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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, 15, 25, 27, 74, 78, and 101

[GN Docket No. 22-352; FCC 23-36; FR ID 148292]

Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use

AGENCY: Federal Communications Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: In this document, the Federal Communications Commission (Commission or FCC) seeks comment on various proposed means for transitioning some or all of the 550 megahertz between 12.7-13.25 GHz (the 12.7 GHz band) to mobile broadband and other expanded use, as well as on alternative changes to the Commission's rules that could promote use of the band on a shared basis.

DATES: Comments are due on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**; reply comments are due on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Written comments on the Paperwork Reduction Act proposed information collection requirements must be submitted by the public, the Office of Management and Budget (OMB), and other interested parties on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Written comments on the Initial Regulatory Flexibility Analysis (IRFA) in this document must have a separate and distinct heading designating them as responses to the IRFA and must be submitted by the public on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Pursuant to §§ 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). See Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998). You may submit comments identified by GN Docket No. 22-352 by any of the following methods:

- *Electronic Filers*: Comments may be filed electronically using the internet by accessing the ECFS: *http://apps.fcc.gov/ecfs/.*
- *Paper Filers*:
    - Parties who choose to file by paper must file an original and one copy of each filing.
    - Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mall. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
    - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
    - U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street NE, Washington, D.C. 20554.
- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (March 19, 2020).* https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy.

People with Disabilities: To request materials in accessible formats (braille, large print, computer diskettes, or audio recordings), please send an email to FCC504@fcc.gov or call the Consumer & Government Affairs Bureau at (202) 418-0530 (VOICE), (202) 418-0432 (TTY).

FOR FURTHER INFORMATION CONTACT: Madelaine Maior of the Wireless Telecommunications Bureau (WTB), Broadband Division, at madelaine.maior@fcc.gov or 202-418-1466; Simon Banyai of the Wireless Telecommunications Bureau, at simon.banyai@fcc.gov or (202) 418-1443; or Nick Oros of the Office of Engineering and Technology, at nicholas.oros@fcc.gov or (202) 418-2099. For additional information concerning the Paperwork Reduction Act proposed information requirements contained in this document, send an e-mail to PRA@fcc.gov or contact Kathy Williams at (202) 418-2918.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Notice of Proposed Rulemaking (NPRM) in GN Docket No. 22-352 included in the Report and Order and Further Notice of Proposed Rulemaking and Notice of Proposed Rulemaking and Order, FCC 23-36, adopted on May 18, 2023 and released on May 19, 2023. The full text this document is available at https://docs.fcc.gov/public/attachments/FCC-23-36A1.pdf. The Report and Order and the Further Notice of Proposed Rulemaking (WT Docket No. 20-443), and the Notice of Proposed Rulemaking and the Order (GN Docket No. 22-352), i.e., the four FCC actions in FCC 23-36, are published separately in the Rules and Regulations and the Proposed Rules sections, as applicable, in this issue of the *Federal Register*.

Regulatory Flexibility Act: The Regulatory Flexibility Act of 1980, as amended (RFA), requires an agency to 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." The Commission seeks comment on potential rule and policy changes contained in the NPRM, and accordingly, has prepared an Initial Regulatory Flexibility Analysis (IRFA). The IRFA for the NPRM in GN Docket No. 22-352 is set forth below in this document, and written public comments are requested. Comments must be filed by the deadlines for comments on the NPRM indicated under the **DATES** section of this document and must have a separate and distinct heading designating them as responses to the IRFA. The Commission reminds commenters to file in the appropriate docket: GN Docket

No. 22-352 for the NPRM.

Paperwork Reduction Act: This document may contain proposed modified information collection requirements. Therefore, the Commission seeks comment on potential new or revised information collections subject to the Paperwork Reduction Act of 1995. If the Commission adopts any new or revised information collection requirements, the Commission will publish a notice in the Federal Register inviting the general public and the Office of Management and Budget to comment on the information collection requirements, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4)), the Commission seeks specific comments on how it might further reduce the information collection burden for small business concerns with fewer than 25 employees.

Ex Parte Rules: This proceeding shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules. 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. In proceedings governed by § 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments

thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). 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 § 1.1206(b). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

Synopsis

I. NOTICE OF PROPOSED RULEMAKING IN GN DOCKET NO. 22-352[1]

A. Background

1. 12.7-13.25 GHz Band—550 megahertz

1. In the United States, the 12.7 GHz band is allocated on a primary basis for non-Federal use to Fixed Service (FS), Fixed Satellite Service (Earth-to-space), and the Mobile Service (MS).[2] The band is shared among Fixed Microwave Services (Fixed Service or FS—part 101), fixed and mobile Broadcast Auxiliary Services (BAS—part 74), fixed and mobile Cable Television Relay Services (CARS—part 78), and FSS—part 25.[3] The 12.75-13.25 GHz band has only limited Federal use. Specifically, the National Aeronautics and Space Administration (NASA) operates a receive-only earth station for its Deep Space Network (DSN) at Goldstone, California, that is authorized to receive transmissions across the entire 12.75-13.25 GHz band.[4]

2. On October 28, 2022, the Commission released its *12.7 GHz Notice of Inquiry* (*12.7 NOI*) to broadly seek information on the current use of the 12.7 GHz band, how the

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[1] Record references and citations refer to GN Docket No. 22-352, unless otherwise noted.

[2] 47 CFR 2.106. The international and domestic allocations are similar for the 12.75-13.25 GHz band in most respects. However, space-to-Earth transmissions are permitted at 12.7-12.75 GHz in International Telecommunication Union (ITU) Regions 1 and 3 but not in Region 2. 47 CFR 2.106, International Table. Domestically, Footnote NG52 of the U.S. Table precludes most GSO FSS systems from using the band for domestic services and limits the deployment of FSS earth stations in the band. *Id.* at n.NG52 (n.NG52 revised as 47 CFR 2.106(d)(52), at 88 FR 37318, June 7, 2023, effective July 7, 2023).

[3] *See* 47 CFR part 25 (§§ 25.101-25.702), part 74 (§§ 74.600-74.690), part 78 (§§ 78.1-78.115), part 101 (§§ 101.1-101.1527).

[4] *See* 47 CFR 2.106 & n.US251 (n.US251 revised as 47 CFR 2.106(c)(251), at 88 FR 37318, June 7, 2023, effective July 7, 2023). *See also infra* note 11.

Commission could encourage more efficient and intensive use of the band, and whether the band is suitable for mobile broadband or other expanded use.[5] In response to the 12.7 *NOI*, very few parties have argued that the current balance of incumbents in the 12.7 GHz band should be left unchanged and that the band should remain untouched, and a significant number argue that the band should be used for exclusive, fixed or mobile, flexible high-powered use. Accordingly, in the NPRM, the Commission seeks comment on various proposed means for transitioning some or all of the 12.7 GHz band to mobile broadband and other expanded use. The Commission also seeks comment on changes to the Commission's rules that could promote expanded use of the band on a shared basis.

B. Expanded Use of the 12.7-13.25 GHz Band

1. Repurposing for Mobile Broadband or Other Expanded Use

3. In the United States, the 12.7 GHz band is allocated on a primary basis for non-Federal use to FS, FSS (Earth-to-space), and the MS.[6] The band is shared among Fixed Microwave Services (FS—part 101), Broadcast Auxiliary Services (fixed and mobile BAS—part 74), fixed and mobile Cable Television Relay Services (CARS—part 78), and Fixed Satellite Services (FSS—part 25).[7] Based on the Commission's licensing records, these services in the 12.7 GHz band include approximately 1,846 terrestrial service call signs that authorize a total of approximately 2,070 fixed point-to-point paths, and approximately 400 licenses that authorize

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[5] *See In the Matter of Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use*, GN Docket No. 22-352, Notice of Inquiry, FCC 22-80, 2022 WL 16634851, at *1, para. 2 (Oct. 28, 2022) (*12.7 NOI*). In the Order portion of the *12.7 NOI*, the Commission extended a temporary freeze on 12.7 GHz band applications pending the outcome of GN Docket No. 22-352. *Id.* at *14, para.44. When applicable, the Commission refers to the Order portion of the *12.7 NOI* as the *12.7 Freeze Extension Order*.

[6] 47 CFR 2.106. The international and domestic allocations are similar for the 12.75-13.25 GHz band in most respects. However, space-to-Earth transmissions are permitted at 12.7-12.75 GHz in ITU Regions 1 and 3 but not in Region 2. 47 CFR 2.106, International Table. Domestically, Footnote NG52 of the U.S. Table precludes most GSO FSS systems from using the band for domestic services and limits the deployment of FSS earth stations in the band. *Id*. at n.NG52 (n.NG52 revised as 47 CFR 2.106(d)(52), at 88 FR 37318, June 7, 2023, effective July 7, 2023).

[7] *See* 47 CFR part 25 (§§ 25.101-25.702), part 74 (§§ 74.600-74.690), part 78 (§§ 78.1-78.115), part 101 (§§ 101.1-101.1527).

mobile TV pickup operations.[8] There are also 27 call signs for FSS space stations and 43 call signs for FSS earth stations.[9] Terrestrial and space services in the 12.7 GHz band are subject to prior-coordination requirements to avoid interference.[10] The 12.7 GHz band has only limited Federal use. Specifically, the National Aeronautics and Space Administration (NASA) operates a receive-only earth station for its Deep Space Network (DSN) at Goldstone, California, that is authorized to receive transmissions across the entire 12.7 GHz band.[11]

4. Given the existing incumbent uses of the band, the *12.7 NOI* sought comment on two potential options for making some or all of the band available for mobile broadband and other expanded uses: (1) repurposing some or all of the band for such use with sunset of some or all incumbent services and relocation and cost-sharing requirements for new services,[12] and (2) potential sharing methods among new and incumbent services.[13] In connection with these potential options, the *12.7 NOI* asked about potential licensing approaches to facilitate deployment of new mobile broadband or other expanded use of the band.[14] The *12.7 NOI* also sought comment on an appropriate protection level that new operations in the 12.7 GHz band

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[8] Licensing data for fixed and mobile BAS under part 74 and Fixed Microwave under part 101 is in the Universal Licensing System (ULS). Licensing data for fixed and mobile CARS is in the Cable Operations and Licensing System (COALS). These statistics are based on a review of ULS on April 26, 2023. There are also approximately 65 fixed or mobile CARS call signs in COALS.

[9] FSS data are in the International Bureau Electronic Filing System (MyIBFS). These statistics are based on a review of MyIBFS on April 26, 2023.

[10] *See* 47 CFR 25.115(a)(6)(i), 101.21(f). The administrative aspects of the coordination process are set forth in 47 CFR 101.103 for coordinating terrestrial stations with earth stations, and in 47 CFR 25.203 for coordinating earth stations with terrestrial stations. *See also id.* § 25.251(a). The coordination procedures specified in 47 CFR 101.103 and 25.203 are applicable for coordinating between earth stations and fixed microwave links, and the information provided during coordination is set forth in 47 CFR 25.203(c)(2) and 101.103(d)(2)(ii).

[11] *See* 47 CFR 2.106 & n.US251 ("The band 12.75-13.25 GHz is also allocated to the space research (deep space) (space-to-Earth) service for reception only at Goldstone, CA (35°20′ N, 116°53′ W).") (n.US251 revised as 47 CFR 2.106(c)(251), at 88 FR 37318, June 7, 2023, effective July 7, 2023). For additional details concerning the domestic and international allocations, *see 12.7 NOI* at *2-*3, paras. 4-6. For additional details on current uses, *see 12.7 NOI* at *2-*5, paras. 4-11 (II.B. Current uses of the 12.7-13.25 GHz (12.7 GHz) Band).

[12] *See 12.7 NOI* at *5, *6-*9, *9-*11, paras. 12, 14-24, 25-30.

[13] *See 12.7 NOI* at *6-*9, paras. 14-24 (III.A. Potential Methods for Sharing the Band), *9-*11, paras. 25-30 (III.B. Sunset of Incumbent Services, Relocation and Cost-Sharing for New Services).

[14] *See 12.7 NOI* at *11-*12, paras. 31-32 (III.C. Potential Licensing Approaches, Service and Technical Rules), specifically, the Commission asked whether to assign new licenses on an exclusive-use basis, through the issuance of new geographic-area overlay licenses or consider other licensing approaches, such as non-exclusive, site-based, or a tiered approach such as that used in the Citizens Broadband Radio Service. *Id*. at *11, para. 31.

would have to provide incumbent services in the lower and upper adjacent bands.[15] The *12.7 NOI* also sought comment on the costs and benefits that should be considered in deciding whether to promote new service opportunities in the band through repurposing/relocation or sharing as well as whether the Commission should consider some combination of these methods.[16]

5. In response to the *12.7 NOI*, very few parties have argued that the current balance of incumbents in the 12.7 GHz band should be left unchanged and that the band should remain untouched. There is substantial support for repurposing these frequencies for mobile broadband or other expanded use and a significant number argue that the band should be used for exclusive, fixed or mobile, flexible high-powered use.[17] Commenters assert that the next-generation wireless technologies underpinning 5G, 5G Advanced, and 6G services will rely depend on extremely high data rates, and the reliability, low latency, and capacity that the 12.7 GHz band spectrum can provide.[18] In addition, standardization is already underway for 6G, and the 12.7 GHz band has considerable capacity and opportunity for channel reuse, making it a good fit for future 6G technologies,[19] including high-speed, low-latency, bandwidth-intensive applications, such as augmented reality (AR), virtual reality (VR), telesurgery, and robotics.[20]

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[15] *See 12.7 NOI* at *12-*14, paras. 34 (describing incumbent services in 12.2-12.7 GHz band), 35-38 (describing incumbent Federal services in 13.25-13.4 GHz and 13.4-13.75 GHz bands), 39-40 (recognizing the need for services in these adjacent bands to continue providing service and seeking comment on whether provisions beyond the existing 12.7 GHz band fixed service protection levels for adjacent bands would be necessary for mobile broadband or other expanded-use operations in the 12.7 GHz band to prevent harmful interference to operations in those adjacent bands).

[16] *See 12.7 NOI* at *5, para. 12.

[17] *See, e.g.*, AT&T Comments at 4; Competitive Carriers Association Reply at 4 (CCA); CTIA Comments at 5; DISH Network Corp. Comments at 5 (DISH); Ericsson Comments at 10; Nokia Comments at 3; Qualcomm Comments at 7; T-Mobile USA, Inc. Comments at 3; U.S. Cellular Corp. Reply at 2 (UScellular); Verizon Comments at 1; 5G Americas Reply at 5; 5G for 12 GHz Coalition Comments at 3. *But see* EIBASS Comments at 1; Ovzon Comments at 1. Several commercial wireless interests note that more lower mid-band spectrum is needed and that the 12.7 GHz band should be viewed as a complement to lower mid-band spectrum—not a replacement. *See* AT&T Comments at 1; Ericsson Comments at 9; T-Mobile Comments at 14; 5G Americas Reply at 6.

[18] *See* Ericsson Comments at 5; Qualcomm Comments at 3, 7. Qualcomm notes that next generation technology advancements such as active Antenna Systems (AAS) and Giga-MIMO will compensate for attenuation in such high frequency bands. Qualcomm Comments at 5; *see also* Nokia Comments at 2-3.

[19] Ericsson Comments at 6, 8.

[20] Consumer Technology Association Comments at 2 (CTA).

6. Accordingly, the Commission proposes to repurpose some or all of the 12.7 GHz band for mobile broadband and other expanded uses and seeks comment on this proposal. The Commission seeks comment on the economic benefits of introducing mobile broadband or other expanded use in all or part of the 12.7 GHz band. Commenters should consider the economic value of current and future use cases for each type of use, including benefits and opportunity costs to consumers and the Nation's economy overall, as well as to unserved or underserved areas and specialized market segments (e.g., education, telemedicine, and manufacturing). Commenters should also address the benefits of international harmonization both in terms of devices and network deployments. In addition, the Commission encourages commenters to consider the economic impact on consumers and businesses in rural communities and areas that are unserved or underserved by current broadband providers, as well as any economic impact on small businesses.

7. The propagation characteristics of this frequency range will require operators to transmit at relatively high power to achieve meaningful coverage and capacity.[21] Parties that support mobile broadband use of the band argue that sharing regimes premised upon relatively low power operations would not provide the coverage needed to make investment worthwhile.[22] Nokia argues that fixed paths—both BAS/CARS, Fixed Microwave Services and Common Carrier and Operational Fixed Services (OFS)—are concentrated in major cities along the coasts and that allowing these operations to remain in the band would discourage investment in mobile broadband expansion in areas that would most benefit from it.[23] Similar to fixed point-to-point links, current mobile use of the band is limited to BAS/CARS television pickup services generally licensed to operate "over an area defined by a point-radius or other wide-area basis,"

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[21] CTIA Comments at 9; Rural Wireless Association, Inc. Comments at 2-3 (RWA); Verizon Comments at 9; T-Mobile Reply at 4.

[22] Ericsson states that sharing methods based on dynamic sharing are not likely to optimize usage of the spectrum, and instead "will result in lower power levels, uncertainty regarding access to the band, and limited investment and utility." Ericsson Comments at 10. 5G Americas also argues that the Commission should relocate incumbents instead of creating a low-power sharing regime. 5G Americas Comments at 4-5.

[23] Nokia Comments at 4.

including large, densely-populated areas with higher spectrum-use demands.[24] Accordingly, parties favoring mobile deployment in the band opposed sharing with these incumbent systems.[25] Some note that sharing should be used in situations where clearing the band is not possible, which is not the case in the 12.7 GHz band, where coordination, repacking and relocation are available.[26]

8. The record, as well as the Commission's experience with other bands, reflects that this proposed repurposing will enable next-generation mobile and fixed broadband services in the 12.7 GHz band. AT&T, T-Mobile, Verizon, Federated Wireless, Nokia, CTIA, Celona, 5G for 12 GHz Coalition, 5G Americas, Dynamic Spectrum Alliance, CCA, and DISH, all support bringing terrestrial mobile wireless services into the 12.7 GHz band.[27] Based on the Commission's well established success in repurposing other bands for new services, such as Personal Communications Service (PCS) and Advanced Wireless Services (AWS), using exclusively assigned geographic-area licenses,[28] the Commission agrees with commenters that assigning exclusive licenses is most likely to foster the innovation necessary for an equipment ecosystem to develop in the band and best facilitate the relocation and repacking of incumbents, which in turn will accelerate deployment of mobile broadband and other expanded services in the band.[29] The Commission seeks comment on these proposals. The Commission also discusses

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[24] Nokia Comments at 5.

[25] *See, e.g.*, Nokia Comments at 4-5.

[26] T-Mobile Reply Comments at 6-7; Verizon Comments at 5-6.

[27] *See* AT&T Comments at 3-4; CTA Comments at 2; CTIA Comments at 1, 6; DISH Comments at 1; Dynamic Spectrum Alliance Comments at 1-2 (DSA); Ericsson Comments at 1, 8; Federated Wireless Comments at 1; NCTA Comments at 1; Nokia Comments at 2-3; OneWeb Comments at 1; Qualcomm Inc. Comments at 6 (Qualcomm); T-Mobile Comments at 1; Verizon Comments at 1; 5G for 12 GHz Coalition Comments at 2-3; CCA Reply at 2; Celona Reply at 2-3; US Cellular Reply at 2; 5G Americas Reply at 4-5.

