in this proceeding, as noted above, we do not invite comment or re-open any of the inquires made in the *Modernization NPRM* nor do we incorporate the open *Modernization NPRM* docket into this proceeding.

and at what point should a site be registered and authorized to operate? On the one hand, the Commission might permit operations only when coordination is confirmed to be complete. On the other, it might allow operations on a non-interfering, unprotected basis while coordination is ongoing. We seek comment on these two options as well as other possibilities. Would non-interfering, unprotected operations during the pendency of coordination adequately protect incumbents from harmful interference? Would it meaningfully accelerate new entry? We also seek comment on measures to validate good-faith coordination. Should licensees be required to provide evidence to the Commission that coordination is complete? If so, what evidence would suffice? Could we instead streamline the process by requiring only that a licensee provide evidence of the coordination upon Commission request? We invite comment on these questions and welcome any other alternatives. We also seek comment how best to ensure that terrestrial and satellite operators coordinate in good faith.[67] If the Commission adopts a light-licensing approach, what safeguards are needed to ensure that incentives are aligned to create a successful registration process? Should the Commission consider measures to prevent "squatting" during link-registration? For example, should the Commission require build-out within a certain timeframe and, if so, what milestone is appropriate?[68] What transition rules will be needed for existing licenses and pending applications?[69]

C. Commercial Agreements between UMFUS Licensees and FSS Operators

25. In the absence of a light-licensing approach, we solicit comment on a market-based approach to potentially increasing use of the UMFUS bands. First, we seek comment on allowing UMFUS licensees to voluntarily negotiate with FSS operators to permit operations in the relevant shared bands without providing interference protection to UMFUS operations. After such an agreement is reached, an FSS operator would be able to file its one or more applications for new earth stations (or modifications) in the geographic area(s) covered by the agreement, and it could receive grants without having to satisfy the UMFUS Protection Criteria. Section 25.136 already permits UMFUS licensees and earth station applicants to negotiate agreements concerning spectrum usage.[70] However, because such agreements must be consistent with the Commission's rules,[71] a waiver of the protections outlined in section 25.136 is still required.

26. Under the proposal on which we seek comment here, criteria such as per county caps, population coverage limitations, and infrastructure coverage limitations would not apply to any earth stations covered by the agreement. Would allowing such arrangements promote more extensive use of spectrum in the UMFUS bands? What incentives or disincentives exist for FSS operators and UMFUS licensees to enter into these agreements? Might the Commission incentivize such agreements by amending section 30.104 to state that an UMFUS license holder can meet its buildout requirements by entering into such agreement(s) with FSS operator(s), provided the FSS operator(s) licenses and deploys at least some number of earth stations in the relevant geographic area by the buildout deadline? If so, how would that work? What would be an appropriate number of earth stations? Are there other ways such agreements could be applied to the UMFUS buildout requirements? Should the Commission require earth station applicants to submit these agreements (with appropriate redactions) via ICFS with the relevant earth stations applications and UMFUS providers to submit these agreements (with appropriate redactions) via ULS with applications that involve the geographic area(s) covered by the agreements? What sort of information would need to be provided to the Commission as part of earth station

[67] *See* SpaceX Oct. 22 Ex Parte Letter at 5.

[68] *See* SpaceX Oct. 22 *Ex Parte* Letter at 5.

[69] *See* Micronet Oct. 21 *Ex Parte* Letter at 2. Are there cases in which single-site applicants should be able to participate in a light-licensing database without a nationwide, non-site license?

[70] *See* 47 CFR § 25.136(f).

[71] *See id.*

applications that are the result of such negotiations? Are there ways the Commission could streamline such a showing to avoid delay once an agreement is reached between an UMFUS license holder and a FSS operator, e.g., submission of a joint letter?

27. Are there any conditions or safeguards that we need to impose on voluntary negotiations between UMFUS licensees and FSS operators? To what extent could such agreements adversely affect the rights of third parties? For example, should we be concerned about adjacent-band or adjacent area interference? Are there other third parties that need to be considered? Should we allow such voluntary agreements where the rights of third parties are affected if the third parties agree as well? If there are potential problems with mutual agreements to not apply the UMFUS Protection Criteria, how can these concerns be addressed in a way that does not unduly hinder the ability of market participants to reach mutually beneficial agreements? Are there any UMFUS Protection Criteria that we should not allow FSS earth station applicants to avoid complying with even if the parties could reach an agreement permitting non-compliance? If so, which criteria, and why? Should the Commission require UMFUS licensees that are parties to such agreements to certify that they have met their buildout requirements and performance obligations in the geographic area covered by the agreement?[72]

D. Revisions to Section 25.136 Criteria

28. We also seek comment on ways the Commission might facilitate more intensive use of spectrum by adjusting the criteria contained in the section 25.136. At the outset, we seek comment on the applicability of the section 25.136 criteria in geographic areas where there are no UMFUS licensees.[73] Should 25.136 be amended to exempt FSS applicants in such geographic areas from some of the section 25.136 criteria? If so, which ones and why? In practice, what are the best ways for the Commission and applicants to identify geographic areas with no UMFUS licensees? More generally, we request input on adjusting our rules for UMFUS licenses that are fallow because they remain in the Commission's inventory. Some of these licenses were not purchased at auction, and others were returned to the Commission afterwards. Should any elements of our proposals in this NPRM change with respect to these licenses?

29. We also seek comment on our approach to collocation. Section 25.136 limits earth stations to three per county.[74] For purposes of this limitation, collocated earth stations are treated as a single earth station.[75] The Commission has defined the term "location" for transmitting earth stations to mean the contour within which one or more earth stations generate a PFD of no more than -77.6 dBm/m^2/MHz at 10 meters above ground level, or in the case of earth stations receiving in the band, the self-defined protection zone around one or more earth stations within which no terrestrial operations may be located.[76] In a March 2025 Public Notice (*2025 Guidance Public Notice*), the Space Bureau (Bureau) clarified that new earth stations do not count against the limit of the total number of earth stations for the licensing area (i.e., are considered collocated) if the aggregate PFD contour of the earth stations partially overlaps with the PFD contour of one or more preexisting earth stations.[77]

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[72] *See*, *e.g.*, Letter from Alisa Valentin, Broadband Policy Director, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 1-2 (filed Oct. 21, 2025).