[28] *See e.g.*, *infra* note 52 and accompanying text; *accord Spectrum Frontiers 1st R&O and FNPRM*, 31 FCC Rcd at 8027-28, paras. 29-30, 8045-46, paras. 78-79.

[29] Indeed, the majority of the interests that advocate for expanded fixed or mobile uses argue against sharing in the band and for repacking or relocation of incumbents. *See, e.g.,* CTIA Comments at 1,7; Ericsson Comments at 11; Nokia Comments at 4-6; Qualcomm Comments at 7; T-Mobile Comments at 10-12. 5G Americas states that "the Commission should relocate incumbents to the greatest extent possible rather than apply a low-power sharing regime" and that "[r]elocation expenses should be reimbursed from the pool of auctions proceeds for relocation pursuant to a concrete deadline and should be shared by all new 12.7 GHz entrants, on a *pro rata* share." *See* 5G Americas Reply Comments at 6-7.

below and seeks comment on whether limited sharing in the band among different types of services is possible.

9. The National Association of Broadcasters and the Society of Broadcast Engineers assert the 12.7 GHz band is generally not favored by BAS for long-distance high reliability links; however, both assert it is necessary for short distance links when no other frequencies are available due to congestion of the 2 GHz and 6 GHz bands.[30] Accordingly, although broadcaster commenters oppose relocation of mobile BAS to other frequency bands, repacking to a discrete portion of the 12.7 GHz band remains not only possible, but a favorable outcome according to broadcasters, provided they are reimbursed and are adequately protected.[31] The Commission therefore proposes to repack mobile BAS/CARS incumbents to a portion of the 12.7 GHz band.

10. The Commission acknowledges that some satellite industry commenters do not support opening the 12.7 GHz band to terrestrial mobile use and would instead prefer rule changes to intensify satellite use of the band in the United States.[32] Other satellite companies, however, support examining whether the band can be opened to mobile or other expanded terrestrial use, but they also note their concern that the Commission take steps to ensure that services in adjacent bands are not impacted by out-of-band emissions below 12.7 GHz.[33] Furthermore, as T-Mobile notes, satellite operators themselves recognize that there has been limited use of the 12.7 GHz band in the U.S. for satellite operations, which makes use of the

[30] National Association of Broadcasters Comments at 3 (NAB); Society of Broadcast Engineers Comments at 2-3 (SBE).

[31] NAB Comments at 2; NAB Reply at 4.

[32] Eutelsat Comments at 2-3, 5-6; Intelsat/SES May 12, 2023 Ex Parte at 2, B-1 (noting that FSS ability to operate in 12.7 GHz band is constrained by footnote NG52 of the U.S. Table of Frequency Allocations limiting use of the band to international systems); Intelsat License LLC and SES Americom, Inc. Comments at 2; Hispasat Reply at 3-4 (arguing that relocating incumbent FSS services out of the 12.7 GHz band, as suggested by certain commenters, is not a viable option because satellite operators have made significant long-term investments, considering the 15–20-year lifespan of a GSO satellite, in reliance on existing frequency allocations).

[33] Kepler Communications Inc. Comments at 2-3 (Kepler); Space Exploration Holdings, LLC Comments at 3 (SpaceX); WorldVu Satellites Limited Comments at 4 (OneWeb).

band for mobile wireless operations feasible.[34] As noted by Nokia, "of the total number of GSO satellites, only eight of the 23 space stations are in the arc of 132.85 WL to 30 WL," and "[r]egarding non-GSO satellites, the one operational system does not have any U.S. earth stations licensed in this band, another system is not operational, and a third has surrendered the Ku-band portion of the grant."[35] Therefore, according to Nokia, "the sharing of the band with satellite service mostly refers to sharing with GSO FSS in the uplink direction (Earth-to-space)," and "[w]hile more detailed analysis taking into account the characteristics of both systems would be more conclusive, it is expected that the mobile broadband service can share the band with [existing] GSO FSS uplink with no restrictive conditions."[36] The Commission seeks comment on its proposal that satellite systems in the band be conserved in their current state with no further expansion in FSS use in the band.[37] The Commission also seeks comment on the best method for mobile and fixed systems to share with these remaining satellite systems, while ensuring against harmful interference to such satellite incumbents.

2. Future Licensing of Incumbent Services

11. Effective September 19, 2022, the International, Public Safety and Homeland Security, Media, and Wireless Telecommunications Bureaus announced a 180-day freeze on the filing of new or modification applications for licenses or other authorizations in the 12.7 GHz band.[38] The purpose of this temporary freeze was to preserve the current landscape of authorized operations in the 12.7 GHz band pending the Commission's consideration of actions in this

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[34] *See* T-Mobile Reply at 9 (citing Eutelsat Comments at 6, OneWeb Comments at 2-3). T-Mobile adds that given the restriction on satellite use of the 12.7 GHz band due to NG52 which restricts the majority of the 12.7 GHz band in the U.S. to international systems, it would be unreasonable for satellite operators to claim a reliance interest in expanded use of the band for satellite operations. T-Mobile Reply at 9.

[35] Nokia Comments at 6 citing *12.7 NOI* at para. 11.

[36] Nokia Comments at 6.

[37] The Commission's proposal would not preclude the possibility of a new U.S.-licensed satellite that would have no visibility into the United States, as defined in the Communications Act, i.e., states, territories, and possessions. 47 U.S.C. 153.

[38] *180-Day Freeze on Applications for New or Modified Authorizations for the 12.7-13.25 GHz Band*, Public Notice, DA 22-974, 2022 WL 4358635, at *1 (IB/PSHSB/MB/WTB Sept. 19, 2022).

proceeding.[39] In light of the *12.7 NOI*, the Commission extended the freeze pending the outcome of GN Docket No. 22-352.[40] Because the Commission proposes to transition most of the band to exclusively assigned geographic-area licenses for mobile broadband and other expanded uses, it proposes to revise its rules to, in essence, make the freeze permanent. Accordingly, the Commission proposes rule revisions to dismiss any new space station license applications and new requests for access to the U.S. market through non-U.S.-licensed space stations, or those parts of any such applications and requests, that seeks to operate in the 12.7 GHz band. This would not apply to new applications for space stations limited to serving earth stations outside the United States, applications for modification of existing space station authorizations,[41] relocations of existing space stations pursuant to the Commission's fleet management policy,[42] or to applications for replacement space stations.[43] The Commission proposes rule revisions to dismiss applications, or those portions of applications, received for new earth station licenses, and modifications to earth stations currently authorized, to operate in the 12.7 GHz band. This would not apply to applications for renewal or cancellation of current earth station authorizations,[44] or modifications to correct location or other data required in the earth station file.[45] The Commission also proposes rule revisions to dismiss applications received for new or major modifications to fixed microwave, fixed or mobile BAS and CARS stations to operate in the 12.7 GHz band. This change does not extend to applications for renewal, cancellation or

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[39] *Id*. The Bureaus noted that the Commission or the Bureaus might extend the freeze if doing so is deemed necessary to avoid undermining the purpose of the freeze. *Id*.

[40] *See 12.7 Freeze Extension Order*, FCC 22-80, at para. 44 (Commission extended freeze pending the outcome of GN Docket No. 22-352).

[41] 47 CFR 25.117.

[42] 47 CFR 25.118(e) (permitting the relocation of a GSO space station without prior authorization, but upon 30 days prior notice to the Commission and any potentially affected licensed spectrum user, provided that the operator meets specific requirements, including a requirement that the space station will be relocated to a position within ±0.15° of an orbital location assigned to the same licensee).

[43] 47 CFR 25.158(a)(2), 25.165(e)(1), (2).

[44] 47 CFR 25.121(e).

[45] *See generally International Bureau Addresses Accuracy of Earth Station Location Information in IBFS*, Public Notice, 32 FCC Rcd 9512 (IB 2017); 47 CFR 25.117.

applications to modify incumbent mobile BAS/CARS licenses to the mobile BAS/CARS repack band. The Commission seeks comment on these proposals.

3. Transition of Incumbent Operations

12. In the *12.7 NOI*, the Commission inquired whether any incumbent services in this band should be sunset,[46] with existing operations relocated from all or part of the band and whether new exclusive, geographic-area-licenses should be required to protect or relocate incumbent operations before the sunset date.[47] The Commission inquired whether the Emerging Technologies (ET) framework could be applied to relocation of incumbents from this band and whether the relocation procedures need to differ for one or more incumbent uses.[48] While the Commission proposes that FSS incumbents would not be subject to relocation or sunset, the Commission proposes to apply its ET procedures to relocate or repack incumbent terrestrial licensees to introduce new services into a frequency band populated by incumbent licensees. ET procedures represent a broad set of tools that the Commission uses, revises, and updates to aid the process of making spectrum available for new uses. Pursuant to these procedures, the

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[46] The sunset is the date by which all incumbent operations cease to be protected from interference by new entrants. *See, e.g.,* 47 CFR 27.1253(a), 101.79(a).

[47] *12.7 NOI* at *9-*10, paras. 25-26.

[48] *12.7 NOI* at *10, para. 26; *see, e.g.*, Amendment of Part 2 of the Commission's Rules (47 CFR part 2) to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, Ninth Report and Order and Order, 21 FCC Rcd 4473, 4484, para. 19 (2006) (requiring new entrants to relocate incumbents system-by-system rather than link-by-link due to the unique operations of incumbents' systems); *Expanding Flexible Use of the 3.7 to 4.2 GHz Band,* GN Docket No. 18122, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343, 2416, para. 182 (2020) (*3.7 GHz Band Report and Order*). Some transitions were based on rules that called for negotiations when an ET licensee proposed to operate a base station before the sunset date that would interfere with an incumbent's operation. *See, e.g.*, 47 CFR 101.69-101.81. Other transitions had relatively short sunset dates. *See, e.g.,* 47 CFR 101.83-101.97. In the Broadcast Incentive Auction Transition and for the 3.7-4.2 GHz (3.7 GHz band) Transition, the Commission established cost catalogs for relocation expenses. *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, 29 FCC Rcd 6567, 6820, para. 619 (2014) (delegating authority to the Media Bureau "to . . . develop a final Catalog of Eligible Expenses, and make other determinations regarding eligible costs and the reimbursement process."); *see also Wireless Telecommunications Bureau Seeks Comment on Preliminary Cost Category Schedule for 3.7-4.2 GHz Band Relocation Expenses*, Public Notice, 35 FCC Rcd 4440 (WTB May 2020). The D.C. Circuit has upheld the Commission's authority to require new entrants to relocate incumbent systems to comparable facilities. *See, e.g.*, *Teledesic LLC v. FCC,* 275 F.3d 75, 84-87 (D.C. Cir. 2001); *see also Ass'n of Public-Safety Commc'ns Officials-Int'l, Inc. v. FCC*, 76 F.3d 395, 400 (D.C. Cir. 1996) (upholding elimination of an exemption for public safety incumbents from a relocation regime in which new licensees would pay all costs associated with relocating incumbents to comparable facilities).

Commission will set a "sunset date" for the terrestrial incumbents in this band—a date after which these licensees may not cause harmful interference to new band entrants.[49] Prior to the sunset date, the new entrants may not cause harmful interference to terrestrial incumbents but will be allowed to enter into mandatory negotiations with these incumbents to gain early entry into the band and, if necessary, may relocate these terrestrial incumbents to comparable facilities.[50] Because new entrants may have to relocate some of these incumbents from a larger frequency range or greater geographic area than where the new entrants will operate, the Commission may establish a companion set of cost-sharing procedures.[51] The Commission seeks comment on these proposals and asks commenters addressing them to outline how they would apply the ET framework to this band as discussed further below for each type of terrestrial incumbent.

a. Fixed Service

13. Based on its goal of making the 12.7 GHz band available for advanced communications services, and supported by the record, the Commission proposes to revise the Commission's rules to make all incumbent point-to-point operations in the band under parts 74,

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[49] The sunset is the date by which all incumbent operations cease to be protected from interference by new entrants. *See, e.g.*, 47 CFR 27.1253(a), 101.79(a). *See infra* Proposed Rules in GN Docket No. 22-352, § 27.1712. Regarding protection of incumbent microwave systems prior to sunset and the trigger for relocation, the Commission seeks comments on whether the references in § 24.237(a) to TIA Telecommunications Systems Bulletin 10–F, "Interference Criteria for Microwave Systems," May 1994, (TSB10–F), and Appendix I of Subpart E of Part 24 – A Procedure for Calculating PCS Signal Levels at Microwave Receivers), and § 24.237(d) Table 3 (Coordination Distance in Kilometers) need to be updated or adjusted to account for use in the 12.7 GHz band.

[50] *See, e.g., Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343 (2020) (*3.7 GHz Band Report and Order*), *aff'd PSSI Global Services v. FCC*, 983 F.3d 1 (D.C. Cir. 2020) (permitting accelerated relocation of incumbent FSS space and earth stations by new wireless entrants); *Improving Public Safety Communications in the 800 MHz Band*, WT Docket 00-55, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969 (2004) (relocation of BAS, CARS, and LTTS incumbents by new, nationwide wireless entrant); *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, ET Docket No. 92-9, First Report and Order and Third Notice of Proposed Rulemaking, 7 FCC Rcd 6886 (1992) (relocation of FS incumbents by new wireless entrants). The D.C. Circuit has upheld the Commission's authority to require new entrants to relocate incumbent systems to comparable facilities. *See, e.g., Teledesic LLC v. FCC*, 275 F.3d 75, 84-87 (D.C. Cir. 2001); *see also Ass'n of Public Safety Communications Officials-Int'l, Inc. v. FCC*, 76 F.3d 395, 400 (D.C. Cir. 1996) (upholding elimination of an exemption for public safety incumbents from a relocation regime in which new licensees would pay all costs associated with relocating incumbents to comparable facilities).

[51] *See Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, Notice of Proposed Rule Making, 11 FCC Rcd 1923 (1995).

78, and 101 secondary to new mobile broadband/expanded use operations on a date certain. The Commission seeks comment on whether this sunset date should be three, five, or ten years after the first license for such new operations is issued in the band. Should the sunset date differ based on the incumbent service? Fixed microwave incumbents have a long and successful history of relocation, including clearing the 1850-1990 MHz band for Personal Communications Service (PCS) and the 2110-2200 MHz bands for Advanced Wireless Services (AWS) bands.[52] CTIA argues that most incumbent services currently operating in the 12.7 GHz band can be relocated to different media or spectrum bands without any loss of functionality.[53] For example, CTIA estimates that nearly 80 percent of the BAS licenses in the 12.7 GHz band are for fixed links that could be moved either to different fixed microwave service bands or to alternative media such as fiber.[54]

14. Verizon notes that the 12.7 GHz band "is home to approximately 1,697 Broadcast Auxiliary Service (BAS) call signs, 15 Cable Television Relay Service (CARS) licenses, and 224 call signs for part 101 licensed point-to-point microwave links."[55] Verizon contends that "[s]uch technologies, which support public service and public safety among other functions, could be relocated (and upgraded) consistent with the Commission's longstanding *Emerging Technologies* principles.[56] Nokia believes that the Commission should relocate the limited number of fixed links operating in the 12.7 GHz band.[57] Ericsson states that the

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[52] *See* CTIA Comments at 7-8 & nn. 20, 21 (citing *Amendment of the Commission's Rules to Establish New Personal Communications Services*, GN Docket No. 90-314, Second Report and Order, 8 FCC Rcd 7700 (1993); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, Second Report and Order*, 17 FCC Rcd 23193 (2002); *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-220 MHz Band*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16214, para. 304 (2012)).

[53] CTIA Comments at 7.

[54] CTIA Comments at 8.

[55] Verizon Comments at 6-7.

[56] Verizon Comments at 7.

[57] Nokia Comments at 4. Nokia notes that "[w]hile the nationwide number of fixed point-to-point links is limited, BAS fixed links (1,172 fixed paths) are concentrated in major cities along the coasts" and "[o]ther licensed fixed service links, such as Common Carrier and Operational Fixed Services (OFS) are concentrated in the West Coast

Commission, "[w]here possible, … should explore opportunities to relocate incumbents" from the 12.7 GHz band or, in certain instances, consolidate, segment, and repack certain incumbent users into a smaller portion of the band.[58] 5G Americas supports the relocation of incumbents from the 12.7 GHz band "to the greatest extent possible."[59]

15. The record reflects a strong consensus among parties that the Commission utilizes its Emerging Technologies policies to transition and sunset all incumbent point-to-point licenses in the band under parts 74, 78, and 101.[60] The Commission agrees that doing so will appropriately balance the operational needs of incumbents with the public interest benefits of expanded use of the spectrum. The transition of fixed links is relatively straightforward and entails the relocation of independent fixed point-to-point microwave links which can proceed link-by-link basis consistent with its Emerging Technology policies. The Commission therefore proposes to apply §§ 101.69, 101.73, and 101.75 and amend §§ 74.690 and 78.40 to govern relocation of incumbent fixed services from this band.[61] The Commission further proposes that, three, five, or ten years after the first mobile broadband/expanded use license is issued in the band, incumbent point-to-point licenses in the band would become secondary (operate on an unprotected, non-interference basis) to new licensed operations. The Commission seeks comment on this proposal including the appropriate sunset period for point-to-point licenses.

b. Mobile BAS/CARS

16. The Commission seeks comment on its proposal to repack incumbent mobile BAS/CARS licensees into a portion of the 12.7 GHz band to be designated for mobile

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cities and states." *Id.* Nokia recommends that the Commission relocate such services to other fixed microwave bands. *Id.*

[58] Ericsson Comments 11.

[59] 5G Americas Reply Comments 5.

[60] *See, e.g.,* AT&T Comments at 4; CTIA Comments at 6-7; Nokia Comments at 3-5; T-Mobile Comments at 3-4; Competitive Carriers Association Reply Comments at 3; 5G Americas Reply Comments at 6-7. *But see* Celona Inc. Comments at 1-2 (noting that "Celona does not advocate sunsetting or relocating incumbent users, but instead supports coexisting with the incumbents through a DSMS model.").

[61] *See infra* Proposed Rules in GN Docket No. 22-352*,* 47 CFR 74.690, 78.40, 101.69, 101.173, 101.75.

BAS/CARS operations. The 12.7 GHz band has approximately 450 BAS and CARS call signs that authorize land mobile television pickup stations. These are effectively mobile news gathering technologies that operate over an area defined by a point-radius or other wide-area basis, making them the most likely to potentially interfere with or receive interference from any new mobile broadband co-channel entrants. While these land mobile pickup transmitter licensees coordinate with each other and share the spectrum among multiple licensees in any given area,[62] coordination among these incumbents and new mobile broadband or other expanded use operations is infeasible given that the former need to operate temporary fixed links or mobile transmitters anywhere in their market, often on short notice, and that the latter will be ubiquitous. For this reason, the Commission asked in the *12.7 NOI* if mobile BAS/CARS operations could be relocated to a portion of the band or else to a different band or technology.[63]

17. Given the varied and widespread nature of mobile BAS (403 call signs) and mobile CARS (50 call signs) operations, Verizon encourages the Commission to propose relocating these operations from the band.[64] Nokia also urges relocation of mobile BAS/CARS operations because transmitters in the television pickup service are often licensed to operate over an area defined by a point-radius or other wide-area basis and across the entire frequency band, with large operating areas that include major cities.[65]

18. Significantly, NAB and Scripps Broadcasting recognize that it may be possible to repack broadcaster operations in the 12.7 GHz band into a smaller segment of the band, assuming the Commission adopts rules that will fully protect those broadcaster operations from

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[62] *See infra* Proposed Rules in GN Docket No. 22-352, 47 CFR part 74 (§§ 74.600-74.690), part 78 (§§ 78.1-78.115).

[63] *12.7 NOI* at *14, para. 28. Ericson recognizes that mobile TV operations "could make sharing the 12.7 GHz band with new terrestrial mobile broadband services more challenging" and that "[o]pportunities to relocate incumbents or consolidate and segment the band should be prioritized," such as "repack[ing] certain existing uses into a smaller portion of the band." Ericsson Comments at 10-11.

[64] Verizon Comments at 7.

[65] Nokia Comments at 5. Nokia contends that "mechanisms to enable coexistence with mobile incumbents are usually more complex than in case of fixed incumbents." *Id.* It also notes that "[r]estrictions on the mobile broadband deployments in such areas to allow sharing with mobile incumbents would decrease the value of the band." *Id.* at 4.

harmful interference caused by new entrants and ensure that broadcaster do not bear any costs associated with relocation.[66] SBE cautions that the relocation of mobile BAS and other incumbent broadcast operations would be impractical and expensive, because (1) there is no "clear alternative offering the flexibility necessary for mobile ENG and other broadcaster operations; and (2) "even if there were a clear alternative … relocation would "render broadcasters' incumbent mobile newsgathering equipment obsolete—resulting in significant costs to replace and deploy new equipment (for use in other spectrum or within a newly reserved portion of existing spectrum), and for which broadcasters' expenses would need to be compensated."[67] As CTIA observes, in 2000 the Commission adopted rules to repack mostly mobile BAS/CARS operations, similar to those in the 12.7 GHz band, from the 1990-2110 MHz band to the 2025-2110 MHz band using more spectrally efficient equipment.

19. The Commission proposes to repack mobile BAS/CARS incumbents into a segment of the 12.7 GHz band to be designated for mobile BAS/CARS use, and the Commission seeks comment on this proposal. The Commission proposes to retain 25 megahertz for mobile BAS/CARS operation and to repack existing operations into this dedicated band. Is 25 megahertz adequate to accommodate current mobile BAS/CARS incumbent operations in the 12.7 GHz band? If no, how much spectrum would be required for mobile BAS/CARS use after repacking? Where within the 12.7 GHz band should these repacked operations be located? Would locating the repack band at the top, bottom, or both ends of the 12.7 GHz band more effectively serve to mitigate potential interference, from new 12.7 GHz band mobile broadband or other expanded use operations, to operations in adjacent bands? Are the existing provisions that reserved 13.15-13.2125 GHz for mobile BAS/CARS inside a 50 km radius of 100 television

[66] NAB Comments at 2, 7-8; Scripps Broadcasting Comments at 1, 5. NAB emphasizes that, any relocation of broadcasters' operations must be fully funded. NAB Reply Comments at 5; *see also* Scripps Broadcasting Comments at 5. Broadcasters have made significant investments in 12.7 GHz operations, and the costs of relocation may be substantial. NAB Reply at 5. Even frequency changes within the 12.7 GHz band may require antenna replacements that are costly or impractical. *Id.*; *see also* Scripps Broadcasting Reply at 5.

[67] SBE Comments at 4-5.

markets relevant to this question?[68] Commenters should discuss advantages and disadvantages of different repacking options, included economic considerations.

20. The Commission seeks comment on the typical use of this band by mobile BAS/CARS incumbent licensees. For example, is this band typically used by BAS licensees for traditional ENG type operations from a mobile pickup van or truck back to the studio or central receiver site? Or is this band used primarily for shorter more localized transmission from cameras or backpack transmitters to the ENG truck? Are there other typical uses for mobile transmitters in this band? Is equipment in this band tunable within the band? Is equipment in this band capable of scaling bandwidth to different sized channels? How intensively is this band used in practice by incumbent licensees for mobile operations compared to other BAS bands such as 2 GHz and 6 GHz? Is equipment currently being manufactured and marketed for mobile BAS/CARS operation in this band? Can new 12.7 GHz band equipment used for studio-transmitter links be reconfigured for ENG or other mobile BAS/CARS uses?

21. The Commission seeks comment on how its Emerging Technologies procedures should apply to incumbent use of non-fixed or mobile operations in the band. Whereas the transition of fixed links is relatively straightforward, in that it entails the relocation of independent fixed point-to-point microwave links, and can proceed link-by-link on an as-needed basis, the integrated nature of mobile BAS and CARS operations makes link-by-link relocation infeasible. It is further complicated by incumbent use of frequency-agile, non-fixed or mobile stations.[69] The Commission has previously required that the BAS and CARS operations be cleared from transitioning bands on a market-by-market basis before any new entrant could

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[68] *See* 47 CFR 2.106 note NG53, 74.602(a) note 2; 78.18(l) (note NG53 revised as 47 CFR 2.106(d)(53), at 88 FR 37318, June 7, 2023, effective July 7, 2023). *See also Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees*, Report and Order (76 FR 59559 (Sept. 27, 2011)), Further Notice of Proposed Rulemaking (76 FR 59614 (Sept. 27, 2011)), and Memorandum Opinion and Order (76 FR 59559 (Sept. 27, 2011)), 26 FCC Rcd 11614, 11626 para. 24 (2011) (Commission excluded FS from 13.150-13.200 MHz nationwide because that spectrum was already reserved for TV pickup operations in 100 markets).

[69] Further, while BAS and CARS mobile operations are licensed for specific geographic markets, in some cases they operate nationwide.

begin operations.[70] It may also be necessary for a new entrant to relocate more non-fixed or mobile BAS and CARS facilities than an interference analysis might indicate is technically necessary in order to meet the comparable facility requirement for relocating non-fixed or mobile BAS or CARS operations.[71] Should a new entrant therefore be obligated to relocate all incumbent non-fixed or mobile BAS and CARS operations in all affected BAS and CARS markets, including those markets where the new entrant provides partial, minimal, or even no service? The Commission seeks comment on its proposals.

22. Once incumbent mobile BAS/CARS have transitioned into a repacked band, should the Commission consider whether to allow the following to operate in some or all of the mobile BAS/CARS repack band: incumbent fixed point-to-point (PTP) BAS, or all incumbent fixed PTP (some of which may have tunable equipment) so long as such fixed PTP links would not intersect with incumbent mobile BAS/CARS authorized mobile operating areas, and new mobile BAS/CARS operations?[72] If the repack band is reserved nationwide for mobile BAS/CARS (limited to incumbents during a transition period) are there any scenarios in which the Commission should consider permitting licensed expanded-use services to operate in portions of the repack band (spectral or geographical) after the transition period? Could an automated spectrum management system at a later design date be needed in the mobile BAS/CARS repack band, or could shared access occur without the use of database managed

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[70] *See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile Satellite Service*, ET Docket No. 95-18, Third Report and Order and Third Memorandum Opinion and Order, 18 FCC Rcd 23638, 23653-23660 paras. 29-42 (2003); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, ET Docket No. 00-258, Sixth Report and Order, Third Memorandum Opinion and Order and Fifth Memorandum Opinion and Order, 19 FCC Rcd 20720, 20746-20753 paras. 57-73 (2004) (*AWS Sixth Report and Order*); 47 CFR 74.690(e)(1), 78.40(f)(1).

[71] *Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands*, Notice of Proposed Rulemaking, 19 FCC Rcd 19263, 19285 para. 52 (2006); 47 CFR 74.690(d), 78.40(d)-(e). For example, operations of non-fixed or mobile BAS or CARS operations in an adjacent market may need to be relocated even though the new entrant does not initiate operations in that adjacent market.

[72] *See* 47 CFR 101.147(a) n.34.

sharing systems?[73] The Commission seeks comment on these issues.

c. Fixed Satellite Service

23. *Space stations.* As noted in its *12.7 NOI*, 27 space stations' records specify use of the 12.7 GHz band with all 27 specifying downlink (space-to-Earth) in the 12.7-12.75 GHz band, 20 specifying uplink (Earth-to-space) in all or a segment of the 12.75-13.25 GHz band, and four specifying uplink (Earth-to-space) in the 12.7-12.75 GHz band and in all or a segment of the 12.75-13.25 GHz band.[74] More generally, of the total number of GSO satellites, the Commission noted in the *12.7 NOI* that only eight of the 23 space stations are in orbital locations with good visibility to all or significant portions of CONUS.[75] Of the four satellite records associated with three non-geostationary orbit (NGSO) systems, the Commission noted that the one operational system does not have any U.S. earth stations licensed in this band, another system is not operational, and a third has surrendered the Ku-band portion of the grant.[76] The Commission is not proposing to sunset or to require new entrants to relocate FSS incumbents, which the Commission proposes to define as any FSS space station or earth station authorized to serve or operate in the United States in accordance with the Table of Allocations based on an application or petition for market access filed before September 19, 2022.

24. Verizon states, however, that "the Commission's recent action to open the band to new [NGSO] satellites has substantially changed the spectral landscape, despite the goal of the freeze on processing of new applications in this frequency range."[77] According to Verizon, "the Commission should seek further comment on how new wireless operations can coexist with the

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[73] 47 CFR 96.53-96.66 (Spectrum Access System for the Citizens Broadband Radio Service); *id.* §§ 15.713-15.715 (White space database); *id.* § 15.407(k) (Automated Frequency Coordination (AFC) system for 6 GHz devices). No AFC system operators have yet been designated by the Commission.

[74] *12.7 NOI* at *5, para. 11.

[75] *Id.* (Commission noted that these eight space stations are in the arc of 132.85 WL to 30 WL.)

[76] *Id.*

[77] Verizon Comments at 8 & n.26 (citing *SpaceX Gen2 Order*, FCC 22-91, 2022 WL 17413767, at *1 para. 1, *18, para. 42 (authorizing the construction, deployment, and authorization of up to 7,500 satellites (Earth-to-space) in the 12.75-13.25 GHz band, among other segments)).

substantial number of new NGSO FSS deployments."[78] In addition, Verizon states that "[t]o the extent FSS operations are not relocated from the band, the Commission should seek comment on how it might leverage the prior-coordination requirements for terrestrial and space services to facilitate coexistence among operations in the band."[79] The Commission seeks comment accordingly. The Commission notes, however, that SpaceX supports the Commission's decision to explore use of the 12.7 GHz band rather than the 12.2 GHz band for terrestrial mobile broadband and other expanded use. SpaceX asserts that "[w]hile [it] is licensed for both bands, it nonetheless joins the other commenters supporting the Commission's shift in focus to the upper 12 GHz band."[80] In any event, SpaceX's "[o]perations of [NGSO] systems in the 12.75-13.25 GHz (Earth-to-space) frequency band with earth stations in the United States are restricted to individually licensed earth stations in accordance with footnote NG57 to the U.S. Table of Frequency Allocations, 47 CFR 2.106, NG57."[81] Additionally, SpaceX's "authorization is subject to modification to bring it into conformance with any rules or policies adopted by the Commission in the future.[82]

25. *Earth stations*. As noted in the *12.7 NOI*, 27 locations are associated with 43 incumbent earth stations.[83] There are eight earth station authorizations for ESIM or temporary

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[78] *Id.*

[79] *See* Verizon Comments at 7-8.

[80] SpaceX Reply at 1. *See also* Letter from Kimberly M. Baum, Vice President, Spectrum Engineering & Strategy, WorldVu Satellites Limited, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 22-352 *et al*. at 2 (filed Mar. 20, 2023) (OneWeb March 20, 2023 *Ex Parte*) ("OneWeb urged closing out the 12.2-12.7 GHz proceeding and shifting the Commission's focus to the 12.7-13.25 GHz band which holds more promise for expanded terrestrial use.").

[81] *SpaceX Gen2 Order,* FCC 22-91 at para. 135(h) (noting that the licensing of earth stations (i.e. filed after Sept. 19, 2022) for operations in the 12.75-13.25 GHz will be subject to filing freeze on applications for new or modified authorizations for the 12.7-13.25 GHz band.).

[82] *SpaceX Gen2 Order*, FCC 22-91 at para. 135(hh) (stating that the "authorization is subject to modification to bring it into conformance with any rules or policies adopted by the Commission in the future. [And, that]…any investments made toward operations in the bands authorized [by the] Order by SpaceX in the United States assume the risk that operations may be subject to additional conditions or requirements as a result of any future Commission actions…[including, but not limited to]…any conditions or requirements resulting from any action in the proceedings associated with…GN Docket 22-352…").

[83] *See 12.7 NOI* at *5, para. 11.

fixed operations that do not specify a specific set of geographic coordinates.[84] Of the 35 remaining earth stations, there are eight instances of co-location with other earth stations, resulting in the 27 locations.[85] A majority (23) of those Earth stations are authorized for uplink transmission (Earth-to-space) in the 12.7 GHz band.[86] Additionally, 20 earth stations are authorized for downlink reception (space-to-Earth) in the lower 50 megahertz of the band (i.e., 12.7-12.75 GHz), in many instances together with other frequencies in the lower-adjacent Ku-band.[87] The Commission also noted that, for FSS operations, downlink earth stations are more likely to suffer harmful interference from terrestrial systems than uplink earth stations (where the victim receiver is at the space station far from the terrestrial systems).[88]

26. The Commission proposes to grandfather the 23 incumbent earth stations in the 12.75-13.25 GHz band that operate in accordance with the United States and ITU's band allocation for Region 2 by operating earth-to-space. No additional earth stations would be authorized in the 12.7 GHz band. The Commission proposes that non-conforming incumbent Earth stations that operate by receiving in the space-to-Earth direction in 12.7-12.75 GHz in the United States may continue on a non-interference basis and have no right to protection from harmful interference.[89] The Commission seeks comment on potential international implications of its proposal.

d. Incumbent Status—Licensing Data

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[84] *Id.* An ESIM is operated by remote control from a ground-based network and monitoring center that is specified in the authorization. *See* 47 CFR 25.271. "Of the 20 earth station authorizations for uplink [sic] (space-to-Earth) in the 12.7-12.75 GHz band, eight are for Earth Stations in Motion (ESIMs) and may or may not involve operations in these frequencies in the United States." *12.7 NOI* at n.28 (the 20 earth stations, and therefore the eight indicated for ESIM have a "downlink" designation.).

[85] *See 12.7 NOI* at *5, para. 11. In addition, the Department of Defense (DoD) leases commercial satellite services in the 12.7-13.25 GHz band as end users. *Id*.

[86] *See 12.7 NOI* at *5, para. 11.

[87] *See 12.7 NOI* at *5, para. 11.

[88] *12.7 NOI* at *10, para. 28.

[89] *See Application of Fugro-Chance, Inc.*, Order and Authorization, 10 FCC Rcd 2860, 2860, para. 2 (IB 1995) (stating that a waiver of § 2.106—the U.S. Table of Frequency Allocations—is appropriate "when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services").

27. The Commission proposes to define incumbent operations entitled to protection or relocation (until the sunset date), or for grandfathered status, based on the facilities authorized in the Commission licensing records.[90] In the *Order*, *see* FCC 23-36, paras. 143-147 (FR 2023-13502), published elsewhere in this issue of the *Federal Register*, the Commission directs fixed and mobile BAS and CARS licensees under parts 74 and 78, for each of their authorizations to use the 12.7 GHz band, to certify the accuracy of all information reflected on each license, including whether the facilities are operating as authorized. If a licensee is unable to make such a certification for a given license, it must cancel or modify the license in accordance with the Commission's rules. For BAS and CARS licenses, the Commission proposes to limit eligibility for incumbent status in the 12.7 GHz band to those licenses for which the licensee has timely filed the certification required in the *Order* in ULS or COALS, respectively.

28. Although the Commission does not require other incumbents to provide additional information on their existing operations at this time, in the *Order* the Commission directs the Bureaus, in coordination with the Office of Economics and Analytics (OEA), to consider whether additional information should be collected from some or all 12.7 GHz band incumbents. In the event that additional information is required from incumbents, the Commission proposes to limit eligibility for incumbent status to those incumbents that file such required certifications or data. Because the Commission proposed to use these licensing data to inform its deliberations regarding the future use of the 12.7 GHz band, including possible interference avoidance coordination or relocation of facilities, or grandfathered status that could require future licensees to accept harmful interference from existing operations, the Commission encourages all licensees to timely submit their data and to update their information in the event of a change in any of the operational parameters.

e. Cost-sharing

[90] Licensing data for fixed and mobile BAS under part 74 and Fixed Microwave under part 101 is in ULS. Licensing data for fixed and mobile CARS is in COALS. Licensing data for FSS stations is in MyIBFS.

29. When the Commission adopts a transition plan that involves the relocation of incumbents, new entrants sometimes have to relocate an incumbent from a larger frequency range or greater geographic area than where the new entrant will operate, thereby clearing the incumbent for the benefit of others. In such cases, the Commission has often developed cost sharing requirements, so that all licensees that derive a benefit from a relocation action share the responsibility for the costs of that relocation, regardless of whether they are the first to deploy their system or deploy their systems after other licensees have already deployed and incurred spectrum-clearing costs.[91] The Commission seeks comment on whether it should adopt cost-sharing procedures applicable to the relocation of incumbents in the 12.7 GHz band. If so, how should the Commission apportion the expenses of a relocation among those new entrants that benefit from the relocation? What type of formula should be applied? Would that formula differ for the reimbursement of relocated fixed microwave services and non-fixed or mobile BAS and CARS operations? If so, how would it differ, and why? For example, if the Commission was to impose an obligation on a new entrant to relocate all non-fixed and mobile BAS and CARS on a market-by-market basis prior to commencing operations, should it obligate all new entrants that are licensed to operate in a cleared market to pay a *pro rata* share of those costs?[92] What type of test should determine whether a new entrant has triggered a cost-sharing obligation for a relocated microwave link or one or more repacked mobile BAS/CARS systems authorized in any

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[91] *3.7 GHz Band Report and Order*, 35 FCC Rcd at 2445, para. 250; *Service Rules for Advanced Wireless Services H Block— Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands*, WT Docket No. 12-357, Report and Order, 28 FCC Rcd 9483, 9548, para. 167 (2013); *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, ET Docket No. 00-258, Ninth Report and Order and Order, 21 FCC Rcd 4473, 4478, para. 8 (2006); *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, Memorandum Opinion and Order on Reconsideration, 15 FCC Rcd 13999, 14004, para. 10 (2000).

[92] *See AWS Sixth Report and Order*, 19 FCC Rcd at 20753 paras. 72-73 (stating the first entrant may seek reimbursement from subsequently entering licensees for a proportional share of the first entrant's costs in clearing BAS spectrum, on a *pro rata* basis according to the amount of spectrum each licensee is assigned); *Improving Public Safety Communications in the 800 MHz Band*, WT Docket 02-55, Fifth Report and Order, Eleventh Report and Order, Sixth Report and Order, and Declaratory Ruling, 25 FCC Rcd13874, 13893 para. 42 (2010) (*800 MHz Fifth Report and Order*) (stating that an AWS entrant will "enter the band" on the date that the grant of its long-form application becomes a final action and any AWS entrant that enters the band prior to the sunset date will be required to reimburse an entrant that has relocated BAS incumbents a *pro rata* share of the relocation costs).

part of a new entrant's licensed area? For example, the Commission adopted a Proximity Threshold Test to determine whether an AWS licensee triggered a cost-sharing obligation for relocated microwave links.[93] If the Commission was to adopt a similar Proximity Threshold Test here, how would the input data in § 27.1168(a)(3)(i) differ to reflect the higher band of microwave operations in the 12.7 GHz band?