[73] *See*, *e.g.*, *id.*, at 1; OTI Oct. 21 *Ex Parte* Letter at 1-2.

[74] *id.* §§ 25.136(a)(4)(i), (c)(1), (d)(4)(i), (e)(4)(i).

[75] *id.* §§ 25.136(a)(4)(i), (c)(1), (d)(4)(i), (e)(4)(i).

[76] *See Spectrum Frontiers Report and Orde*r, 31 FCC Rcd at 8036, para. 54; *Spectrum Frontiers Second Report and Order*, 32 FCC Rcd at 11034, para. 139.

[77] *See Space Bureau Updates its Guidance on Siting Methodologies for Earth Stations Seeking to Operate in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz, 47.2-48.2 GHz, And 50.4-51.4 GHz Bands to Demonstrate Compliance With Section 25.136*, IB Docket No. 17-172, Public Notice, 40 FCC Rcd 1547, 1550 (SB Mar. 10, 2025) (*2025 Guidance Public Notice*). The Bureau noted that "[e]ven if it does not count towards the PFD contour,

(continued….)

30. Given the interest in encouraging collocation with existing sites when possible, should we expand the definition of collocation? In some cases, multiple pieces of antenna equipment are located together in a dedicated area called an "antenna farm." Should we treat as collocated multiple earth stations that are located within the same satellite antenna farm, even if they are several hundred meters apart? If so, do we need a precise definition of "antenna farm?" In many instances, it is likely that UMFUS licensees would not be operating close to a known, existing antenna farm and therefore no harmful interference would occur. Given that the clarification concerning collocation in the *Guidance Public Notice is* not binding on the Commission,[78] should we adopt it, and any precise definition of "antenna farm" for purposes of section 25.136 as binding rules? And, if an earth station wishes to collocate with another earth station, is there any reason to collect the complex technical showings currently required under section 25.136?

31. Next, we examine our geographical per-county and per-PEA numerical limitations on earth stations operating in the UMFUS bands. Our current rules establish a cap of three earth station locations in a county where earth stations may not be required to provide additional interference protection to UMFUS licensees, or, in the case of space-to-earth bands, are entitled to interference protection from UMFUS operations.[79] Earth stations operating in receive mode are limited to 15 per PEA as well.[80] When initially adopting the per-county cap in the *Spectrum Frontiers Report and Order*, the Commission noted that "[s]ince there are over 3,000 counties in the United States, with a potential for up to three locations in each county, FSS licensees would have many choices for earth station locations."[81] In the *Second Spectrum Frontiers Report and Order* the Commission stated that "eliminating [the per-county and per-PEA] limits would be inconsistent with the decision to prioritize terrestrial deployment in these bands."[82]

32. While a numerical cap is a straightforward and easy to administer means of limiting potential FSS interference with UMFUS use of spectrum, it also has the adverse effect of serving as a barrier to entry for earth stations. In fact, licensing experience by the Commission suggests that there are indeed geographic areas where such caps are inhibiting new earth station siting. We therefore seek comment on raising or removing the per-county and per-PEA limitations contained in the rule.[83] Did the Commission's statement in the *Spectrum Frontiers Report and Order* that "FSS licensees would have many choices for earth station locations" prove correct? Given that the UMFUS bands have not become workhorse terrestrial spectrum and are instead in high demand for FSS operations, do the caps still make sense today? Further, the Commission adopted the UMFUS Protection Criteria in the *Spectrum Frontiers Report and Order* with GSO systems in mind. Since then, NGSO constellations, which require many distributed earth stations and smaller beams to support capacity and low latency requirements, have proliferated.

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the Bureau intends to consider such an earth station, however, in the calculation of the aggregate population limit for the areas outside the contour or protection zone of the existing earth station." *Id.* at 1550 n.21.

[78] *See id.* at 1548 ("the *Revised Siting Guidance* is not binding, does not establish mandatory requirements or procedures, and does not replace any Commission rules.").

[79] 47 CFR §§ 25.136(a)(4)(i), (c)(1), (d)(4)(i), (e)(4)(i).

[80] 47 CFR § 25.136 (c)(1).

[81] *Spectrum Frontiers Report and Orde*r, 31 FCC Rcd at 8036, para. 55.

[82] *Spectrum Frontiers Second Report and Order*, 32 FCC Rcd at 11033, para. 135. The Commission raised the per county and per PEA caps on earth stations operating in the 37.5-40 GHz band to three and 15, respectively, based on technical showings that the exclusion zones required to protect FSS were smaller than believed at the time of the *Spectrum Frontiers Report and Order*, but reserved the right to take action if FSS applicants began claiming substantially larger exclusion zones. *Id* at 11032-34, paras. 134-37.

[83] 47 CFR §§ 25.136(a)(4)(i), (c)(1), (d)(4)(i), (e)(4)(i).

33. Do fixed geographic caps match the architectural needs of modern satellite systems? Are the caps necessary to protect UMFUS licensees, or are they overprotective? What are the benefits and costs associated with raising or removing the per-county or per-PEA limitations? Have caps hindered any earth station deployments? If the Commission raises the cap, should the number of permissible earth stations vary by county or PEA or be tied to certain characteristics of specific counties or PEAs, such as geographic area, total population, or population density? For example, should the limit be adjusted to accommodate counties with larger geographic areas (e.g., additional earth stations allowed for counties larger than 3,000 square miles)?[84] If we were to raise the per-county or per-PEA limitations, what increments are reasonable and why? Might we exempt earth station deployments whose beams are very unlikely to cross paths with a mobile 5G signal from the caps? For example, many NGSO operators place gateway earth stations on rooftops of data centers, points-of-presence, or other telecom facilities, especially in dense metropolitan areas where land is scarce. Such sites give clear line of sight to satellites above clutter and reduce blockage from nearby buildings. These sites may also reduce the odds of interference to UMFUS transmissions, which are downwardly directed from the base station.

34. Alternatively, does it make sense to have a numerical limit on the number of earth stations per county or per PEA at all? Managing a cap requires administrative resources and could result in other economic inefficiencies. Earth stations have a license term of fifteen years[85] and a renewal expectancy. Therefore, once a cap is reached within a given geography, no new earth station can be reasonably expected in that area. As a result, a new FSS entrant cannot use these bands as a practical matter in large parts of the country. This might harm innovation and efficient deployment of infrastructure. We therefore invite comment on eliminating the geographic cap entirely and seek to understand how the bands would be efficiently shared in such a situation. Are there other protection criteria that should be used if we were to eliminate caps, or are the population and other limits sufficient?

35. If we retain numerical caps on the number of earth stations in a geographical area, what is the best approach to determine which applicants get these opportunities? In situations involving a scarce resource (e.g., a cap on earth stations), there is a need to determine who can access that resource. For instance, in other situations the Commission has used auctions to assign scarce resources.[86] We generally seek comment on what approaches might be appropriate when multiple FSS applicants vie for limited licenses in a geographic area and why.

36. Next, we examine the efficacy of our existing first-in-time rules. The first-come, first-served approach adopted in 2016[87] has created challenges in this context. For example, processing of later-filed straightforward applications has occasionally been delayed because those applications were filed after more complicated applications in the same county that seek waivers and require more analysis. And once the cap is reached, future entrants are kept out until an existing licensee subject to the cap ceases operation and relinquishes its license. Is there another approach the Commission should consider to eliminate or reduce these delays? For example, should we consider permitting applicants to apply for a nationwide, non-site license, with the ability to register individual sites upon successful coordination with UMFUS and FSS operations through a third party database? Under this approach, would FSS operators still be required to make the showings under section 25.136 for each individual earth station? Should

[84] 5.8 percent of U.S. counties are larger than 3,000 square miles, yet they comprise 40.3% of U.S. total area. Staff analysis, 2000 Land Area Data, *U.S. Census Bureau*, https://www.census.gov/library/publications/2011/compendia/usa-counties-2011.html#LND.

[85] 47 CFR § 25.121(a)(1).

[86] *See*, *e.g.*, *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 (OEA, WTB 2021); *Auction of Toll Free Numbers in the 833 Code, Somos Announces Winning Bidders for the 833 Auction*, AU Docket 19-101, Public Notice, 34 FCC Rcd 12501 (2019).

[87] *See*, *e.g.*, *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8035, 8051, paras. 53, 93.

applicants seeking waivers be placed at the back of the line so as to prevent forestalling other applications in a given area? These approaches would retain the first-come, first-served approach but seek to reduce or eliminate the showings which have been problematic. How could a revised first-come, first-served approach be coupled with a cap?

37. Regardless of the means by which we initially determine who receives a license, might we additionally attach a "slot" to current and future earth station licenses? These slots would represent opportunities to operate an earth station in the relevant geographical area. Then, the Commission could allow slot-holders to exchange these slots over time, effectively creating or allowing a secondary market for slots? For example, the Commission could follow a first-come, first-served approach (or another initial assignment approach) to obtaining a license within a county and under the cap, but allow slot holders to transfer the slot (but not the license) to another party. Currently, an earth station licensee has poor incentives to surrender a license they no longer, use and therefore we would expect the per county cap to create inefficiencies. But if a secondary market for slots existed, there would be incentive for a party that placed little value on a particular earth station to surrender its license and transfer the associated slot to another party who values that slot more. Could allowing for such a secondary market exchange be a way to make sure the limited slots within a cap go to the highest and best use? Furthermore, a party who obtains a slot could avoid most, if not all, of the complex showings that must be submitted with a license application, which would streamline the license process. Could allowing for such exchange even for existing license holders be a way to inject greater efficiency in the near-term while we determine how additional or future sites for earth stations will be allocated? Should such an exchange of slots be subject to some form of regulatory approval process, analogous to the transfer or assignment of licenses and authorizations, or would a simpler form of notification to the Commission be appropriate? Should we allow exchanges only once an earth station is constructed or operational or, in the alternative, include construction or operation milestones that are not extended following an exchange?

38. Section 25.136 also limits the population that can fall within the location or protection zone of an earth station operating in the UMFUS bands.[88] These limits vary by band and by population in the terrestrial license area.[89] The limits were based on the primacy of UMFUS, however.[90] Given the sparse buildout of terrestrial wireless service in, and increased demand for FSS use of, the spectrum, does it make sense to revisit these population limits? Might they be increased to facilitate more intensive use of the spectrum by satellite operators? Does the answer depend on characteristics of the county, such as geography, population, or population density?

39. Section 25.136 also requires that the -77.6 dBm/m^2/MHz contour not cover certain defined types of infrastructure or major roads – including major event venues; urban mass transit routes; passenger railroads; cruise ship ports; and Interstates, Other Freeways and Expressways, and Other Principal Arterials as defined by the Federal Highway Administration.[91] The protection zone for earth stations operating in the 37.5-40 GHz band is subject to similar requirements.[92] Experience has shown that these limitations are an impediment to a timely licensing process.[93]

40. Given the state of buildout of terrestrial wireless service in the UMFUS bands and the desire to use the spectrum for FSS operations, should these population and infrastructure limits be modified or eliminated entirely? If not, are there parts of the country (for example, more rural, less

[88] 47 CFR § 25.136(a)(4)(ii), (c)(2), (d)(4)(ii), (e)(4)(ii).

[89] *Id.* § 25.136(a)(4)(ii), (c)(2), (d)(4)(ii), (e)(4)(ii).

[90] *See*, *e.g.*, *Spectrum Frontiers Second Report and Order*, 32 FCC Rcd at 11030, para. 127.

[91] *Id.* § 25.136(a)(4)(iii), (d)(4)(iii), (e)(4)(iii).

[92] *Id.* § 25.136(c)(3).

[93] *See supra* para. 16. *See also infra* para. 45.

populated areas) in which they could be eliminated? Are there categories of roads that are protected under the current rules where protection is not appropriate because terrestrial deployment in the upper microwave bands is unlikely? Given the generally small size of earth station contours and the speed at which passenger trains move, is protection for passenger railroads necessary? We also invite other suggestions for changes to the list of protected infrastructure. If we retain population and infrastructure limits of some kind, how might the required showings be modified to make them less burdensome?