30. Would there be a need to designate one or more clearinghouses to administer the cost-sharing plan and calculate the amount of each beneficiary's reimbursement obligation in accordance with any formula that would be set forth in the Commission's rules?[94] Are there opportunities to incentivize the relocation of some or all types of incumbents on an accelerated basis?[95] Would some form of the accelerated relocation payment approach such as was used for the 3.7-4.2 GHz band (3.7 GHz band) be appropriate to accelerate clearing some or all incumbent services out of some or all of the 12.7 GHz band?[96]

C. Alternative Approaches for Sharing the Band

31. Here the Commission explores the second alternative option raised in the *12.7 NOI* for making the 12.7 GHz band available for mobile broadband and other expanded use: implementation of certain sharing methodologies among incumbents and new entrants. In the *12.7 NOI*, the Commission sought detailed proposals for promoting coexistence or sharing between potential new terrestrial mobile broadband or other expanded use and existing

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[93] 47 CFR 27.1168. In comparison, the Commission determined that an AWS licensee triggered a reimbursement obligation for relocated BAS operations in the 2 GHz band upon grant of its long-form application. *See 800 MHz Fifth Report and Order,* 25 FCC Rcd at 13893, para. 42 (stating that an AWS entrant will "enter the band" on the date that the grant of its long-form application becomes a final action).

[94] A cost-sharing clearinghouse is a third-party that is typically designated by the Wireless Telecommunications Bureau pursuant to delegated authority. *See Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket 18-22, Public Notice, 35 FCC Rcd 11859 (WTB 2020); *Wireless Telecommunications Bureau Designates Clearinghouses That Will Administer the 2 GHz PCS Relocation Cost-Sharing Plan*, DA 96-1522, Public Notice, 11 FCC Rcd 10634 (WTB 1996); *see also Wireless Telecommunications Bureau Finds CTIA and PCIA Qualified to Administer the Cost-Sharing Plan for Licensees in the 2.1 GHz Bands,* WT Docket 02-353, Public Notice, 21 FCC Rcd 11265 (WTB 2006).

[95] Based on the unique record presented for the 3.7 GHz band, the Commission adopted two Accelerated Relocation Deadlines—a one year Phase I deadline and a three-year Phase II deadline—"for incumbent space station operators that voluntarily relocate on an accelerated schedule (with additional obligations and incentives for such operators)." *3.7 GHz Band Report and Order*, 35 FCC Rcd at 2413, para. 168.

[96] *See id.* at 2413-14, paras. 168-72 (accelerated relocation).

incumbent licensees in the 12.7 GHz band, rather than sunsetting or relocating incumbents, or repacking of the band.[97] The Commission also sought comment on sharing methodologies such as static or dynamic sharing, using a database or spectrum management system, adopting a nonexclusive licensing system, or application of long-term sensing technology.[98] The Commission noted that, while an automated spectrum management systems have been proven to be effective for devices in the part 96 Citizens Broadband Radio Service (CBRS), for part 15 white space devices, and for 6 GHz unlicensed devices, there are several important differences between them.[99] Under the white space and 6 GHz unlicensed rules, devices must query a database system for a list of available frequencies and permissible operating power on a periodic basis, e.g., once per hour or once per day, and a device may select any available operating frequency and permissible power level from a list provided by the database.[100] The CBRS Spectrum Access Systems (SAS) have greater interactivity with managed devices and may require devices to change frequency or power level or to cease operation within 60 seconds as necessary to prevent interference to incumbent services or devices with a higher spectrum access priority.[101] The sharing methods that have been proven for white space devices and CBRS, in conjunction with new or developing sharing technologies, may be used in the 12.7-13.25 GHz band to maximize the use of spectrum.

32. Federated Wireless proposes a Dynamic Spectrum Management System (DSMS)

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[97] *12.7 NOI* at *6, para. 14.

[98] *Id.* at *6-*8, paras. 16-21.

[99] *Id.* at *7, para. 17.

[100] *Id.* at *7, para. 17 (citing 47 CFR 15.711(h)(1)-(2), 15.407(k)(8)(iv)). While the D.C. Circuit did remand a portion of the 6 GHz Report and Order to the Commission for further discussion, this limited remand concerned a commenter's arguments regarding unlicensed devices operating without a spectrum management system rather than higher powered devices controlled by the 6 GHz band automated frequency coordination (AFC) system. *See Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 3852 (2020), *aff'd in part and remanded in part*, *AT&T Servs. Inc., v. FCC*, 21 F.4th 841, 853-54 (D.C. Cir. 2021).

[101] *12.7 NOI* at *7, para. 17 (citing 47 CFR 96.39(c)(2)). Relative to such sharing approaches, the Commission also seeks comments on whether any third-party entity that manages, coordinates, or facilitates use of devices by those who are not individually licensed should be required to collect and maintain data documenting operation of devices, including the identity of those persons or entities operating such devices. If so, how long should this data should be retained and made available to the Commission upon request?

as an effective and efficient way to maximize the use of the 12.7 GHz band, with new and innovative uses of spectrum, while protecting incumbent operations.[102] The DSMS would operate by acquiring information about the incumbent's spectrum use by several methods such as querying a database like the Universal Licensing System (ULS), receiving notifications through an automated portal system, sensing incumbent use, or a combination of two or more of these methods.[103] Federated Wireless also proposes that the Commission adopt a multi-tiered licensing framework in the 12.7 GHz band, similar to the three-tiered regulatory framework used by the SAS in the CBRS band.[104] The three-tier regulatory framework used by the CBRS band enables different classes of users while providing interference protection to incumbents in the 3550-3700 MHz band.[105] Other commenters, such as the Dynamic Spectrum Alliance, NCTA, and the Open Technology Institute and Public Knowledge, all support adopting a shared-licensing framework, emphasizing the benefits that have been achieved in the TV White Space, CBRS, and 6 GHz band.[106]

33. The Society of Broadcast Engineers claims that neither an database-driven spectrum management system nor a spectrum-sensing approach to spectrum sharing will provide adequate protection for electronic news-gathering operations in the band.[107] It adds that spectrum sensing is unable to detect the one-way transmission equipment used in mobile newsgathering, and database-driven systems like the an automated frequency coordination system will not precisely capture mobile BAS operations, which by definition do not have a fixed location found in any database.[108] In its comments, Verizon discourages the use of new

[102] Federated Wireless Comments at 2.

[103] Federated Wireless Comments at 3.

[104] Federated Wireless Comments at 5.

[105] *See* 47 CFR 96.11(a).

[106] DSA Comments at 2; NCTA Comments at 4; Open Technology Institute and Public Knowledge Comments at 8 (OTI & PK).

[107] SBE Comments at 5.

[108] SBE Comments at 5.

and complex dynamic sharing methods or database coordination requirements that may limit investments and complicate new mobile broadband deployments into the 12.7 GHz band.[109] Instead, it recommends the use of an exclusive-use, flexible-rights licensing framework, as well as coordination, repacking, and relocation that is better suited for incumbent operations.[110]

34. The Commission seeks comment on using an automated spectrum management system such as the automated frequency coordination (AFC) systems used in the 6 GHz band or spectrum access systems used in CBRS as a method to enable spectrum sharing in the 12.7 GHz band as an alternative to relocating incumbents or repacking the band. To determine whether a new mobile broadband device can operate at a particular location on a given frequency, the device would be required to obtain either a list of permissible frequencies from an automated spectrum management system prior to transmitting or a list of prohibited frequencies on which it cannot transmit. The Commission envisions the automated spectrum management system to be a database that is simple to implement. The Commission seeks comment on this alternative proposal. What capabilities should be incorporated into the automated spectrum management system? Should it use a centralized model where all data and computations are done in a central location? In this case, the device would establish a connection with the automated spectrum management system, provide its location and technical details, and the automated spectrum management system will communicate the list of permissible frequencies (or a list of prohibited frequencies) back to the device. Or should the automated spectrum management system's architecture be de-centralized where the device maintains a local database of incumbent operations and performs the necessary computations to determine which frequencies and power levels can be used without causing harmful interference? Under such a model, how would the local database within the device be kept up to date? What are the trade-offs, including the costs and benefits, between a centralized versus a decentralized model in terms of efficiency, device

[109] Verizon Comments at 1-2, 5-6.

[110] Verizon Comments at 6.

complexity, and ability to protect incumbent licensee operations?

35. Because BAS was not present in the portions of the 6 GHz band where the AFC systems manage access to spectrum, mobile BAS/CARS was not addressed in the 6 GHz band AFC implementation. The mobile nature of these BAS/CARS operations makes it more difficult to manage spectrum access in real time. Electronic news gathering trucks, while they are mobile by definition, operate in a fixed fashion and direct transmissions towards fixed receive sites when broadcasting from the location of scheduled sporting or news events. Mobile BAS/CARS equipment may also be used for short-range connectivity such as relaying signals from a camera to a news gathering truck. For these types of itinerant mobile-fixed operation, a mobile BAS/CARS licensee could provide advanced notice of its planned operation to enable the automated spectrum management system to protect the BAS operations from harmful interference. The Commission seeks comment or proposals on whether these sorts of planned mobile operations can be accommodated on an AFC or SAS-like system. The Commission also seeks comment on whether mobile BAS/CARS operations in this band are, in fact, similar to BAS use in the 6 GHz band, and if not whether there are additional considerations that an automated spectrum management would need to address specific to this band. Could such a system be adapted to accommodate unplanned, unscheduled news or other events?

36. Should the automated spectrum management system determine frequency availability using the proposed permissible power limits for base stations, mobile stations, and transportable stations or should it instead determine frequency availability at power levels less than the maximum, and calculate a list of available frequencies and the maximum power permitted on each one? If the automated spectrum management system calculates the maximum power for each frequency, how would it control the power levels of mobile broadband devices to ensure that they operate at permissible levels? How should frequency availability information be reported to the devices? Should the automated spectrum management system report availability for discrete frequency bands, e.g., 10 or 20 megahertz channels, or should it simply report the

range or ranges of available frequencies? Alternatively, should the automated spectrum management system simply list the range or ranges of unavailable frequencies?

37. The Commission seeks comment on whether device registration with the automated spectrum management system is necessary. Under a registration requirement, a mobile broadband device would transmit identifying information along with its location to the automated spectrum management system before receiving a list of permissible frequencies.[111] Alternatively, a device under a centralized system architecture could provide only its location data and the automated spectrum management system would provide it with the list of permissible channels for that location. Under a decentralized system architecture, registration would not necessarily be required as the device only needs periodic updates of the local fixed service operating environment.

38. The Commission seeks comment on the types of security requirements that would be necessary for an automated spectrum management system that manages mobile broadband devices in the 12.7 GHz band. White space devices and databases, CBRS devices and the SAS, as well as 6 GHz AFC systems and unlicensed devices are required to incorporate security measures to ensure that devices communicate only with authorized databases, that all communications and interactions between a database and devices are accurate and secure, and that unauthorized parties cannot access or alter a database, or the list of available frequencies sent to a device.[112] Are similar requirements necessary or appropriate for devices and an automated spectrum management system in the 12.7 GHz band? Are any additional requirements necessary? Does the Commission need to specify security requirements for devices to ensure that the software within them cannot be easily modified to enable operation on frequencies other than those indicated as available by the automated spectrum management

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[111] Fixed white space devices and Citizens Broadband Radio Service Devices are required to register certain information with the white space database or Spectrum Access System, including the device's location, antenna height above ground, device identification information, and contact information for the device's operator. 47 CFR 15.713(g), 96.39(c).

[112] *See* 47 CFR 96.39(f), 15.407(k)(8)(v), 15.713(l).

system?

D. Licensing and Operating Rules

1. Part 27

39. To encourage intensive investment in, and robust deployment of, next-generation wireless networks, the Commission has adopted or proposed licensing approaches for other mid-band spectrum that are tailored to the unique characteristics of each band. The Commission proposes and seeks comment on service-specific rules for the 12.7 GHz band. In addressing these issues, commenters should discuss the costs and benefits associated with these proposals and any alternatives that commenters propose.

40. The Commission proposes to license the spectrum under its flexible-use part 27 rules, which permit licensees to provide any fixed or mobile service consistent with the permitted allocations, subject to rules necessary to prevent or minimize harmful interference. With the exception noted below, under this proposal, new mobile broadband and other expanded use licensees in the 12.7 GHz band would comply with licensing and operating rules that are applicable to all part 27 services,[113] including flexible use,[114] regulatory status,[115] foreign ownership reporting,[116] compliance with construction requirements,[117] renewal criteria,[118] permanent discontinuance of operations,[119] partitioning and disaggregation,[120] and spectrum

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[113] *See Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal et al.*, Second Report and Order and Further Notice of Proposed Rulemaking and Order, 32 FCC Rcd 8874 (2017) (*WRS Renewal Reform 2nd R&O and FNPRM*) (amending several of the rules applicable to part 27 services).

[114] Section 303(y) provides the Commission with authority to provide for flexibility of use if: "(1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users." Balanced Budget Act of 1997, Pub. L. 105-22, 111 Stat. 251, 269-69; 47 U.S.C. 303(y). *See also* 47 CFR 27.2, 27.3.

[115] 47 CFR 27.10.

[116] 47 U.S.C. 310; 47 CFR 27.12.

[117] 47 CFR 27.14(k).

[118] *Id.* § 1.949.

[119] *Id.* § 1.953.

[120] *Id.* § 1.950.

leasing.[121] The Commission seeks comment generally on this approach. With respect to technical rules and performance requirements, the Commission intends to adopt rules based on commenter concerns and its experience and expertise. Finally, the Commission proposes to make its licensing, authorization, and service rules governing the 12.7 GHz band applicable nationwide, i.e., within the Contiguous United States (CONUS) as well as the non-contiguous states, territories, and possessions. The Commission seeks comment on this proposal.

2. 12.7 GHz Band Plan

41. The Commission's goal in this proceeding is to make as much of the 12.7 GHz band available for mobile broadband or other expanded uses as possible in order to facilitate next-generation uses of spectrum that are increasingly necessary in the modern, connected world. To promote effective use of the 12.7 GHz band, the Commission proposes a technologically neutral policy for licensing the band. That is, the Commission does not make any technological choices or prohibitions, or prefer any particular kind of technology. The Commission does not propose a duplex gap, or distinct blocks for base and mobile that would presume or prohibit FDD or TDD deployments. The Commission seeks comment on this proposal. Are there interference issues that the Commission is not currently anticipating that this regime would create? The Commission ask commenters to address interference concerns between FDD and TDD, explain how they could coexist in the band, and discuss coordination and interference rules that must apply if both were to be permitted. In section I.B.3.b above (Mobile BAS/CARS), the Commission proposes to set aside 25 megahertz to repack mobile BAS/CARS incumbents.

3. Spectrum Block Sizes for New Licenses

42. Currently, the 12.7 GHz band is licensed for satellite, BAS/CARS fixed and mobile use, and other fixed uses. Under its band plan proposal, most of the 550 megahertz would be made available to new entrants for mobile or other expanded uses, with a small portion

[121] *Id.* §§ 1.9001 through 1.9080.

of the band set aside to accommodate repacked mobile BAS/CARS incumbents. The Commission seeks comment on the appropriate block sizes for these new licenses to best promote efficient and robust use of the band for next-generation wireless technologies. Several commenters note the importance of larger block sizes to the deployment of mobile broadband and other expanded uses; indeed, some commenters indicate that as broadband technologies evolve, operators will be required to have contiguous 100 megahertz blocks to deliver next-generation broadband.[122] In light of this concern, the Commission believes that 100 megahertz blocks will produce the best environment for 5G and future 6G deployments, as large block sizes support faster data speeds and better coverage for next-generation deployments.[123] Additionally, the Commission believes 100 megahertz blocks will afford adequate flexibility to prospective licensees in terms of system design.

43. The Commission seeks comment on this proposal (100 MHz blocks) and on how to authorize any spectrum blocks less than 100 megahertz depending on the size of the mobile BAS/CARS repack band. Commenters offering an alternative proposal should detail the advantages and disadvantages of their favored approach, including any costs and benefits, based on what they know about the technical requirements of the respective technologies that either use or could use the band. The Commission recognize that some commenters favor smaller blocks of 50 megahertz.[124] If the Commission adopts smaller sized blocks, should the Commission allow licensees to aggregate the use of these separate licenses into wider bandwidths while

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[122] *See, e.g.* AT&T Comments at 4; Qualcomm Comments at 7 (noting that a 5G base station with 100 MHz bandwidth provides sub-meter positioning accuracy, and that more bandwidth will allow for more precise positioning and improve overall network performance); Verizon Comments at 9; Ericsson Reply at 10-11; 5G Americas Reply at 6.

[123] "[T]he Commission should prioritize large bandwidths such as 50-megahertz or 100-megahertz channel blocks, the latter which 'have become international best practice and are implemented in the majority of 5G-leading markets.'" Verizon Comments at 9 (quoting GSMA, 5G Spectrum: GSMA Public Policy Position, at 5 (June 2022), https://www.gsma.com/-spectrum/wp-content/uploads/2022/06/5G-Spectrum-Positions.pdf).

[124] Competitive Carriers' Association Reply at 5; T-Mobile Comments at 14; US Cellular Reply at 5. Some Commenters, such as T-Mobile, argue that 100 megahertz blocks would orphan a 50 megahertz block, or otherwise require the Commission to license the band with blocks of varying size. T-Mobile Comments at 14; US Cellular Comments at 6. The Commission notes that under its band plan proposal, some spectrum would be designated for repacking incumbent mobile BAS/CARS operations.

retaining the performance requirements of each individual license? Would this approach help ensure that spectrum is put to use, as compared to larger block sizes? Are there any additional considerations that the Commission should take into account in determining the spectrum block sizes to be used for new licenses in this band?

4. Geographic License Area Sizes

44. Consistent with its approach in several other bands used to provide fixed and mobile services, the Commission proposes to license the 12.7 GHz spectrum on an exclusive, geographic-area basis.[125] Geographic-area licensing provides flexibility to licensees, promotes efficient spectrum use, and helps facilitate rapid assignment of licenses. The Commission seeks comment on this approach, including the costs and benefits of adopting a geographic area licensing scheme. In the event that a party does not support using geographic licensing, it should explain its position, describe what type of licensing scheme it supports, and identify the costs and benefits associated with its alternative licensing proposal.

45. In determining the appropriate geographic license size, the Commission considers several factors, including: (1) facilitating access to spectrum by both small and large providers; (2) providing for the efficient use of spectrum; (3) encouraging deployment of wireless broadband services to consumers, especially those in rural areas and Tribal lands; and (4) promoting investment in and rapid deployment of new technologies and services.[126] In light of these statutory considerations, the Commission proposes to issue flexible use licenses on a Partial Economic Area (PEA) basis.[127] The Commission asks commenters to discuss and quantify the economic, technical, and other public interest considerations of licensing on a PEA basis. The Commission observes that the question of geographic license area sizes intersects with the question of whether to issue exclusive or shared licenses: those that favor exclusive

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[125] *See, e.g.*, 47 CFR 27.6 (h), (i) (AWS-1 and AWS-4, respectively).

[126] *See, e.g.*, *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, 25174, para. 31 (2003) (*AWS-1 Service Rules R&O*).