41. Section 25.136 also requires earth station applicants to complete frequency coordination with UMFUS licensees using the applicable processes contained in section 101.103(d) of the Commission's rules before filing its application.[94] Coordination is designed only to resolve potential interference to existing deployments, and there is a duty to cooperate in good faith. While all of the requirements will not be presented here, coordination under section 101.103(d) involves (1) notification to existing licensees, permittees and applicants in the area, and other applicants with previously filed applications, whose facilities could affect or be affected by the proposed earth station and (2) response from the parties notified.[95] The notification must include relevant technical details of the proposal, which includes: applicant's name and address, transmitting station name; transmitting station coordinates; frequencies and polarizations to be added, changed or deleted; transmitting equipment type, its stability, actual output power, emission designator, and type of modulation(s) (loading); transmitting antenna type(s), model, gain and, if required, a radiation pattern provided or certified by the manufacturer; transmitting antenna center line height(s) above ground level and ground elevation above mean sea level; receiving station name; receiving station coordinates; receiving antenna type(s), model, gain, and, if required, a radiation pattern provided or certified by the manufacturer; receiving antenna center line height(s) above ground level and ground elevation above mean sea level; path azimuth and distance; estimated transmitter transmission line loss expressed in dB; estimated receiver transmission line loss expressed in dB; for a system utilizing ATPC, maximum transmit power, coordinated transmit power, and nominal transmit power; and, for transmitters employing digital modulation techniques, the notification should clearly identify the type of modulation.[96]

42. In general, notified parties have 30 days to respond, and applicants, permittees, and licensees are expected to make every reasonable effort to eliminate all problems and conflicts.[97] All technical problems that come to light during coordination must be resolved; if not, the earth station applicant must explain why it is unable or unwilling to resolve the conflict.[98] Where changes to a proposal become necessary over the course of coordination, additional notifications to relevant licensees, permittees and applicants may be required, and those notified parties have up to 30 days to respond.[99] Moreover, if the party proposing the earth station makes a change after completion of coordination that it believes will have no impact on the parties originally notified, it must re-notify those parties concerning the change and of its opinion that no response is required.[100] If no earth station application is filed within six months after coordination, the party proposing the earth station must send a renewal notification to the

[94] 47 CFR § 25.136(a)(4)(iv), (c)(4), (d)(4)(iv), (e)(4)(iv).

[95] *Id.* §§ 101.103(d)(1), (d)(2)(i).

[96] *Id.* §§ 101.103(d)(2)(ii), (iii).

[97] *Id.* § 101.103(d)(2)(iv). The rule allows for an expedited prior coordination period, but provides that circumstances preventing a timely response from the receiving party should be accommodated accordingly. *Id.* § 101.103(d)(2)(vi).

[98] *Id.* § 101.103(d)(2)(vii).

[99] *Id.* § 101.103(d)(2)(viii).

[100] *Id.* 101.103(d)(2)(ix).

notified parties, or else they are entitled to assume that the previously coordinated frequency use is no longer desired.[101]

43. We ask commenters to suggest any changes to the process that they believe would facilitate coordination. For example, are there different deadlines or procedures than those set forth above that would be appropriate for coordination between UMFUS and FSS licensees in the UMFUS bands? Could we modify some deadlines or procedures, or establish additional deadlines or procedures, to help FSS operators and UMFUS licensees better coordinate? Should we explore ways of automating the coordination and interference analysis processes, in lieu of using the manual part 101 coordination framework? If so, what would be the best approach for automating that process, and what rule changes would be necessary to implement that automation? To the extent that propagation modeling is still required, we seek comment on whether and how the Commission should provide further clarification or guidance beyond what is contained in the Bureau's relevant Guidance Public Notices?[102]

44. Finally, many of the issues discussed above involve the contour within which one or more earth stations generate a PFD of no more than -77.6 dBm/m^2/MHz at 10 meters above ground level.[103] The Commission was very cautious when establishing protection criteria in 2016. Over the years, however, the Commission has gained better insight into the actual operating environment between UMFUS and uplink gateway earth stations in the band. In addition, there have been significant improvements in both earth station and terrestrial systems designs, including antenna sidelobe suppression, beamforming techniques, and interference-resilient modulation. In light of the foregoing, we seek comment on whether it remains appropriate to measure the -77.6 dBm/m^2/MHz at 10 meters above ground level. Would it be more appropriate to measure at the UMFUS receive antenna site or at some distance close to the UMFUS receive antenna?

E. Revisions to Section 25.136 Showings

45. The showings required for earth station applications in the UMFUS bands under section 25.136 require time-consuming staff review and delay the approval of earth station licenses. For example, in order to show compliance with limits on the population that may be covered in the earth station's immediate area of operation or protection zone,[104] parties are required to provide detailed engineering exhibits to the Commission, which Commission staff are required to evaluate. Earth station applicants also must submit, and Commission staff must also review, detailed showings demonstrating compliance with requirements concerning coverage of defined types of infrastructure or major roads.[105] Review of these materials involves substantial Commission time and resources, resulting in application processing delay and backlog. Accordingly, we seek comment below on different approaches that may increase the efficiency of earth station application processing. Are there any other countries with models we might consider? When commenting on the proposals below, commenters should bear in mind that the per-county numerical limits on earth station deployments are meant to balance the interests of FSS operators against UMFUS licensees. Accordingly, burdens imposed by additional showings should be justified if they are to be retained.

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[101] *Id.* § 101.103(d)(2)(xi). Parties must receive this notification within ten days of the end of the six month period. *Id.*

[102] *See International Bureau Issues Guidance On Siting Methodologies For Earth Station Seeking To Operate in the 24.75-25.25 GHz, 27.5–28.35 GHz, 37.5–40 GHz, 47.2-48.2 GHz, and 50.4-51.4 GHz Frequency Bands to Demonstrate Compliance with Section 25.136*, Public Notice, 35 FCC Rcd 6347 (IB 2020); *2025 Guidance Public Notice*.

[103] *See generally* 47 CFR § 25.136.

[104] *Id.* § 25.136(a)(4)(ii), (c)(2), (d)(4)(ii), (e)(4)(ii).

[105] *Id.* § 25.136(a)(4)(iii), (c)(3), (d)(4)(iii), (e)(4)(iii).

46. One alternative is to allow earth station applicants to certify compliance with each of the UMFUS Protection Criteria and, in the absence of a challenge to the application, FCC staff would rely on those certifications without reviewing any technical exhibits. Under this approach, earth station applicants would still be responsible for complying with the UMFUS Protection Criteria, but Commission staff would only be required to spend time and resources reviewing technical exhibits to address accusations of actual harmful interference that arise. One approach would be to require applicants to submit their technical exhibits with their applications, so that interested parties can review them, but have staff rely only on the certifications in the application. Instead, the Commission could require applicants to submit their technical analysis to the Commission upon request. We seek comment on both possibilities.

47. Instead of a certification approach, could the Commission allow applicants to provide more limited showings in certain cases? For example, could the Commission employ a safe harbor approach in cases in which an applicant proposes to locate an earth station at an existing satellite antenna farm, or specifies minimum distances (at appropriate power levels) from roads and other infrastructure specified in section 25.136?[106] Might such applicants be exempted from completing the relevant bespoke showings concerning the enumerated in the UMFUS Protection Criteria? What other ways might the Commission reduce the showings the FSS applicants must provide? Are there available, public data sets showing population dispersion or infrastructure on which applicants and staff can rely that might make showing easier? Is there a publicly available tool that the Commission should adopt for applicants to use for certain showings?

48. Might the Commission adopt some *de minimis* exceptions to the UMFUS Protection Criteria? That is, instead of finding an earth station application unacceptable for grant if the station's immediate area of operation or protection zone covers any of the roads or infrastructure enumerated in the rule,[107] might the Commission allow coverage of a *de minimis* portion of a major event venue, urban mass transit route, passenger railroad, cruise ship port. urban mass transit route, or other road enumerated in the rule? If so, how might the Commission define this *de minimis* area? We note that the Bureau has granted waivers to allow *de minimis* overlaps of up to 400 meters with major roads or passenger railroads in rural areas where the earth station operator has successfully coordinated with the UMFUS licensee(s).[108] Could the Commission apply a similar approach to other UMFUS Protection Criteria?

F. Other Alternatives for Replacing the Section 25.136 Criteria

49. Beyond the light licensing approach discussion in III.B above, we also seek comment on whether section 25.136 could be replaced with a different paradigm for sharing between UMFUS and FSS operations. Would it be reasonable to remove all the section 25.136 criteria and replace them with new rules for how terrestrial and earth station licensees may deploy and coordinate with each other? If so, how would such coordination work? For example, could we rely on a successfully completed frequency coordination with affected UMFUS licensees? If we remove all the criteria how should we treat the secondary status of FSS in the 28 GHz band?[109] If we adopt new rules, should we retain the existing rule with respect to the secondary status of FSS in the 28 GHz band?[110] In the alternative, would it be desirable to possibly revise the U.S. Table of Frequency Allocations to allocate FSS on a co-primary basis

[106] *Id.* § 25.136(a)(4)(iii), (c)(3), (d)(4)(iii), (e)(4)(iii).

[107] *Id.* § 25.136(a)(4)(iii), (c)(3), (d)(4)(iii), (e)(4)(iii).

[108] *See*, *e.g.*, File Nos. SES-LIC-20210803-01372, SES-LIC-20210803-01377, SES-LIC-20210803-01400, SES-LIC-20210803-01409, SES-LIC-20210803-01464, SES-LIC-20211217-01946, SES-LIC-20220803-00822, SES-LIC-20221108-01201, SES-LIC-20210402-00613, SES-AMD-20241216-02678, and SES-LIC-20221108-01210.

[109] *See* 47 CFR § 25.136.

[110] *See id.* § 25.136(a).

in the band?[111] What would be the pros and cons of such an approach? Replacing the section 25.136 criteria could occur in the near term or could evolve alongside the UMFUS licensing framework.

50. *Dynamic Spectrum Sharing.* We also seek comment generally on whether allowing uncoordinated earth stations with sensing capabilities could play a role in facilitating more intensive use of the upper millimeter wave bands. Starting at least as far back as 2005, the European Conference of Postal and Telecommunications Administrations Electronic Communications Committee (CEPT ECC) has issued several reports that have envisioned allowing uncoordinated earth stations to coexist with other services in the 28 GHz band. The most recent report was adopted in January 2022.[112] While the report notes several challenges associated with such an approach in the relatively congested bands below 30 GHz, and suggests that relatively long minimum separation distances between earth stations and fixed links would be required in those bands, uncoordinated earth stations with sensing might be more feasible in some of the less congested bands above 30 GHz. The most obvious candidates may be bands allocated to space-to-Earth operations, such as the 38.6-40 GHz band, where earth stations operate in listen-only mode and therefore pose no danger of direct interference to terrestrial operations. To the extent that we consider permitting uncoordinated earth stations to operate in certain bands, should they be required to be capable of shifting their operations to alternative frequencies (e.g., for the 38.6-40 GHz band, could the adjacent 40-42 GHz band, allocated primarily to satellite operations, be a plausible alternative)? This could help to ensure that uncoordinated earth stations do not become stranded investments if terrestrial buildouts begin to generate interference. If a receive-only earth station shifts to an alternative frequency, by what mechanism will the satellite(s) communicating with it learn of the need to make a parallel frequency shift? In addition, if we adopt this approach, how should we address bands that are shared with federal services? We seek comment on whether there are any other circumstances under which earth stations could be authorized on an uncoordinated basis.