[127] *See* 47 CFR part 27, subpart A, appendix A – List of Partial Economic Areas with Corresponding Counties.

licenses often prefer PEAs or larger, whereas those that favor shared licensing regimes prefer smaller areas, such as counties.[128] Because the Commission proposes to license the band exclusively, the Commission also proposes PEAs. In its judgment, this area size will also help promote rural deployments by facilitating access to spectrum by small and regional service providers and beyond.[129] The Commission seeks comment on licensing the 12.7 GHz band on a PEA basis.

46. Some commenters seek smaller areas, such as counties.[130] They argue that these smaller areas help smaller businesses and rural areas.[131] Could smaller license areas increase the possibility of interference between adjacent areas and complicate a licensee's ability to fully deploy services using their licensed spectrum in their service areas?[132] If so, are there other reasons that would nevertheless support adopting smaller license areas such as promoting competition?[133] Would smaller or larger areas promote or complicate cost-sharing for relocation of incumbents? Are there any additional considerations that the Commission should take into account when determining the geographic license areas sizes for new licenses in the 12.7 GHz band when weighing the factors listed above? For example, could a smaller license area help promote deployment in Tribal areas? The Commission notes that several commenters suggest providing priority access to spectrum over Tribal lands to Tribal entities.[134]

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[128] *But see* RWA Comments at 2 (arguing for counties and not PEAs for licensed area size).

[129] *See, e.g.*, US Cellular Reply at 7.

[130] RWA Comments at 2-3; OTI & PK Comments at 7; WISPA Reply at 1-2, 7; *see also see* Letter from Traci Biswese, Vice President & Associate General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 22-352, at 3 (May 11, 2023) (NCTA May 11, 2023 Ex Parte).

[131] RWA points out that the propagation characteristics of the band warrant adoption of smaller-sized license areas. RWA Comments at 3. In proposing PEAs, the Commission is making the judgement that it propagates sufficiently far to justify PEA-sized areas. The Commission also seeks comments on this approach.

[132] *See* T-Mobile Reply at 6.

[133] *See* NCTA May 11, 2023 Ex Parte at 3.

[134] See Open Technology Institute and Public Knowledge May 10, 2023 Ex Parte at 3 ("With regard to creating a rural Tribal window for any spectrum authorized for new licensees in the 12.7 GHz band, the success of the 2.5 GHz window demonstrates the enormous value to Tribes of creating the opportunity for greater spectrum access on Tribal lands. This would also be consistent with the Memorandum of Understanding between the Department of the Interior and the Department of Commerce National Telecommunications and Information Administration, 11/23/2022. Available at https://www.bia.gov/sites/default/files/dup/inline-files/mou_esb46-009818_doi-fcc-

5. License Term and Renewal

47. The Commission proposes to establish a 10-year license term for new mobile broadband and other expanded use licenses in the 12.7 GHz band. The Commission believes that a 10-year term serves its goal of providing licensees with flexibility to develop this spectrum as the market demands and to employ innovative technologies which may not be available immediately upon licensing. The Commission acknowledges that the Commission has adopted license terms longer than 10 years to account for delays in relocating incumbent operations. In this case, however, because the existing use of the band is relatively light, the Commission is proposing its standard 10-year license term along with an additional year (relative to some services) to meet the proposed interim buildout requirement. The Commission also proposes to apply its general renewal requirements for wireless radio service licenses.[135] The Commission seeks comment on these proposed license term and renewal requirements, as well as on the costs and benefits of these proposals.[136] Are there alternative license terms that might be better suited for this band?[137] If an alternative license term is better, what impact would it have on investment or deployment, particularly for smaller or rural entities, and how could the Commission determines its costs and benefits?

6. Performance Requirements

48. The Commission establishes performance requirements to ensure that spectrum

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ntia_electromagnetic_spectrum_on_tribal_lands_2022-11-23_final_fcc_ntia_doi_signed_508.pdf"). See also Tribal Ready May 10, 2023 Ex Parte ("The Commission has previously recognized the value of Tribal set asides in promoting deployment as recently as the 2.5 GHz band. The 12 GHz band can and should also be an option to help Native Americans close the digital divide.").

[135] *See* 47 CFR 1.949 (Application for renewal of license). The *WRS Renewal 2nd R&O and FNPRM* adopted a unified framework for construction, renewal, and service continuity rules for flexible use geographic licenses in the Wireless Radio Services. *See Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 to Establish Uniform License Renewal et al.*, WT Docket No. 10-112, Second Report and Order and Further Notice of Proposed Rulemaking and Order, 32 FCC Rcd 8874 (2017) (*WRS Renewal Reform 2nd R&O and FNPRM*). *Accord*, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343, 2390, para. 106 (2020) (*3.7 GHz Report and Order*).

[136] The Communications Act does not specify a term limit for wireless radio services licenses. The only statutory limit on license terms is eight years for licenses in the broadcast services. *See* 47 U.S.C. 307(c)(1); *see also* 47 CFR 73.1020(a).

[137] *See, e.g.*, 47 CFR 27.14(k) (AWS-3 licenses have a 12-year initial license terms and 10-year renewal terms), (l) (600 MHz band licenses have 12-year initial license terms and 10-year renewal terms).

is intensely and efficiently used. The Commission has applied different performance and construction requirements to different spectrum bands based on considerations relevant to those bands.[138] The Commission continues to believe that performance requirements play a critical role in ensuring that licensed spectrum does not lie fallow.

49. In response to the *12.7 NOI*,[139] AT&T, T-Mobile, Intelsat, Ericsson and others note that the 12.7 GHz band shares many characteristics with millimeter wave (mmW) spectrum.[140] Despite these similarities, T-Mobile and Intelsat suggest that performance requirements for the 12.7 GHz band should not necessarily be similar to those that apply to the mmW spectrum, given the difficulties mmW bands have had fulfilling buildout requirements.[141] Moreover, T-Mobile suggests that the Commission carefully consider buildout requirements and allow for flexibility based on the unique needs of the spectrum being used and the geographic area being served.[142]

50. As with other part 27 services, the Commission proposes to adopt specific quantifiable benchmarks for different types of operations. For the 12.7 GHz band, the Commission proposes to require licensees offering mobile or point-to-multipoint services to provide reliable signal coverage and offer service to at least 30% to 45% of the population in each of their license areas within five years[143] of the license issue date (interim performance

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[138] *See, e.g.*, *Service Rules for Advanced Wireless Services H Block—Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands*, Report and Order, 28 FCC Rcd 9483, 9558-59, para. 195 (2013) (requiring 40 percent population coverage within four years of initial grant and 75 percent population coverage within 10 years of initial grant); *see also Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, Report and Order, 29 FCC Rcd 4610, 4659-60, para. 135 (2014) (requiring 40 percent population coverage within six years of initial grant and 75 percent population coverage within 12 years of initial grant); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, 6877-78, para. 764 (2014).

[139] *See, e.g.*, *12.7 NOI* at *11, para. 31.

[140] AT&T Comments at 1; Ericsson Comments at 8; T-Mobile Comments at 14; Intelsat Reply at 11-12.

[141] T-Mobile Comments at 14-15 (citing an NTIA Study that examined outdoor propagation in the 37-40 GHz band in Boulder, Colorado); Intelsat Reply at 11; T-Mobile Reply at 4-5.

[142] T-Mobile Comments at 15.

[143] For AWS-4, AWS H Block, and 3.45 GHz Service, the first performance benchmark is 4 years from the date of the initial license and the second performance benchmark is 8 years from the date of the initial license for AWS-4 and 3.45 GHz Service and 10 years for H Block. For services with incumbent transitions, the first performance

benchmark), and to at least 60% to 80% of the population in each of their license areas within ten years from the license issue date (final performance benchmark).[144] The Commission seeks comment on this proposal including the specific population coverage percentage appropriate for the interim and final benchmarks. The Commission recognizes that, relative to the recently established 3.45 GHz Service, which has buildout deadlines at years four and eight,[145] the Commission is proposing an additional year for 12.7 GHz band licensees to meet the proposed first buildout requirement and an additional two years to meet the second buildout requirement. The Commission believes this additional time is warranted given the lack of industry standards and 12.7 GHz band mobile broadband equipment. The Commission proposes licensees providing fixed point-to-point service would be required to demonstrate within five years of the license issue date (interim performance benchmark) that they have four links operating and providing service, if the population within the license area is equal to or less than 268,000. If the population within the license area is greater than 268,000, a licensee relying on point-to-point service would need to demonstrate that it has at least one link in operation and providing service, either to customers or for internal use, per every 67,000 persons within a license area. The Commission proposes to require licensees relying on point-to-point service to demonstrate within ten years of the license issue date (final performance benchmark) that they have eight links operating and providing service, either to customers or for internal use, if the population within the license area is equal to or less than 268,000. If the population within the license area

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benchmark ranges from 6 years (AWS-3, 600 MHz) to 8 years (3.7 GHz Service) from the date of the initial license, and the second performance benchmark is 12 years (AWS-3, 600 MHz, 3.7 GHz Service). *See* 47 CFR 27.14(q), (r),(s),(t),(v),(w).

[144] The Commission's proposals and questions comport with actions taken for other licenses taking into account the unique characteristics of the 12.7 GHz band, e.g., presence of incumbents and the location of this mid-band spectrum—significantly higher than 3.7 GHz but significantly lower than mmW spectrum. *See, e.g.*, 47 CFR 27.14(v)(1) (requiring a 3.7 GHz Service licensee providing mobile or point-to-multipoint service to cover 45% of population within eight years of initial grant and 80% population coverage within 12 years of initial grant); 47 CFR 27.14(w)(1)(i) (requiring a 3.45 GHz Service licensee providing mobile or point-to-point service to cover 45% of population within 4 years and 80% of population within 8 years of initial grant); 47 CFR 30.103, 30.104(a) (requiring a UMFUS licensee providing mobile or point-to-multipoint service to cover 40% of population within ten years).

[145] *See* 47 CFR 27.14(w)(1)(i).

is greater than 268,000, the Commission proposes to require a licensee relying on point-to-point service to demonstrate it is providing service and has at least two links in operation per every 67,000 persons within a license area.[146]

51. The Commission also proposes alternate Internet of Things (IoT) performance requirements in order to allow for flexibility to provide services potentially less suited to a population coverage metric. Specifically, the Commission proposes that licensees providing IoT-type services would have flexibility to demonstrate that they offer geographic area coverage of at least 25% to 35% of the license area at the interim (five-year) performance benchmark, and geographic area coverage of at least 50% to 65% of the license area at the final (ten-year) performance benchmark.[147] The Commission seeks comment on this proposal including the specific geographic area coverage percentage appropriate for the interim and final benchmarks metrics appropriate in the 12.7 GHz band. Commenters should discuss the appropriate metric to accommodate such service offerings or other innovative services in the 12.7 GHz band, as well as the costs and benefits of an alternative approach. The Commission also seeks comment on whether to adopt renewal-term performance obligations.

52. *Compliance Procedures*. The Commission proposes that to demonstrate

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[146] *See, e.g.,* 47 CFR 27.14(v)(1) (requiring a 3.7 GHz Service licensee providing point-to-point service to demonstrate within 8 years and 12 years of initial grant that they are operating four links and eight links, respectively, and providing service to customers or for internal use if the license area is equal to or less than 268,000, and if the population is greater than 268,000, that they are operating at least one link within 8 years and at least two links within 12 years and providing service to customers or for internal use per every 67,000 persons within a license area); 27.14(w)(1)(ii) (requiring a 3.45 GHz Service licensee providing point-to-point service to demonstrate within 4 years and 8 years of initial grant that they are operating four links and eight links, respectively, and providing service to customers or for internal use if the license area is equal to or less than 268,000, and if the population is greater than 268,000, that they are operating at least one link within 4 years and at least two links within 8 years and providing service to customers or for internal use per every 67,000 persons within a license area); 47 CFR 30.103, 30.104(a) (requiring a UMFUS licensee providing point-to-point service to demonstrate within 10 years of initial grant that they are operating four links and providing service to customers or for internal use if the license area is equal to or less than 268,000, and if the population is greater than 268,000, that they are operating at least one link and providing service to customers or for internal use per every 67,000 persons within a license area).

[147] *See, e.g.,* 47 CFR 27.14(v)(2) (requiring a 3.7 GHz Service licensee providing Internet of Things service to offer geographic area coverage of 35% of the license area within 8 years of initial grant and geographic area coverage of 65% of the license area within 12 years of initial grant); 27.14(w)(1)(iii) (requiring a 3.45 GHz Service licensee providing Internet of Things service to offer geographic area coverage of 35% of the license area within 4 years of initial grant and geographic area coverage of 65% of the license area within 8 years of initial grant); 47 CFR 30.103, 30.104(b) (requiring a UMFUS licensee providing Internet of Things or other services deployed along non-traditional lines to offer geographic area coverage of 25% of the license area within 10 years of initial grant).

compliance with these performance requirements, licensees shall use the most recently available decennial U.S. Census Data at the time of measurement and shall base their measurements of population or geographic area served on areas no larger than the Census Tract level. The population or area within a specific Census Tract (or other acceptable identifier) would be deemed served by the licensee only if it provides reliable signal coverage to and offers service within the specific Census Tract (or other acceptable identifier). To the extent the Census Tract (or other acceptable identifier) extends beyond the boundaries of a license area, a licensee with authorizations for such areas may include only the population or geographic area within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license. If a licensee does not provide reliable signal coverage to an entire license area, the license must provide a map that accurately depicts the boundaries of the area or areas within each license area not being served. Each licensee also must file supporting documentation certifying the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology.

53. *Penalty for Failure to Meet Performance Requirements.* Along with performance benchmarks, the Commission proposes to adopt meaningful and enforceable penalties for failing to meet those benchmarks. The Commission proposes that, in the event a licensee fails to meet the first performance benchmark, the licensee's final benchmark and license term would be reduced by two years, thereby requiring it to meet the final performance benchmark two years sooner (at 8 years into the license term) and reducing its license term to 8 years. If a licensee fails to meet the final performance benchmark for a particular license area, its authorization for each license area in which it fails to meet the performance requirement shall terminate automatically without Commission action. The Commission seeks comment on this

proposal and on which penalties will most effectively ensure timely buildout.

54. The Commission seeks comment on how, in the event a 12.7 GHz band licensee's authority to operate terminates, its spectrum rights should become available for reassignment pursuant to the licensing framework the Commission adopts for this band. The Commission also seeks comment on whether, consistent with the Commission's rules for other part 27 licenses, the Commission should require that any 12.7 GHz band flexible use licensee that forfeits its license for failure to meet its performance requirements be precluded from regaining that license. Finally, the Commission seeks comment on other performance requirements and enforcement mechanisms that would effectively ensure timely buildout.

7. Open Eligibility

55. The Commission proposes to adopt an open eligibility standard for licenses in the 12.7 GHz band, consistent with established Commission practice.[148] An open eligibility standard should encourage the development of new technologies, products, and services, while helping to ensure efficient use of this spectrum. The Commission seeks comment on this assumption. The Commission notes that an open eligibility approach would not affect citizenship, character, or other generally applicable qualifications that may apply under its rules.[149] Commenters should discuss the costs and benefits of the open eligibility proposal on competition, innovation, and investment.

8. Mutually Exclusive Applications for New Licenses

56. As discussed above, the Commission proposes to use an exclusive geographic

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[148] The Commission has determined in a number of services that eligibility restrictions on licenses may be imposed only when open eligibility would pose a significant likelihood of substantial harm to competition in specific markets and when an eligibility restriction would be effective in eliminating that harm. This approach relies on market forces absent a compelling showing that regulatory intervention to exclude potential participants is necessary. *See, e.g.*, *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16193, paras. 241-42 (2012); *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket No. 06-150 *et al*., Second Report and Order, 22 FCC Rcd 15289, 15381, 15383-84, paras. 253, 256 (2007) (*700 MHz Second Report and Order*); *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, WT Docket No. 02-146, Report and Order, 18 FCC Rcd 23318, 23346-47, para. 70 (2003).

[149] *Id.* sections 301, 308(b), 310.

area licensing scheme for the 12.7 GHz spectrum, which will permit the filing of mutually exclusive applications. The Commission's statutory authority to resolve mutually exclusive applications for initial licenses through a system of competitive bidding has lapsed. Accordingly, in the event the Commission determines to adopt a mutually exclusive application approach, the Commission seeks comment on how it should resolve mutually exclusive applications for new initial licenses in the 12.7 GHz band in light of the lapse in its authority to use competitive bidding. In the event that the Commission's statutory authority with respect to auctions is restored, the Commission delegates authority to WTB and the Office of Economics and Analytics to seek comment on appropriate competitive bidding rules and procedures, consistent with prior Commission guidance.

9. Mobile Spectrum Holdings Policies

57. Spectrum is an essential input for the provision of mobile wireless services, and ensuring access to and the availability of sufficient spectrum is crucial to promoting the competition that drives innovation and investment.[150] The Commission has held that the Communications Act requires a close examination of the impact of spectrum aggregation on competition, innovation, and the efficient use of spectrum to ensure that spectrum is allocated and assigned in a manner that serves the public interest, convenience and necessity, and avoids the excessive concentration of licenses.[151] In this NPRM, the Commission seeks comment generally on whether to adopt limitations on the aggregation of spectrum holdings in the 12.7 GHz band in order to meet its statutory requirements and to ensure competitive access to the band. The Commission seeks comment on whether the technical and market characteristics of the 12.7 GHz band warrant such limitations and, if so, whether implementation of such

[150] *Communications Marketplace Report*, GN Docket No. 22-203, Report, FCC 22-103, at 64, para. 82 (Dec. 30, 2022) (*2022 Communications Marketplace Report*); *see* NCTA May 11, 2023 Ex Parte at 2 (arguing for the importance of promoting competition through avoiding excessive concentration).

[151] *Policies Regarding Mobile Spectrum Holdings Expanding the Economic Innovation Opportunities of Spectrum Through Incentive Auctions*, WT Docket No. 12-269, Report and Order, 29 FCC Rcd 6133, 6137, para. 8 (2014) (*Mobile Spectrum Holdings Report and Order*).

limitations should be through the Commission's total spectrum screen, a separate screen, a limit on initial licensing, or other means, as discussed below.[152]

58. *Total Spectrum Screen*. The Commission examines the suitability and availability of spectrum to determine whether particular bands should be included within the total spectrum screen.[153] Suitability is determined by whether the spectrum is capable of supporting mobile service given its physical properties and the state of equipment technology, whether the spectrum is licensed with a mobile allocation and corresponding service rules, and whether the spectrum is committed to another use that effectively precludes its use for mobile services.[154] Spectrum is considered "available" if it is "fairly certain that it will meet the criteria for suitable spectrum in the near term, an assessment that can be made at the time the spectrum is licensed or at later times after changes in technology or regulation that affect the consideration."[155]

59. The Commission seeks comment on whether, for purposes of the spectrum screen, the 12.7 GHz band will be "suitable" and "available" for the provision of mobile telephony/broadband services shortly after the spectrum is assigned. To the extent the

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[152] In 2004, the Commission established its framework for case-by-case review of spectrum aggregation (and market concentration), in which it established a total spectrum screen "trigger" of approximately one-third of the total suitable and available spectrum for commercial mobile radio services. *Applications of AT&T Wireless Inc. and Cingular Wireless Corporation For Consent To Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 19 FCC Rcd 21522, 21525, 21568-69, paras. 4, 106-112 (2004) (*Cingular-AT&T Wireless Order*). This screen was subsequently expanded and applied to mobile telephony/broadband services. *See, e.g.*, *Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC for Consent to Transfer Control of Licenses, Authorizations, and Spectrum Manager and De Facto Transfer Leasing Arrangements*, WT Docket No. 08-95, Memorandum Opinion and Order and Declaratory Ruling, 23 FCC Rcd 17444, 17469-70, paras. 45-46 (2008). In 2008, the Commission determined that its case-by-case review would also apply to the initial licensing of spectrum acquired at auction, similar to the Commission's analysis of secondary market transactions. *Union Telephone Company and Cellco Partnership d/b/a Verizon Wireless Applications for 700 MHz Band Licenses, Auction No. 73*, Order, 23 FCC Rcd 16787, 16791-92, 16796, paras. 9, 18 (2008). In 2014, the Commission determined that it would treat as an "enhanced factor" in its case-by-case review any proposed increase in below-1-GHz spectrum holdings resulting in the acquiring entity holding approximately one-third or more of the suitable and available spectrum below 1 GHz. *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6233, 6240, paras. 267, 286-88. In 2016, the Commission adopted a separate mmW spectrum threshold that would apply to its case-by-case review of proposed secondary market mmW transactions. *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, 8081, 8083-84, paras. 184, 189 (2016) (*Spectrum Frontiers 1st R&O and FNPRM*).