51. *Alternative Suggestions.* In addition to the proposals mentioned above, we invite commenters to offer alternative suggestions for how the UMFUS bands can be more intensively used. Should terrestrial operators be allowed to satisfy their buildout requirements by leasing spectrum to satellite operators, or by entering into other arrangements to provide satellite service access to areas beyond the reach of terrestrial facilities? What other rule changes might facilitate greater use of the UMFUS bands? We also seek comment on any corresponding revisions to Part 30 that would facilitate these changes.[113]

52. With respect to all of these inquiries, we ask commenters to consider and address the following issues: How would the market-based proposals suggested herein, changes to required earth station application showings, or proposed changes or replacements to section 25.136 criteria facilitate real world deployment of earth stations by satellite operators while still protecting UMFUS licensees from harmful interference? What proposals would be most effective in facilitating greater satellite use through deployment of earth stations? How would adopting these methods affect existing and planned terrestrial deployments? Are there steps the Commission could take to minimize the impact on terrestrial deployments from more intensive use of UMFUS spectrum by earth stations? Are the contemplated changes consistent with the fact that UMFUS licenses are geographic area licenses? What additional rules or technical criteria would be necessary to adopt any of these proposals? What are the costs and benefits associated with these approaches? Would the proposed changes promote more intensive use of the spectrum and potentially unleash nascent services (e.g., Ground-Station-as-a-Service)? To the extent possible, commenters should quantify expected costs and benefits of the proposals set forth above or any

[111] *Id.* § 2.106.

[112] *See* ECC Report 335: Sensing mechanism for uncoordinated FSS Earth stations in 28 GHz to protect fixed service, available at https://docdb.cept.org/document/26188.

[113] *See* Letter from Courtney Tolerico, Director, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-305, at 4-5 (filed Oct. 20, 2025).

alternatives a commenter would prefer. Again, we encourage commenters to provide input concerning the potential impact of proposals on small entities.

IV. PROCEDURAL MATTERS

53. *Regulatory Flexibility Act*. The Regulatory Flexibility Act of 1980, as amended (RFA),[114] 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."[115] Accordingly, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) concerning the potential impact of rule and policy change proposals contained in the *NPRM* on small entities. The IRFA is set forth in Appendix A. The Commission invites the general public, in particular small businesses, to comment on the IRFA. Comments must be filed by the deadlines for comments on the *NPRM* indicated on the first page of this document and must have a separate and distinct heading designating them as responses to the IRFA.

54. *Paperwork Reduction Act*. The *NPRM* does not contain proposed information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, therefore, it does not contain any proposed information collection burden "for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4).

55. *Providing Accountability Through Transparency Act*. Consistent with the Providing Accountability Through Transparency Act, Public Law 118-9, a summary of the *NPRM* will be available on https://www.fcc.gov/proposed-rulemakings.

56. *Ex Parte Rules*. This proceeding shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[116] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with Rule 1.1206(b).[117] Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

57. *Comment Filing Procedures*. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments 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/.

[114] 5 U.S.C. §§ 601–612. The RFA has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[115] 5 U.S.C. § 605(b).

[116] 47 CFR § 1.1200(a).

[117] *Id.* § 1.1206(b).

- 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.

58. *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 Consumer & Governmental Affairs Bureau at 202-418-1325.

59. *Contact Persons*. For further information contact Jake Riehm, Associate Division Chief, Industry Analysis Division, Media Bureau, on detail to the Space Bureau, at 202-418-2166 or by email to Jake.Riehm@fcc.gov or Kerry Murray, Deputy Chief and Chief of Staff, Space Bureau at 202-418-0734 or by e-mail to Kerry.Murray@fcc.gov.

V. ORDERING CLAUSES

60. IT IS ORDERED that, pursuant to sections 4, 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154, 303, 307, that this *Notice of Proposed Rulemaking* IS ADOPTED as set forth above.[118]

61. IT IS FURTHER ORDERED that the Commission's Office of the Secretary, SHALL SEND a copy of this *Notice of Proposed Rulemaking*, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

[118] 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 Executive Order 12866.

APPENDIX A

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Federal Communications Commission (Commission) has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the policies and rules proposed in the *Notice of Proposed Rulemaking* (*NPRM*) assessing the possible significant economic impact on a substantial number of small entities. The Commission requests written public comments on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments specified on the first page of the *NPRM*. The Commission will send a copy of the *NPRM*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Rules

2. In the *NPRM*, the Commission initiates a review of the rules governing shared used between the terrestrial Upper Microwave Flexible Use Service (UMFUS) and the Fixed-Satellite Service (FSS) in upper microwave spectrum bands above 24 GHz to facilitate more intensive use of these bands due to the expanded needs of the space industry, and in particular the increased interest in the bands used for UMFUS by FSS operators. The space industry's expanded activity has increased the demand for FSS licenses especially in the 28 GHz band, and the complex criteria in the Commission 's existing rules in section 25.136 has created difficulties for the Commission with processing earth station applications by the industry in bands used for UMFUS. Consequently, in this proceeding the Commission seeks a workable, scalable solution for UMFUS licensees and FSS operators to share upper microwave spectrum bands. Specifically, the Commission seeks comment on proposals exploring whether, and how to revise our section 25.136 rules, and policies applicable to bands above 24 GHz that are shared by terrestrial UMFUS licensees and FSS operators. Alternatively, the Commission seeks comment on proposals, and frameworks that could replace the section 25.136 rules to allow sharing for space and terrestrial use in these bands.

B. Legal Basis

3. The proposed action is authorized pursuant to sections 4(i), 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303, 307.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

4. 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 proposed rules, if adopted.[4] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[5] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[6] A "small business

[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] *Id*. § 603(a).

[3] *Id*.

[4] *Id.* § 603(b)(3).

[5] *Id.* § 601(6).

[6] *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, (continued….)

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.[7]

5. 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.[8] In general, a small business is an independent business having fewer than 500 employees.[9] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses.[10] Next, "small organizations" are generally not-for-profit enterprises that are independently owned and operated and not dominant in their field.[11] 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.[12] Finally, "small governmental jurisdictions" are defined as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[13] 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.[14]

6. The review of the rules and policies in the *Notice* will apply to small entities in the industries identified in the chart below by their six-digit North American Industry Classification System[15] codes and corresponding SBA size standard.[16]

Regulated Industry (NAICS Classification)	NAICS Code	SBA Size Standard	Total Firms[17]	Small Firms[18]	% Small Firms in Industry
All Other Telecommunications	517810	$40 million	1,079	1,039	96.29

(Continued from previous page)
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."

[7] 15 U.S.C. § 632.

[8] 5 U.S.C. § 601(3)-(6).

[9] *See* SBA, Office of Advocacy, *Frequently Asked Questions About Small Business* 1 (July 23, 2024), https://advocacy.sba.gov/wp-content/uploads/2024/12/Frequently-Asked-Questions-About-Small-Business_2024-508.pdf.

[10] *Id*.

[11] 5 U.S.C. § 601(4).

[12] *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/.

[13] 5 U.S.C. § 601(5).

[14] *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.

[15] 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.

[16] The size standards in this chart are set forth in 13 CFR § 121.201, by six digit NAICS code.

[17] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, and *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM.

[18] *Id.*

Regulated Industry (NAICS Classification)	NAICS Code	SBA Size Standard	Total Firms[17]	Small Firms[18]	% Small Firms in Industry
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	334220	1,250 employees	656	624	95.12
Satellite Telecommunications	517410	$47 million	275	242	88.00
Wireless Telecommunications Carriers (except Satellite)[19] [20]	517112	1,500 employees	2,893	2,837	98.06

7. Based on currently available U.S. Census data regarding the estimated number of small firms in each identified industry, we conclude that the review of the rules and policies in the *NPRM* will impact a substantial number of small entities. Where available, we provide additional information regarding the number of potentially affected entities in the above identified industries, and information for other affected entities, as follows.

2024 Universal Service Monitoring Report Telecommunications Service Provider Data [21] (Data as of December 2023)	SBA Size Standard (1500 Employees)		
Wireless Telecommunications Carriers (except Satellite)[22]	585	498	85.13

D. Description of Economic Impact and Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

8. The RFA directs agencies to describe the economic impact of the proposed 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.[23]

1. Revising the Section 25.136 Criteria

9. The Commission explores of the possible expansion of the definition of collocation inquiring whether reporting of the complex technical showings currently required under section 25.136 of our rules should continue if we accept as collocated a new earth station located several hundred meters apart within the same satellite antenna farm, because theoretically UMFUS licensees would not be operating close to a known, existing antenna farm. Removing this requirement would lessen the administrative and technical economic burden on small and other entities caused by complying with this

[19] Affected Entities in this industry include 39 GHz Service and Fixed Microwave Services.

[20] Affected Entities in this industry that also have a Commission small business size standard involving eligibility for bidding credits and installment payments in the auction of licenses codified in the Commission's rules include: 39 GHz Service (47 CFR §§ 30.301, 30.302) and Fixed Microwave Services (47 CFR §§ 101.538(a)(1)-(3)), 101.1112(b)-(d), 101.1319(a)(1)-(2).

[21] 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.

[22] Affected Entities in this industry include all reporting wireless carriers and service providers.

[23] 5 U.S.C. § 603(b)(4).

collection mandate. The proposals in the *NPRM* to expand the definition of earth station collocation, and increase or eliminate numerical per-county or per-Partial Economic Area (PEA) caps on earth stations would reduce the burdens for small and other FSS applicants and provide opportunities for more entities to apply for licenses without imposing additional recordkeeping or reporting requirements. We also review the usefulness of the current first-in-time/first-come first-served rules for ways to reduce and/or eliminate problematic reporting requirements for small and other entities. At this time the Commission is not aware of any costs that would be imposed on small entities by the alternatives to the first-in-time rules for processing initial earth station applications proposed in the *NPRM*. Our proposal to revise section 25.136 to allow UMFUS licensees and FSS operators to agree to waive certain protection criteria contained in the rule would reduce burdens on FSS operators.

10. Our proposals in the *NPRM* to modify or eliminate population and infrastructure limits for earth station applications, if adopted, would not introduce or impose any new reporting or recordkeeping requirements on small entities. Instead, these proposals would streamline and simplify application preparation and reduce administrative burdens. Similarly, our examination of the frequency coordination requirements in section 25.136 inquiring whether there are deadlines or procedures to facilitate frequency coordination between FSS operators and UMFUS licensees such as investigating whether automation of the coordination and interference analysis processes can be implemented to replace the current part 101 manual coordination framework, could reduce burdens for small and other entities.

2. Replacing the Section 25.136 Criteria; Light Licensing

11. The Commission's consideration of whether to replace section 25.136 and its requirements could result in a new body of rules, including but not limited to technical criteria requirements governing the deployment and coordination between terrestrial and earth station licensees. In the *NPRM*, we discuss and seek comment on approaches in two areas toward that end: Automated Interference Analysis and Dynamic Spectrum Sharing. The Automated Interference Analysis/Light Licensing model proposes a model where the Commission or one or more third parties would oversee UMFUS-FSS coordination and a shift to a licensing model that requires earth station and terrestrial licensees to use a registration database where links are registered under their licenses. The coordinator's role would be two-fold by also including review of compliance with any section 25.136 requirements that continue to apply. Such a framework would reduce the economic impact of current earth station pre-coordination and licensing requirements in bands above 24 GHz for small and other entities. Dynamic Spectrum Sharing would allow uncoordinated earth stations with sensing capabilities to operate in certain upper millimeter wave bands resulting in the removal of existing coordination requirements applicable to the bands where allowed.

12. While we note that the economic impact and reporting, recordkeeping and other compliance obligations could be reduced for small and other entities by some of the proposals and matters which the Commission seeks comment on in this proceeding, the diversity and variability of the proposals and inquiries make it impractical to conduct a realistic cost estimate and/or economic analysis at this time. The Commission is not aware of any costs that would be imposed on small entities and does not anticipate that it will be necessary for small entities to hire professionals if the proposals discussed in the *NPRM* are adopted. However, to help the Commission more fully evaluate the cost of compliance we request comment on the cost implications of the proposals and alternatives discussed in the *NPRM* as well as on any alternative approaches that are submitted by commenters. We expect the information we received in comments including cost analysis data, to help the Commission further identify and evaluate relevant matters for small entities, including compliance costs and other burdens that may result from the proposals and inquiries in the *NPRM*.