[153] *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169-70, paras. 71-75.

[154] *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, para. 71.

[155] *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, para. 71 (internal quotation marks omitted).

Commission finds that the 12.7 GHz band is "suitable and available," the Commission seeks comment on whether it should include the band within its total spectrum screen or within a separate spectrum screen, such as the existing mmW threshold.[156] To that end, the Commission seeks comment on which bands are most similar in technical characteristics with the 12.7 GHz band.[157]

60. *Initial licensing*. Should there be a limit on the amount of 12.7 GHz band spectrum held by a single entity at the licensing stage? If so, what should that limit be and why? Should the Commission consider the factors set forth in the *Mobile Spectrum Holdings Report and Order*[158] in determining if a limit at the initial licensing stage is appropriate? Should the Commission's determination also be based on the extent to which competitors have opportunities to gain access to alternative bands that would serve the same purpose as the 12.7 GHz band.[159]

E. Technical Rules

1. Power Limits

61. The Commission establishes power limits for wireless services to help limit the potential for harmful interference, among operators using the same frequency bands (for example, in neighboring geographic areas) as well as among operators using adjacent bands. The determination of an appropriate power limit for a particular band is informed by the technical characteristics of the band, as well as the services expected to be deployed.[160] Thus, § 30.202 of the Commission's rules restricts the power for fixed base stations operating in connection with mobile systems to a maximum equivalent isotropic radiated power (EIRP)

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[156] *See 2022 Communications Marketplace Report*, FCC 22-103, at 66, para. 85 and Fig. II.B.9.

[157] *See, e.g.*, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Third Report and Order, Memorandum Opinion and Order, and Third Notice of Proposed Rulemaking, 33 FCC Rcd 5576, 5612, para. 96 (2018); *Facilitating Shared Use in the 3100-3550 MHz Band*, WT Docket 19-348, Second Report and Order, Order on Reconsideration, and Order of Proposed Modification, 36 FCC Rcd 5987, 6022-23, para. 102 (2021) (*3.45 GHz Second Report and Order*); *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343, 2382-84, paras. 85-88 (2020) (*3.7 GHz Order*).

[158] *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6192-93, paras. 143-44.

[159] *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6193, para. 144.

[160] *See, e.g., Spectrum Frontiers 1st R&O and FNPRM*, 31 FCC Rcd at 8110-12, paras. 276-80.

density of +75dBm/100 MHz.[161] Under § 30.202, mobile stations and transportable stations are each limited to a maximum EIRP of +43 dBm and +55 dBm, respectively.[162] Since the adoption of these power limits, the Commission has seen mmW wave deployments in various parts of the USA, chiefly in urban areas.

62. Setting appropriate power limits for the 12.7 GHz band requires an understanding of what services may be deployed in the band. It is important that new technologies and feasible visions for future wireless deployments are considered so that the appropriate power limits are set to advance wireless innovation. Ericsson asserts that the characteristics of the 12.7 GHz band make it a good fit for future 6G technologies and smart-city applications, and that use of the 12.7 GHz band would complement spectrum in the 3-8 GHz range.[163] Qualcomm states the 12.7 GHz Band is ideal for the deployment of the latest 6G technological advances which will offer coverage levels only available today in the lower mid-band spectrum range; these technologies, such as Giga Multiple-Input Multiple-Output (MIMO), will overcome greater signal losses in this upper range through higher beam directionality and offer ubiquitous coverage, low latency, and high capacity.[164] Qualcomm adds that increased data rates will support innovative use cases like deeper immersion into digital and virtual worlds with boundless augmented, virtual, extended and mixed reality (AR/VR/XR/MR) applications and advanced sensing, which will allow for real-time mapping of the physical world to a digital or virtual copy.[165] Besides 6G operations, the Commission seeks comment on what other feasible new services or technologies are envisioned to be deployed in the band and whether they would require particular power level profiles.

63. Based on the record in response to the *12.7 NOI*, and its technical expertise, the

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[161] 47 CFR 30.202(a).

[162] *Id.* § 30.202(b), (c).

[163] Ericsson Comments at 3, 8.

[164] Qualcomm Comments at 7.

[165] Qualcomm Comments at 3.

Commission proposes to adopt the same power limits that are applied to UMFUS operations.[166] Specifically, for base stations, mobile stations, and transportable stations, the Commission proposes to adopt an EIRP limit of +75 dBm/100 MHz (or +72dBm/50 MHz depending on the final channel size allocations), +43 dBm, and +55 dBm, respectively. The Commission believes these limits to be appropriate because, the Commission agrees with commenters that RF characteristics in this band more closely resemble mmW transmissions than lower mid-band transmissions.[167] Furthermore, the Commission agrees with commenters that higher frequencies are subject to greater signal attenuation.[168] Commenters from the terrestrial mobile wireless industry have submitted general feedback urging the Commission to establish power limits in a way that does not hinder development and innovation in this band while providing sufficient coverage for the public.[169] The Commission seeks comment on its proposed power limits for this band. If beams incorporating higher directionality are employed in this band, the Commission seeks comment on including provisions similar to § 101.145(c) to protect GSO satellites, particularly if the Commission grandfathers existing FSS operations.

64. The Commission seeks comment on whether incumbent satellite services and new terrestrial mobile services can coexist if the latter will be subject to the power limits that the Commission proposes above. Various satellite industry interests have expressed concerns that satellite operations cannot successfully co-exist with mobile terrestrial broadband networks in the 12.7 GHz band.[170] Overall, they identify two chief sources of interference: FSS uplink

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[166] *See* 47 CFR 30.202.

[167] *See, e.g.,* AT&T Comments at 1; Ericsson Comments at 8; T-Mobile Comments at 14; Intelsat Reply a 11-12.

[168] *See* CTIA Comments at 9-10 (arguing that the greater propagation loss at 12.7 GHz as compared to that at low mid-band spectrum will require even higher power levels to provide meaningful coverage range and capacity); Ericsson Comments at 2, 10; Nokia Comments at 2; Verizon Comments at 9 ("The Commission should also promote standard-power deployments and further consider power levels greater than those contained in part 27 of the Commission's rules to compensate for the higher propagation losses in this frequency range."); CCA Reply at 1-2, ("[H]igh-powered use will provide the greatest potential for innovation and will aid the wireless industry in serving American consumers."); CCA Reply at 5 ("For many CCA members who serve suburban and rural areas, low-power operations may be too costly because of the number of cell sites needed to provide sufficient coverage."); *accord* 5G Americas Reply at 7.

[169] *See, e.g.,* T-Mobile Reply at 9, 12; 5G Americas Reply at 7.

[170] *See* Eutelsat Comments at 4-5; Hispasat Comments at 6-8; Intelsat/SES Comments at 12-14.

transmissions can interfere with receiving terrestrial mobile stations, and aggregate emissions of high power terrestrial mobile stations can also interfere with the satellite antenna of an FSS system receiving in the band.[171] As noted above, Verizon also questions how any incipient terrestrial mobile services would coexist with a substantial number of new NGSO FSS deployments in the band.[172] CTIA asserts that coexistence is possible between new entrants and incumbent FSS, because FSS space stations will be protected based on the terrestrial service obligations contained in Radio Regulations Table 21-1, which includes a maximum equivalent isotropic radiated power ("EIRP") of +45 dBW for a station in the fixed or mobile service.[173] The Commission agrees with CTIA that, as long as terrestrial mobile broadband operations do not exceed the power limits that the Commission proposes, they should pose no danger of exceeding any aggregate interference level at any victim receivers on satellites operating in the band, but the Commission seeks comment on this observation. Furthermore, proposed grandfathered FSS earth stations are not susceptible to harmful interference because they do not receive in this band. Nevertheless, the Commission seeks comment on whether satellite services and terrestrial mobile services can coexist with power limits of § 30.202. Is it appropriate to adopt these power limits for the 12.7 GHz band for base station, mobile station, and transportable stations? Would it be useful to limit the power terrestrial transmitters may emit toward higher elevation angles to protect satellite receivers from aggregate emissions?

65. The Commission also received comment urging the Commission to conduct further technical studies before establishing power limits for 12.7 GHz band.[174] Nokia

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[171] Hispasat Comments at 6.

[172] Verizon Comments at 8 & n.26 (citing *SpaceX Gen2 Order*, FCC 22-91 at para. 49 (authorizing the construction, deployment, and authorization of up to 7,500 satellites in the 12.75-13.25 GHz band, among other segments)); *see supra* note 77 and accompanying text.

[173] EIRP power limits in ITU radio regulations Table 21-1 does not specify a reference bandwidth, so this power limit is 45dBW (75dBm) regardless of the reference bandwidth, i.e. any reference bandwidth may be used for the power limit. Therefore, the Commission maintains that its proposed limit of 75dBm/100MHz is at least as conservative as the ITU radio regulations power limit. For example, the ITU regulations would permit 75dBm/1MHz, which would be higher power than what the Commission proposes.

[174] Hispasat Comments at 13-14; Nokia Comments at 6.s

recommends a detailed analysis regarding the EIRP limit for flexible use in the 12.7 GHz band.[175] It states that such an analysis should consider "(1) the impact of relocating some incumbent services from the 12.7 GHz band, and a potential relaxation of maximum EIRP requirements, (2) the coexistence scenarios involving incumbent services in the 12.7 GHz band and in the lower and upper adjacent bands, and (3) receiver characteristics of incumbent users, including out-of-band receiver blocking performance."[176] Are there other comprehensive technical studies that could shed light on the appropriate power levels for this band? What are the technical reasons that it is appropriate or not appropriate to adopt the part 30 power limits? Are there alternative power limit proposals that would serve the public interest better and what are the technical data and analysis for these reasons? Are there alternative metrics for controlling power in this band? The Commission further seeks comment on any additional considerations that should be included to provide adequate protection for services in the adjacent bands. For any alternative or additional proposals, metrics, or considerations, commenters should include technical details, including any and/or all assumptions and parameters. For example, how would the in-band requirements specified in various ITU documents, discussed above, translate to out-of-band requirements in the 12.7 GHz? Is any further information or assumptions necessary, particularly concerning out-of-band receiver blocking performance for receivers in the adjacent bands? Commenters advocating for particular technical rules to protect operations in adjacent bands, including DBS, NGSO FSS, MVDDS, active spaceborne sensors, and ARNS, should provide detailed information on the receiver, antenna, and operational characteristics for such services operating in the adjacent bands.

2. Out-of-Band Emissions (OOBE) Limits

66. The Commission seeks comment on appropriate out-of-band emissions (OOBE) limits for base and mobile stations in the 12.7 GHz band. Section 101.111(a)(2)(i) of the

[175] Nokia Comments at 7-8.

[176] Nokia Comments at 7-8.

Commission's rules establishes an emission limit for fixed stations operating with digital emissions in this band expressed as A = 35 + 0.8(P −50) + 10 Log10 B, where A is attenuation below the mean output power of the transmitter, B is the authorized bandwidth in megahertz, and P is the percentage by which the transmitter bandwidth is removed from the carrier frequency.[177] Under this provision, attenuation greater than 80 decibels or to an absolute power of less than −13 dBm/1MHz is not required.[178] This emission limit is defined in conducted fashion.[179] These rules are intended to support various fixed microwave technologies with conventional antenna systems.

67. For most mobile systems, the Commission has generally required licensees to attenuate their unwanted emission power below the transmission mean power (P) by a factor of at least 43 + 10log10(P), or -13 dBm/MHz for any emissions on frequencies outside the licensee's authorized spectrum.[180] These requirements take effect at the edges of the assigned frequencies (e.g., channel, block, or band), and may be used as a basis for developing further requirements that relate to transmitter performance by industry standard organizations.[181] This limit is applied equally both to base stations and to mobile stations, and compliance with this limit in existing systems, where access to the RF port of the antennas is conveniently available, is based on conducted measurement of transmission power at the output of the individual RF port.[182]

68. In response to the *12.7 NOI*, a few commenters suggest specific criteria for out-of-band emission limits. For example, 5G Americas and CTIA suggest that new broadband users should be subject to the same out-of-band emission limits that apply to the existing incumbents

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[177] 47 CFR 101.111(a)(2)(i).

[178] *Id*.

[179] *Id.*

[180] *See, e.g.,* 47 CFR 22.359(a), 47 CFR 27.53(a)(1)(i).

[181] *Id.*

[182] *Id.*

in the band.[183] T-Mobile and Ericsson suggest that the Commission consider adopting the same out-of-band emission limit of –13dBm/MHz that was adopted in the Spectrum Frontiers proceedings for the Upper Microwave Flexible Use Service in the upper mmW spectrum bands.[184] T-Mobile argues that this existing out-of-band emission limit is sufficient to protect services in adjacent bands.[185] Hispasat, Oneweb, Dish, and SpaceX suggest that further analysis should be conducted to determine whether the existing out-of-band emissions limit is, in fact, sufficient to protect users in adjacent bands.[186] Due to the propagation characteristics in the 12.7 GHz band signal attenuation with distance is higher than at lower frequencies and to overcome those losses higher gain antennas are typically used, therefore the Commission believes that deployments in this band are likely to use integrated multiple element antenna arrays that have characteristics more similar to antennas in the UMFUS bands than those in the PCS and AWS bands. As such, measurement of OOBE based on conducted measurements may be challenging, as was recognized to be the case for the mmW bands.[187] In order to achieve higher antenna gain in the compact format necessary for mobile operation and beam steering necessary for base stations to track mobile devices, the Commission expects that mobile and base stations in the 12.7 GHz band, much like the mmW bands, will have tens of radiating elements with multiple power amplifiers. Recognizing the potential measurement challenges posed by having a requirement based on conducted measurements, the Commission proposes to provide flexibility for the out-of-band emission limits to be measured either using conducted power or radiated power, and the Commission seeks comment on this proposal. With lack of RF ports, the

[183] *See* CTIA Comments at 13; 5G Americas Comments at 2.

[184] *See* Ericsson Comments at 11; T-Mobile Comments at 14 & n.47 (citing *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988, para. 34 (2017); Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, Fourth Report and Order, 33 FCC Rcd 12168, paras. 11-12 (2018)).

[185] *See* T-Mobile Reply at 10.

[186] *See* OneWeb Comments at 4; DISH Reply at 7; Hispasat Reply at 13; SpaceX Reply at 6.

[187] *Spectrum Frontiers 1st R&O and FNPRM*, 31 FCC Rcd at 8117, para. 297 (discussing OOBE measurement challenges in the mmW band).

emission measurement needs to be made in radiated fashion, and the antenna gain must be characterized and subtracted from the radiated measurement if the emission limit is to be defined in conducted fashion. Ericsson suggests that in order to support adaptive antennas, either the conductive power or the total radiated power of any emission outside a licensee's frequency block shall be −13 dBm/MHz or lower.[188]

69. In light of the discussion above, the Commission proposes to adopt a requirement that the conductive power or the total radiated power of any emission outside a licensee's frequency block shall be −13 dBm/MHz or lower and seeks comment on this proposal. The Commission seeks comment on whether a radiated emission limit of –13dBm/MHz can be supported by transmitters operating in the 12.7 GHz band. In this NPRM, the Commission also proposes to retain a portion of the band either at the top or bottom edge of the band, or both, to accommodate re-packed mobile TV pickup operations. From the perspective of protecting services in adjacent bands from out-of-band emissions and harmful interference, does one of these alternatives offer more benefits than the others? Should the out-of-band emissions limits be different if mobile services are adjacent to incumbent TV pickup operations, as opposed to being directly adjacent to the 12.7 GHz or 13.25 GHz band edges? Should the out-of-band emissions limits be applied at the band edge between new flexible use services and BAS, or is it necessary to define out-of-band emissions limits at the edges of the 12.7 and 13.25 GHz band, regardless of any buffer created by BAS repack bands?

70. The Commission notes that out-of-band emissions and spurious emissions characterize the overall emission performance of a transmitter, and that the measurement procedures for spurious emissions at antenna terminals and the field strength of spurious radiation are described in the Commission's rules. For bands higher than 1 GHz, for example PCS and AWS-1, compliance with the emission rule is based on a resolution bandwidth of 1

[188] *See* Ericsson Comments at 7.

megahertz or greater, except within the first 1 megahertz.[189] In the first 1 megahertz bands immediately outside and adjacent to the channel block, a resolution bandwidth equal to at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, provided that the measured power is integrated over the full required measurement bandwidth.[190] The Commission seeks comment on whether the Commission should apply this measurement methodology in this band; and if so, whether the 1 MHz resolution bandwidth is appropriate. Alternatively, what resolution and frequency offset should be considered to define out-of-band emissions and spurious emissions?

71. The Commission request that commenters proposing specific out-of-band emissions criteria or alternative methods of defining or measuring the out-of-band emissions provide technical analysis describing how the proposed radiated emission limits would mitigate the risk of harmful interference to operations by adjacent users. The Commission also seeks comment on protection of Federal operations in adjacent bands in section I.E.7 below (Protection of Federal Operations).

3. Field Strength Limits/Market Boundaries

72. The Commission's rules for mobile services typically define field strength limits at the market boundaries in order to prevent interference or facilitate coordination between licensees in adjacent markets. For example, the part 27 rules for the Advanced Wireless Services (AWS) specify that the predicted or measured median field strength at any location on the geographical border of a licensee's service area shall not exceed 47 dBμV/m unless the adjacent affected service area licensee(s) agree(s) to a different field strength.[191] The part 30 rules for Upper Microwave Flexible Use Service (UMFUS) specify that the predicted or measured Power Flux Density (PFD) from any Base Station operating in the 27.5-28.35 GHz band, 37-38.6 GHz

[189] *See, e.g.*, 47 CFR 27.53(a)(5).

[190] *Id.*

[191] *See* 47 CFR 27.55(a)(1).

band, and 38.6-40 GHz bands at any location on the geographical border of a licensee's service area shall not exceed −77.6 dBm/m2/MHz (measured at 1.5 meters above ground) unless the adjacent affected service area licensee(s) agree(s) to a different PFD.[192] The part 101 rules for the Multipoint Video and Data Distribution Service (MVDDS) in the 12.2-12.7 GHz band, directly adjacent to the band under consideration here, simply specify that licensees must coordinate their operations whenever the facilities have optical line-of-sight into other licensees' areas or are within the same geographic area.[193] While none of the commenters in response to the *12.7 NOI* suggested specific criteria for field strength limits at the market boundaries, several commenters do support an exclusive market-based licensing framework.[194]

73. In section I.D above (Licensing and Operating Rules) of this NPRM, the Commission proposes to establish a framework for licensing this band using exclusive market based licenses with 100 or 50 megahertz channel blocks. Since the Commission proposes to license geographic areas on an exclusive basis the Commission also proposes to establish PFD limits at the market boundaries, consistent with the approach the Commission has used in the past for similar market-based services. The Commission believes that some criteria are necessary at market boundaries to manage interference and coordination between adjacent area licensees. The Commission also believes that given the wide channel bandwidths and diversity of potential applications that might be deployed in these bands, any criteria that the Commission proposes should include a scaling factor for the bandwidth. In the Spectrum Frontiers proceeding the Commission adopted a PFD of −77.6 dBm/m2/MHz (measured at 1.5 meters above ground).[195] The Commission believes that deployments in this band are likely to use

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[192] *See* 47 CFR 30.204(a).

[193] *See* 47 CFR 101.1421(c).

[194] *See* CCA Reply at 4; AT&T Comments at 4; CTIA Comments at 2, 6; Ericsson Comments at 2.

[195] *See Spectrum Frontiers 1st R&O and FNPRM*, 31 FCC Rcd at 8124, para. 312. The Commission notes that the final rule adopted by the *Spectrum Frontiers 1st R&O and FNPRM* listed the incorrect value of –76 dBm/m2/MHz as opposed to the –77.6 dBm/m2/MHz value referenced in the discussion of the item. For clarity, in the instant *12.7 GHz NPRM*, the Commission is proposing the -77.6 dBm/m2/MHz value.

directional antennas that have characteristics more similar to those in the UMFUS bands than those in the PCS and AWS bands. Therefore, the Commission proposes to adopt a requirement that the predicted or measured Power Flux Density (PFD) from any Base Station operating in the 12.7 GHz band at any location on the geographical border of a licensee's service area shall not exceed −77.6 dBm/m2/MHz (measured at 1.5 meters above ground) unless the adjacent affected service area licensee(s) agree(s) to a different PFD. The Commission seeks comment on this proposal. The Commission seeks comment on whether a PFD at the market boundary is the appropriate metric for this band or whether there are advantages to using a different metric, such as a field strength limit, which is used for other mobile services under part 27? Is the specific PFD value the Commission proposes appropriate for this frequency band taking into consideration factors like the typical receive antenna gain and receiver characteristics? Would simple coordination criteria, such as those currently in place for the MVDDS services in the 12.2-12.7 GHz band, which require coordination for any facility that has optical line of sight to an adjacent market be more appropriate? Given the potential flexible uses of the band, would it be appropriate to have different interference protection and/or coordination criteria depending on the types of services (e.g., fixed or mobile) that a licensee deploys? Commenters who propose alternative metrics or criteria or for controlling interference or facilitating coordination between licensees in adjacent markets or adjacent channels within the same market should describe their proposal in detail and support their proposal with engineering analysis.

4. Antenna Height Limits

74. The Commission proposes not to adopt limits on base station antenna height at this time because no commenters address the issue in response to the *12.7 NOI*. The Commission seeks comment on this proposal. Considering what future wireless networks are envisioned to be, are antenna height thresholds and corresponding power reductions applicable to

certain part 27 bands[196] appropriate for base or fixed stations that will be used in the 12.7 GHz band to provide mobile broadband or for other expanded uses? Conversely, given that the Commission is proposing below to control interference at license boundaries, are separate antenna height restrictions and corresponding power reductions even necessary? The Commission tentatively proposes not to adopt antenna height and power limits similar to those in its part 27 rules for certain bands. However, the Commission seeks comment on whether power limits based on antenna height are necessary and/or whether any modifications should be made to either the height thresholds or the power limits at specific heights that the Commission has proposed. The Commission also seeks comment on whether there would there be any benefit in requiring antenna downtilt for antennas above a certain height? The Commission seeks comment on this proposal, including the costs and benefits of the proposal and any alternatives. For alternative proposals, commenters should provide technical support.

5. Canada and Mexico Coordination

75. Typically, the Commission's rules provide that fixed and mobile operations are subject to international agreements with Mexico and Canada.[197] The Commission proposes to apply the same limitation to the newly established rules for the 12.7-13.25 GHz band. Until such time as any adjusted agreements between the United States, Mexico, and/or Canada can be agreed to, operations in the 12.7-13.25 GHz band must not cause harmful interference across any international borders of the United States, consistent with the terms of the agreements currently in force.[198] Currently, fixed use of the 12.7-13.25 GHz band is covered by an existing arrangement between the United States and Canada.[199] The Commission notes that further

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[196] *See, e.g.,* 47 CFR 27.50(b)(1)-(5), (c)(1)-(4) (power and antenna height limits set forth in Tables 1-4 of § 27.50 applicable to certain 600 MHz, 700 MHz, and 800 MHz bands), (c)(1)-(4).

[197] *See e.g.*, 47 CFR 27.57, 30.206, 101.147(r)(13), 101.509(d).

[198] *See* Agreement Concerning the Coordination and Use of Radio Frequencies Above Thirty Megacycles per Second, Ca.-U.S., Oct 24, 1962 13 UST 2418, https://transition.fcc.gov/ib/sand/agree/files/can-nb/above30.pdf.

[199] *See* Agreement Concerning the Coordination and Use of Radio Frequencies Above Thirty Megacycles per Second, Ca.-U.S., Oct 24, 1962 13 UST 2418, https://transition.fcc.gov/ib/sand/agree/files/can-nb/above30.pdf.

modification of the proposed rules might be necessary in order to comply with any future agreements with Canada and Mexico regarding the use of this band. The Commission seeks comment on this issue, including the costs and benefits of alternatives.

6. General Part 27 Rules

76. There are several additional technical rules applicable to all part 27 services, including §§ 27.51 (equipment authorization), 27.52 (RF safety), 27.54 (frequency stability), 27.56 (antennas structures; air navigation safety), and 27.63 (disturbance of AM broadcast station antenna patterns).[200] Given that the Commission proposes to designate mobile broadband and other expanded uses of the 12.7 GHz band as part 27 services, the Commission proposes to apply these general part 27 rules to all 12.7 GHz band licenses. Further, the Commission proposes to apply these rules to licensees that acquire their licenses through partitioning or disaggregation (to the extent the service rules permit such aggregation). The Commission seeks comment on its proposals, including specific costs and benefits, and ask commenters to identify any aspects of its general part 27 rules that should be modified to accommodate the particular characteristics of the 12.7 GHz band.

7. Protection of Federal Operations

a. In-Band

77. Federal operations in the 12.7-13.25 GHz band include the Space Research Service (SRS) (space-to-Earth) and the use of commercial satellites in the FSS (Earth-to-space). The National Telecommunications and Information Administration (NTIA) filed comment in response to the *12.7 NOI* raising concerns about interference to SRS operations at Goldstone, CA ground stations and other Federal systems.[201]

78. With respect to Goldstone, NTIA has expressed concern that ground stations maybe susceptible to interference from commercial network base stations and handheld mobile

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[200] *See, e.g.*, 47 CFR 27.51, 27.52, 27.54, 27.56, 27.63.

[201] *See* NTIA Comments at 2.

stations.[202] Per footnote US251 of the Table of Allocation, the 12.75-13.25 GHz band is also allocated to the space research (deep space) (space-to-Earth) service for reception only at Goldstone, CA (35° 20' N, 116° 53' W).[203] Goldstone is one of three ground station complexes around the world known as the National Aeronautics and Space Administration (NASA)'s Deep Space Network (DSN) established for commanding, tracking and monitoring the health and safety of spacecraft at many distant planetary locales. The DSN is also used to conduct powerful science investigations that examine the nature of asteroids and the interiors of planets and moons.[204]

79. Additionally, NTIA raised concerns about possible aggregate interference from a large population of terrestrial emitters to current and future commercial satellite receivers used by the DoD.[205] In light of this, NTIA suggested that the Commission consider a compatibility analysis between mobile broadband service and commercial GSO and NGSO satellites.[206]

80. NTIA also raised concerns about possible interference to NASA and NSF passive radio astronomy observatories operating in the 12.7 GHz band.[207] The sites at issue include very long baseline interferometry (VLBI) stations for geodesy and astrometry high accuracy reference frames.[208] In its comments, NTIA notes that current coordination requirements exist for Green Bank Telescope within the National Radio Quiet Zone (NRQZ) for ground-based transmitters and that repurposing the 12.7 GHz band to allow terrestrial mobile broadband or other expanded use may require additional coordination zones and/or new coordination agreements and updated NRQZ coordination requirements with the changes

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[202] NTIA Comments at 2.

[203] *See supra* note 11 and accompanying text.

[204] For details, *see 12.7 NOI* at *3, para. 6 and NASA, *What is the Deep Space Network* (Mar. 30, 2020) (NASA's Deep Space Network "is the largest and most sensitive scientific telecommunications system in the world."), https://www.nasa.gov/directorates/heo/scan/services/networks/deep_space_network/about.

[205] NTIA Comments at 2.

[206] NTIA Comments at 2.

[207] NTIA Comments at 2.

[208] NTIA Comments at 2.

beneficial for other U.S. radio astronomy observatories.[209]

81. Recognizing the importance of these Federal operations in the band, and the need to protect them from interference, the Commission seeks comment on establishing coordination zone and/or other criteria to protect Goldstone ground stations from possible harmful interference that might be caused by mobile broadband or other expanded use intended for the 12.7-13.25 GHz band. The Commission seeks comment on how to define such a coordination zone and on what interference protection levels should apply at the edge of the coordination zone. The Commission notes that to protect Goldstone site, § 30.205 of the Commission's rules defines two coordination zones with contours 'coordinates tables corresponding to 60 dBm/100 MHz EIRP and 75 dBm/100 MHz EIRP respectively. Under § 30.205, all licensees in the 37-38 GHz band located in the coordination zone must coordinate with Federal Space Research Service (space to Earth) users of the band via the NTIA. All licensees within the zone defined by the 60 dBm/100 MHz EIRP must coordinate all operations; licensees operating within the area between the zones defined by the 60 dBm/100 MHz and 75 dBm/100 MHz EIRP must coordinate all operations if their base station EIRP is greater than 60 dBm/100 MHz or if their antenna height exceeds 100 meters above ground level; licensees operating outside the zones defined by the 75 dBm/100 MHz EIRP coordinates are not required to coordinate their operations with NTIA. Could a similar approach, based on a coordination agreement with NASA, be adopted for mobile broadband to ensure protection of the DSN?

b. Adjacent Band

82. Federal operations adjacent to the 12.7-13.25 GHz band include both military and scientific operations in the upper adjacent-band, 13.25-13.75 GHz. This band can be divided into two sub bands, the 13.25-13.4 GHz band and the 13.4-13.75 GHz band, each with different Federal allocations. The 13.25-13.4 GHz portion is allocated on a secondary basis for Federal

[209] NTIA Comments at 2-3.

Earth exploration satellite services (EESS) (active), space research services (SRS) (active), and on a primary basis for aeronautical radionavigation services (ARNS).[210] The 13.25-13.4 GHz portion is allocated for Federal EESS (active), SRS (active), and radiolocation services on a primary basis and standard frequency and time signal-satellite (Earth-to-space) on a secondary basis.[211]

83. In response to the *12.7 NOI*, NTIA articulated several concerns related to adjacent band Federal operations.[212] First, NTIA noted that the 13.25-13.4 GHz band is used by the Department of Defense (DoD) and the Federal Aviation Administration (FAA) to operate airborne Doppler navigation radar systems used to determine ground speed and drift angle of an aircraft with respect to the ground.[213] NTIA believes those operations may be susceptible to performance degradation due to interference coming from 12.7-13.25 GHz.[214] Future Unmanned aircraft detect-and-avoid safety systems being developed in this band are also a source of concern for the NTIA.[215] Although Recommendation ITU-R M.2008-1 provides characteristics and protection criteria for the 13.25-13.4 GHz band used for airborne Doppler radars,[216] NTIA believes that adjacent-band compatibility studies with representative commercial deployments may be necessary to update Recommendation ITU-R M.2008-1 to reflect the characteristics of current and future airborne Doppler navigation radars.[217]

84. NTIA also noted that the 13.4-13.75 GHz band is used for DoD operations of shipborne radars (search radars, tracking radars, and missile and gun fire-control radars), the National Oceanic and Atmospheric Administration (NOAA) satellite operations in the Joint

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[210] NTIA Comments at 3.

[211] NTIA Comments at 3.

[230] NTIA Comments at 3-5.

[213] NTIA Comments at 4.

[214] NTIA Comments at 4.

[215] NTIA Comments at 4.

[216] NTIA Comments at 4.

[217] NTIA Comments at 4.

Satellite Oceanography Network (JASON), NASA's active remote sensing (including the future Surface Water and Ocean Topography (SWOT) mission), Global Precipitation Mission (GPM) and Tracking and Data Relay Satellite (TDRS) operations, and the NSF continuum and spectral-line research (including as a calibration aid for the radionavigation satellite service) operations.[218] NTIA is concerned that aggregate interference from mobile base stations and ubiquitous handheld units may cause interference to NASA and NOAA's satellite systems.[219] Mobile broadband operations are also believed to be possible source of interference to military agencies radar systems.[220] NTIA suggests that adjacent-band compatibility studies with representative commercial deployments are necessary to assess any possible degradation of Federal operations in the 13.4-13.75 GHz band.[221]

85. The Commission notes that NTIA has set up a Technical Interchange Group (TIG) as a tool for implementation of electromagnetic Compatibility (EMC) studies between 12.7-13.25 GHz band mobile broadband or other expanded use and Federal systems.[222] NTIA TIG recommendations can be submitted in the record for the NPRM to help inform the decisions in the Report and Order (R&O). In section I.E.2 above (Out-of-Band Emissions (OOBE) Limits), the Commission proposes to establish an out-of-band emissions limit of -13dBm/1MHz anywhere outside a licensee spectrum block and seeks comment on that proposal. In this section, the Commission seeks comment on whether that same out-of-band emission limit is adequate to protect Federal operations in the adjacent bands. If the Commission relocates mobile BAS/CARS operations into a portion of the 12.7-13.25 GHz band, could creating a buffer between base/mobile operations and Federal operations alleviate some of the Federal concerns about interference? Recognizing the importance of Federal operations in adjacent bands, the

[218] NTIA Comments at 5.

[219] NTIA Comments at 5.

[220] NTIA comments at 5.

[221] NTIA Comments at 5.

[222] NTIA Comments at 5-6.

Commission seeks comment generally on how to protect Federal operations in bands adjacent to the 12.7-13.25 GHz band.

F. Promoting Digital Equity and Inclusion

86. The Commission, as part of its continuing effort to advance digital equity for all,[223] including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invites comment on any equity-related considerations[224] and benefits (if any) that may be associated with the proposals and issues discussed herein. Specifically, the Commission seeks comment on how its proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well the scope of the Commission's relevant legal authority

II. INITIAL REGULATORY FLEXIBILITY ANALYSIS IN GN DOCKET NO. 22-352

87. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[225] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the Notice of Proposed Rulemaking (NPRM). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the NPRM. The Commission will send a copy of the

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[223] Section 1 of the Communications Act of 1934 as amended provides that the FCC "regulat[es] interstate and foreign commerce in communication by wire and radio so as to make [such service] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex." 47 U.S.C. 151.

[224] The term "equity" is used here consistent with Executive Order 13985 as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. *See* E.O. 13985, 86 FR 7009, Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Jan. 20, 2021).

[225] *See* 5 U.S.C. 603. The RFA, *see* 5 U.S.C. 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. 104-121, Title II, 110 Stat. 857 (1996).

NPRM, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[226] In addition, the NPRM and IRFA (or summaries thereof) will be published in the *Federal Register*.[227]

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

88. The NPRM seeks comment on proposals to repurpose some or all of the 550 megahertz of upper mid-band spectrum between 12.7-13.25 GHz (12.7 GHz band) for mobile broadband or other expanded use. The Commission is pursuing the joint goals of making this spectrum available for new wireless uses while effectively accommodating incumbent operations in the band. Accordingly, the NPRM seeks comment on various proposals for transitioning all or part of the band to make it available for mobile broadband, as well as other expanded uses that will help ensure that the speed, capacity, and ubiquity of the nation's wireless networks so that they may keep pace with the demands placed upon them by new technologies and possible new types of services for consumers and businesses.

89. The NPRM proposes to require new licensees to protect fixed point-to-point incumbents until a sunset date with the option to negotiate agreements for accelerated relocations to other bands or media, and to repack mobile Broadcast Auxiliary Service (BAS) and Cable Television Relay Services (CARS) incumbents within a portion(s) of the band designated for such use. The Commission also proposes to grandfather the 23 Fixed Satellite Service (FSS) earth stations currently authorized to operate in the band (Earth-to-space) in accordance with the U.S. Table of Allocations, but otherwise prohibit all future earth stations of this type. Other earth station operations in the band could continue to operate on a non-interference, unprotected basis. Furthermore, the Commission proposes to dismiss any new space station license applications and new requests for access to the U.S. market through non-U.S.-licensed space stations, or those parts of any such applications and requests, that seek to operate in the 12.7 GHz

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[226] 5 U.S.C. 603(a).

[227] *Id*.

band. Under these proposals, the band would be unavailable for new Fixed Service (FS), mobile BAS, or FSS earth stations and would become available for mobile broadband and other expanded uses. The NPRM encourages commenters to discuss and quantify the costs and benefits associated with any of the proposed approaches for transitioning the band, along with other helpful technical or procedural details. These actions are another step in the Commission's efforts to close the digital divide by providing wireless broadband connectivity across the nation and to secure U.S. leadership in the next generation of wireless services, including fifth-generation (5G) wireless, 6G, and beyond.

A. Legal Basis

90. The proposed action is taken pursuant to sections 1, 2, 4, 5, 301, 302, 303, 304, 307, 309, 310, and 316 of the Communications Act of 1934, 47 U.S.C. 151, 152, 154, 155, 301, 302a, 303, 304, 307, 309, 310, 316, and § 1.411 of the Commission's rules, 47 CFR 1.411.

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

91. 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 rules, if adopted.[228] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[229] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[230] A small business concern is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by

[228] *Id*. section 603(b)(3).

[229] *Id.* section 601(6).

[230] *Id.* section 601(3) (incorporating the definition of "small business concern" in in the Small Business Act, 15 U.S.C. 632). Pursuant to 5 U.S.C. 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

the SBA.[231]

92. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* The Commission's actions, over time, may affect small entities that are not easily categorized at present. The Commission therefore describe, at the outset, three broad groups of small entities that could be directly affected herein.[232] First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the Small Business Administration's (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.[233] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 32.5 million businesses.[234]

93. Next, the type of small entity described as a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[235] The Internal Revenue Service (IRS) uses a revenue benchmark of $50,000 or less to delineate its annual electronic filing requirements for small exempt organizations.[236] Nationwide, for tax year 2020, there were approximately 447,689 small exempt organizations in the U.S. reporting revenues of $50,000 or less according to the registration and tax data for exempt organizations available from the IRS.[237]

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[231] 15 U.S.C. 632.