E. Discussion of Significant Alternatives Considered That Minimize the Significant Economic Impact on Small Entities

13. The RFA directs agencies to provide a description of any significant alternatives to the

proposed rules that would accomplish the stated objectives of applicable statutes, and minimize any significant economic impact on small entities.[24] The discussion is required to include alternatives such as: "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[25]

14. The Commission's evaluation of revisions to section 25.136 considers and seeks comment on several options for collocation which could minimize the economic impact for small entities. As we describe in section D above, we consider expanding the definition of collocation in a manner which could result in the elimination of the complex technical showings currently required under section 25.136. We also consider increasing or removing the three per county limitation on earth station collocations. More specifically, we inquire whether to raise the limitation to ten per county, or to modify the per county cap to a structure where the cap has a designated increase at a specific time interval such as increasing the limitation by ten every one, two, or five years. Additionally, we inquire about an approach where the number of permissible earth stations would vary by county, or be tied to characteristics of a county, such as geographic area, total population, or population density. These options would allow for an increase in earth stations by small and other entities while decreasing the frequency and burdens of any showings required for collocation. Alternatively, we consider the efficacy of continuing to have a numerical cap on the number of earth stations per county noting the potential harm to innovation and the efficient deployment of infrastructure by caps because once a cap is reached the opportunity for small and other entities to collocate an earth station is foreclosed. Similarly for the 28 GHz band, we consider whether the limit of 15 earth stations per PEA should be increased or eliminated. If the Commission maintains numerical cap limitations we consider and seek comment on a fair and equitable approach to determining how applicants get the opportunity to collocate.

15. We also explore the usefulness of the first-in-time, first-come first-served approach of obtaining a license within a county that the Commission adopted in 2016. The approaches we consider retain the first-come, first-served approach while seeking to mitigate or eradicate the showings that have posed earth station licensing challenges. For example, we seek comment on options to alleviate challenges like the processing delays resulting from this approach such as allowing small and other applicants to apply for a nationwide, non-site license, with the ability to register individual sites upon successful coordination with UMFUS and FSS operations through a third party database, like Comsearch. We also inquire and seek comment on how a revised first-come, first-served approach could be coupled with a cap. Should a cap be retained, the *NPRM* considers market-based alternatives for allocating earth stations such as auctioning initial opportunities to construct and operate earth stations in geographic areas (slots) or maintaining the Commission's current approach to initial earth station allocation. A slot would be attached to each earth station license and allow permittees (who may or may not also be the licensee) to exchange these slots over time. This approach could increase opportunities by effectively creating or allowing a secondary market for slots, and we seek comment on the impact of such proposals on small entities. Another alternative the Commission considers in *NPRM* as discussed above in section D, is whether and how coordination and interference analysis processes can be automated which would benefit small entities. Lastly, in the *NPRM* and in section D of this IRFA, we discuss whether the section 25.136 criteria is still needed exploring a coordination and license registration model, and allowing the operation of uncoordinated earth stations. These approaches could lessen the burdens of the existing earth station coordination and licensing requirements in frequency bands above 24 GHz for small and other entities.

16. Based comments the Commission receives in response to the *NPRM*, we expect to more

[24] *Id.* § 603(c).

[25] *Id.* § 603(c)(1)-(4).

fully consider the alternatives raised in the *NPRM* as well as any alternatives raised by commenters, and the economic impact for small entities. The Commission's evaluation of the comments filed in this proceeding will shape the final alternatives it considers, the final conclusions it reaches, and any final actions it ultimately takes in this proceeding to minimize any significant economic impact that may occur on small entities.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

17. None.

STATEMENT OF
CHAIRMAN BRENDAN CARR

Re: *Facilitating More Intensive Use of Upper Microwave Spectrum*, SB Docket No. 25-305, Notice of Proposed Rulemaking (Oct. 28, 2025).

Starting with our "Space Month" agenda this October, we will be thinking more ambitiously and revisit our rules from first principles to ensure that America is the regulatory forum of choice for space innovators. With this item, we apply that big picture thinking to cut red tape that has throttled satellite infrastructure builds.

Over the last few years, it has become painfully clear that infrastructure reforms are needed to help make more productive use of satellite spectrum—specifically in what we refer to as the upper microwave band, or UMFUS for the uninitiated. Our current siting restrictions for these airwaves are woefully outdated and were artificially plucked out of thin air during a bygone era. So, with today's item, we will now propose a wide range of reforms to streamline our siting rules so that satellite earth stations can use the UMFUS bands more productively. We view these efforts as win-win, not zero-sum. We are confident that the changes we propose in this item will help earth stations and 5G operators to use these frequency bands more intensively while living side-by-side in harmony.

For their outstanding efforts on this item, I thank Gregory Coutros, Franco Hinojosa, Kerry Murray, Jake Riehm, and Jay Schwarz from the Space Bureau, and John Schauble and Charles Oliver from the Wireless Bureau.

STATEMENT OF
COMMISSIONER OLIVIA TRUSTY

Re: *Facilitating More Intensive Use of Upper Microwave Spectrum*, SB Docket No. 25-305, Notice of Proposed Rulemaking (Oct. 28, 2025).

Today's NPRM marks another important step forward in modernizing the FCC's spectrum policies to keep pace with the rapid growth of the space economy. Nearly a decade ago, the FCC adopted rules governing how Earth Stations could be sited in the Upper Microwave Flexible Use (UMFUS) bands. Since then, the communications landscape has changed dramatically.

Demand for spectrum from the satellite sector has surged as new constellations, technologies, and services have come online, connecting people and powering innovation around the globe.

This NPRM recognizes that progress and seeks to ensure our rules reflect today's marketplace realities. By examining ways to reform and streamline our Earth Station siting and licensing framework, the FCC can help enable more intensive and efficient use of the UMFUS bands. That means reducing regulatory friction, unlocking new opportunities for spectrum sharing, and promoting investment in next-generation satellite networks that complement our nation's 5G and 6G wireless systems.

As we look ahead, collaboration among industry, innovators, and federal partners will be critical in advancing our goal of maximizing the value of our spectrum resources while preserving flexibility for both terrestrial and space-based operations.

Today's NPRM is a step toward a balanced, forward-looking approach, one that ensures American leadership in space and spectrum innovation remains second to none.

I thank the Space Bureau for its thoughtful work on this item and its continued leadership in advancing policies that strengthen America's position in the global space economy. Today's NPRM will help ensure our spectrum rules remain as dynamic and innovative as the industries they support.