[232] 5 U.S.C. 601(3)-(6).

[233] *See* SBA, Office of Advocacy, Frequently Asked Questions, "What is a small business?," https://cdn.advocacy.sba.gov/wp-content/uploads/2021/11/03093005/Small-Business-FAQ-2021.pdf. Nov 2021.

[234] *Id*.

[235] 5 U.S.C. 601(4).

[236] The IRS benchmark is similar to the population of less than 50,000 benchmark in 5 U.S.C 601(5) that is used to define a small governmental jurisdiction. Therefore, the IRS benchmark has been used to estimate the number of small organizations in this small entity description. S*ee* Annual Electronic Filing Requirement for Small Exempt Organizations – Form 990-N (e-Postcard), "Who must file," https://www.irs.gov/charities-non-profits/annual-electronic-filing-requirement-for-small-exempt-organizations-form-990-n-e-postcard. The Commission note that the IRS data does not provide information on whether a small exempt organization is independently owned and operated or dominant in its field.

[237] *See* Exempt Organizations Business Master File Extract (EO BMF), "CSV Files by Region," https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf. The IRS Exempt Organization Business Master File (EO BMF) Extract provides information on all registered tax-

94. Finally, the small entity described as a "small governmental jurisdiction" is defined generally as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[238] U.S. Census Bureau data from the 2017 Census of Governments[239] indicate there were 90,075 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.[240] Of this number, there were 36,931 general purpose governments (county,[241] municipal, and town or township[242]) with populations of less than 50,000 and 12,040 special purpose governments—independent school districts[243] with enrollment populations of less than 50,000.[244] Accordingly, based on the 2017 U.S. Census of Governments data, the Commission estimates that at least 48,971 entities fall into the category of

exempt/non-profit organizations. The data utilized for purposes of this description was extracted from the IRS EO BMF data for businesses for the tax year 2020 with revenue less than or equal to $50,000 for Region 1-Northeast Area (58,577), Region 2-Mid-Atlantic and Great Lakes Areas (175,272), and Region 3-Gulf Coast and Pacific Coast Areas (213,840) that includes the continental U.S., Alaska, and Hawaii. This data does not include information for Puerto Rico.

[238] 5 U.S.C. 601(5).

[239] *See* 13 U.S.C. 161. The Census of Governments survey is conducted every five (5) years compiling data for years ending with "2" and "7". *See also* Census of Governments, https://www.census.gov/programs-surveys/cog/about.html.

[240] *See* U.S. Census Bureau, 2017 Census of Governments – Organization Table 2. Local Governments by Type and State: 2017 [CG1700ORG02], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. Local governmental jurisdictions are made up of general purpose governments (county, municipal and town or township) and special purpose governments (special districts and independent school districts). *See also* tbl.2. CG1700ORG02 Table Notes_Local Governments by Type and State_2017.

[241] *See id.* at tbl.5. County Governments by Population-Size Group and State: 2017 [CG1700ORG05], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 2,105 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

[242] *See id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2017 [CG1700ORG06], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 18,729 municipal and 16,097 town and township governments with populations less than 50,000.

[243] *See id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2017 [CG1700ORG10], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 12,040 independent school districts with enrollment populations less than 50,000. *See also* tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2017 [CG1700ORG04], CG1700ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2017.

[244] While the special purpose governments category also includes local special district governments, the 2017 Census of Governments data does not provide data aggregated based on population size for the special purpose governments category. Therefore, only data from independent school districts is included in the special purpose governments category.

"small governmental jurisdictions."[245]

95. *Radio Frequency Equipment Manufacturers (RF Manufacturers).* There are several analogous industries with an SBA small business size standard that are applicable to RF Manufacturers. These industries are Fixed Microwave Services, Other Communications Equipment Manufacturing, Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. A description of these industries and the SBA small business size standards are detailed below.

96. *Fixed Microwave Services.* Fixed microwave services include common carrier,[246] private-operational fixed,[247] and broadcast auxiliary radio services.[248] They also include the Upper Microwave Flexible Use Service (UMFUS),[249] Millimeter Wave Service (70/80/90 GHz),[250] Local Multipoint Distribution Service (LMDS),[251] the Digital Electronic Message Service (DEMS),[252] 24 GHz Service,[253] Multiple Address Systems (MAS),[254] and Multichannel Video Distribution and Data Service (MVDDS),[255] where in some bands licensees can choose between common carrier and non-common carrier status.[256] Wireless

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[245] This total is derived from the sum of the number of general purpose governments (county, municipal and town or township) with populations of less than 50,000 (36,931) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (12,040), from the 2017 Census of Governments - Organizations tbls.5, 6 & 10.

[246] *See* 47 CFR part 101, subparts C and I.

[247] *See id*. subparts C and H.

[248] Auxiliary Microwave Service is governed by part 74 of title 47 of the Commission's Rules. *See* 47 CFR part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[249] *See* 47 CFR part 30.

[250] *See* 47 CFR part 101, subpart Q.

[251] *See id*. subpart L.

[252] *See id*. subpart G.

[253] *See id*.

[254] *See id.* subpart O.

[255] *See id*. subpart P.

[256] *See* 47 CFR 101.533, 101.1017.

Telecommunications Carriers (*except* Satellite)[257] is the closest industry with an SBA small business size standard applicable to these services. The SBA small size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[258] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[259] Of this number, 2,837 firms employed fewer than 250 employees.[260] Thus, under the SBA size standard, the Commission estimates that a majority of fixed microwave service licensees can be considered small.

97. The Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time the Commission is not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

98. *Other Communications Equipment Manufacturing.* This industry comprises establishments primarily engaged in manufacturing communications equipment (except telephone apparatus, and radio and television broadcast, and wireless communications equipment).[261] Examples of such manufacturing include fire detection and alarm systems manufacturing, Intercom systems and equipment manufacturing, and signals (e.g., highway, pedestrian, railway, traffic) manufacturing.[262] The SBA small business size standard for this

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[257] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[258] *See* 13 CFR 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[259] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[260] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[261] *See* U.S. Census Bureau, *2017 NAICS Definitions, "334290 Other Communications Equipment Manufacturing,*" https://www.census.gov/naics/?input=334290&year=2017&details=334290.

[262] *Id.*

industry classifies firms having 750 or fewer employees as small.[263] For this industry, U.S. Census Bureau data for 2017 shows that 321 firms operated for the entire year.[264] Of that number, 310 firms operated with fewer than 250 employees.[265] Based on this data, the Commission concludes that the majority of Other Communications Equipment Manufacturers are small.

99. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.* This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment.[266] Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.[267] The SBA small business size standard for this industry classifies firms having 1,250 employees or less as small.[268] U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year.[269] Of this number, 624 had fewer than 250 employees.[270] Based on this data, the Commission concludes that a majority of manufacturers in this industry are small.

100. *Broadcast Auxiliary Services (BAS) Remote Pickup (RPU) Licensees (TV*

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[263] *See* 13 CFR 121.201, NAICS Code 334290.

[264] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 334290, https://data.census.gov/cedsci/table?y=2017&n=334290&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[265] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[266] *See* U.S. Census Bureau, *2017 NAICS Definition*, "*334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing,*" https://www.census.gov/naics/?input=334220&year=2017&details=334220.

[267] *Id.*

[268] *See* 13 CFR 121.201, NAICS Code 334220.

[269] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 334220, https://data.census.gov/cedsci/table?y=2017&n=334220&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[270] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

Stations). Only licensees of broadcast stations, broadcast networks, and cable networks can hold RPU licenses. BAS involves a variety of transmitters, generally used to relay broadcast programming to the public (through translator and booster stations) or within the program distribution chain (from a remote news gathering unit to the studio or from the studio to the transmitter). The Commission nor the SBA has developed a small business size standard for Broadcast Auxiliary Services (BAS) Remote Pickup (RPU) licensees. Television Broadcasting[271] is the closest industry with a SBA small business size standard for Remote pickup BAS when used by a TV station. The SBA small business size standard for this industry classifies a business as small if it has $41.5 million or less in annual receipts.[272] 2017 U.S. Census Bureau indicates that 744 firms in this industry operated for the entire year.[273] Of that number, 657 firms had revenue of less than $25,000,000.[274] Based on this data the Commission estimates that the majority of firms are small entities under the SBA size standard.

101. *Wireless Telecommunications Carriers (except Satellite).* This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves.[275] Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless Internet access, and wireless video services.[276] The SBA size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[277] U.S. Census Bureau

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[271] *See* U.S. Census Bureau, *2017 NAICS Definition, "515120 Television Broadcasting,*" https://www.census.gov/naics/?input=515120&year=2017&details=515120.

[272] *See* 13 CFR 121.201, NAICS Code 515120 (as of 10/1/22 NAICS Code 516120).

[273] *See* U.S. Census Bureau, *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, NAICS Code 515120, https://data.census.gov/cedsci/table?y=2017&n=515120&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[274] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. The Commission also notes that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[275] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers (except Satellite),"* https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[276] *Id.*

[277] *See* 13 CFR 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

data for 2017 show that there were 2,893 firms in this industry that operated for the entire year.[278] Of that number, 2,837 firms employed fewer than 250 employees.[279] Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 594 providers that reported they were engaged in the provision of wireless services.[280] Of these providers, the Commission estimates that 511 providers have 1,500 or fewer employees.[281] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

102. *Satellite Telecommunications.* This industry comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[282] Satellite telecommunications service providers include satellite and earth station operators. The SBA small business size standard for this industry classifies a business with $38.5 million or less in annual receipts as small.[283] U.S. Census Bureau data for 2017 show that 275 firms in this industry operated for the entire year.[284] Of this number, 242 firms had revenue of less than $25 million.[285] Additionally, based on

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[278] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[279] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[280] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf.

[281] *Id.*

[282] *See* U.S. Census Bureau, *2017 NAICS Definition, "517410 Satellite Telecommunications,"* https://www.census.gov/naics/?input=517410&year=2017&details=517410.

[283] *See* 13 CFR 121.201, NAICS Code 517410.

[284] *See* U.S. Census Bureau, *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, NAICS Code 517410, https://data.census.gov/cedsci/table?y=2017&n=517410&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[285] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. The Commission also notes that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 65 providers that reported they were engaged in the provision of satellite telecommunications services.[286] Of these providers, the Commission estimates that approximately 42 providers have 1,500 or fewer employees.[287] Consequently, using the SBA's small business size standard, a little more than half of these providers can be considered small entities.

C. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

103. The Commission expects the rules proposed in the NPRM governing the operations of new licensees in the 12.7 GHz band will impose new reporting or recordkeeping and/or other compliance obligations on small entities as well as other applicants and licensees, if adopted. The rule changes proposed in this NPRM sunsetting fixed service operations in the 12.7 GHz band, repacking mobile BAS/CARS operations, and prohibiting certain fixed satellite service operations in the band, could also impose other new compliance obligations on small and other entities. In the event these proposed actions are adopted, the NPRM seeks comment on relocation options and on transition and protection mechanisms for incumbent non-Federal operations. In the alternative, the NPRM explores the possibility of shared use of the band. Finally, for newly licensed mobile and other expanded uses in the 12.7 GHz band, the NPRM seeks comment on various service rules that should apply, including construction benchmarks and technical operating requirements. The projected reporting, recordkeeping, and other compliance obligations proposed for small entities and other licensees are described below.

104. *Certification.* In the *Certification Requirement for Part 74 and Part 78 Licensees Order* (*Order*) (FR 2023-13502), the Commission directs each BAS and CARS

[286] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf.

[287] *Id.*

licensee for each of their authorizations to use the 12.7 GHz band to certify the accuracy of all information reflected on each license, including whether the facilities are *operating* as authorized. If a licensee is unable to make such a certification for a given license, it must cancel or modify the license in accordance with the Commission's rules. The Commission proposes in the NPRM to protect only those BAS and CARS stations licensed in the Universal Licensing System (ULS) and the Cable Operations and Licensing System (COALS), respectively, for which the licensee timely files the certification required in the *Order*. To minimize burdens on entities, including small entities, the Commission exempted from the certification requirement of 12.7 GHz band licenses for which the licensee has filed an application in ULS or COALS on or after January 1, 2021. The NPRM does not require other incumbents to provide certifications for their existing authorized operations at this time. However, the Commission encourages all licensees to timely submit their data and update their information because it may use this data to inform its deliberations regarding the future use of the 12.7 GHz band. Moreover, the NPRM emphasizes that the Commission's rules require all in-band incumbents to operate in accordance with their authorizations and that the latter must be kept current. Therefore, while providing updated information may come at some cost, the revisions the Commission may ultimately adopt should benefit small entities by providing them with increased access to wireless spectrum, more information about opportunities in the 12.7 GHz band, and more flexibility to provide a wider range of services.

105. *Transitioning Mechanism*. In the NPRM, the Commission proposes using the Emerging Technologies (ET) framework to relocate incumbent licensees and to introduce new services into the 12.7 GHz band. Pursuant to those procedures, if adopted, the Commission will set a sunset date for this band by which incumbent licensees may not cause harmful interference to new band entrants. Prior to this date, new entrants will be allowed to negotiate with incumbents to gain early entry into the band and, if necessary, may relocate the incumbents to comparable facilities. Because new entrants may have to relocate incumbents from a larger

frequency range or greater geographic area than where the new entrants will operate, certain expenses will be placed upon incumbents by the proposed rules, and the Commission may establishes a companion set of cost-sharing procedures.[288] This process may require small entities that are incumbent operators in the band to participate in negotiations to reassign their spectrum access rights, involving additional attendant costs. Incumbents operating in the spectrum designated for new licensed mobile and expanded use would further be required to relocate their operations to different bands, potentially requiring reconfiguration or replacement of their existing facilities, also at additional cost.

106. *The 12.7 GHz Band Plan.* The Commission proposes to allocate the 12.7 GHz band as an unpaired band and to license it on an exclusive, geographic license area (using Partial Economic Areas (PEA)) basis, and in roughly 100 megahertz blocks without guard bands, which will permit the filing of mutually exclusive applications. The Commission's statutory authority to resolve mutually exclusive applications for initial licenses through a system of competitive bidding has lapsed.[289] Accordingly, in the event the Commission determines to adopt a mutually exclusive application approach, the Commission seeks comments on how the Commission should resolve mutually exclusive applications for new initial licenses in the 12.7 GHz band in light of the lapse in its authority to use competitive bidding. In the event that the Commission's statutory authority with respect to auctions is restored, the Commission delegates authority to WTB and OEA to seek comment on appropriate competitive bidding rules and procedures, consistent with prior Commission guidance.

107. *Licensing and Operating Rules.* In the NPRM, the Commission proposes that licensees in the 12.7 GHz band would be required to comply with certain licensing and operating

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[288] *See Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, Notice of Proposed Rule Making, 11 FCC Rcd 1923 (1995).

[289] *See* 47 U.S.C. 309(j)(11).

rules applicable to all part 27 services,[290] flexible use,[291] regulatory status,[292] foreign ownership reporting,[293] compliance with construction notification requirements,[294] renewal criteria,[295] permanent discontinuance of operations,[296] partitioning and disaggregation,[297] and spectrum leasing.[298] The Commission seeks comment on this proposal and on certain other part 27 rules that may be appropriate to apply to 12.7 GHz band licensees, or whether there are any aspects of its general part 27 service rules that should be modified to accommodate the particular characteristics of the 12.7 GHz band. In addition, small entities and other future 12.7 GHz band licensees will have to comply with service-specific requirements for the band addressing eligibility, mobile spectrum holdings policies, license term, performance requirements, renewal term construction obligations, and other licensing and operating rules, some of which include reporting and recordkeeping obligations.

108. *Alternatives for Sharing the Band.* The sharing methods that have been proven for white space devices and Citizens Broadband Radio Service (CBRS), in conjunction with new or developing sharing technologies, may be used in the 12.7 GHz band to maximize the use of spectrum. Accordingly, the NPRM seeks comment on such methods as well as on using an automated spectrum management system such as the Automated Frequency Coordination (AFC)

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[290] The *WRS Renewal 2nd R&O and FNPRM* adopted a unified framework for construction, renewal, and service continuity rules for flexible use geographic licenses in the Wireless Radio Services. *See Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal et al.*, WT Docket No. 10-112, Second Report and Order and Further *Notice* of Proposed Rulemaking and Order, 32 FCC Rcd 8874 (2017) (*WRS Renewal Reform 2nd R&O and FNPRM*).

[291] 47 CFR 2.106, 27.2, 27.3. Section 303(y) of the Act provides the Commission with authority to provide for flexibility of use if: "(1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and an opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users." Balanced Budget Act of 1997, Pub. L. 105-33, 111 Stat. 251, 268-69; 47 U.S.C. 303(y).

[292] 47 CFR 27.10.

[293] 47 U.S.C. 310; 47 CFR 27.12.

[294] 47 CFR 27.14(k).

[295] *Id.* § 1.949.

[296] *Id.* § 1.953.

[297] *Id.* § 1.950.

[298] *Id.* § 1.9001 through 1.9080.

systems used in the 6 GHz band or spectrum access systems used in CBRS as a method to enable spectrum sharing in the 12.7 GHz band as an alternative to relocating incumbents or repacking the band.

109. *Eligibility, License Term and Renewal.* An open eligibility standard has been proposed for licensing in the 12.7 GHz band along with a 10-year initial term for new licenses. The Commission also proposes to apply its general part 27 renewal requirements for wireless licenses as the renewal standard for the 12.7 GHz as the Commission did in the 3.7 GHz Service and the 3.5 GHz band orders.

110. *Performance Requirements.* The NPRM seeks comment on requiring a 12.7 GHz band licensee, deploying mobile or point-to-multipoint service in accordance with its part 27 rules, to provide reliable signal coverage and offer service to at least 30% to 45% of the population in each of their license areas within five years of their license issue date (interim performance benchmark), and to at least 60% to 80% of the population in each of their license areas within ten years from the license issue date (final performance benchmark). For licensees deploying point-to-point service, the NPRM seeks comment on requiring them to demonstrate within five years of the license issue date (interim performance benchmark) that they have four links operating and providing service, if the population within the license area is equal to or less than 268,000. If the population within the license area is greater than 268,000, a licensee deploying point-to-point service would need to demonstrate that it has at least one link in operation and providing service, either to customers or for internal use, per every 67,000 persons within a license area. The Commission proposes to require licensees deploying point-to-point service to demonstrate within ten years of the license issue date (final performance benchmark) that they have eight links operating and providing service, either to customers or for internal use, if the population within the license area is equal to or less than 268,000. If the population within the license area is greater than 268,000, the Commission proposes to require a licensee deploying point-to-point service to demonstrate it is providing service and has at least two links in

operation per every 67,000 persons within a license area.

111. While the NPRM seeks comment on performance benchmarks based on population coverage applicable for a range of fixed and mobile services, the NPRM recognizes that 12.7 GHz licenses have flexibility to provide services potentially less suited to a population coverage metric. In particular, licensees providing Internet of Things-type (IoT-type) fixed and mobile services may benefit from an alternative performance benchmark metric. To account for this, the Commission proposes that licensees providing IoT-type services would have flexibility to demonstrate that they offer geographic area coverage of at least 25% to 35% of the license area at the interim (five-year) performance benchmark, and geographic area coverage of at least 50% to 65% of the license area at the final (ten-year) performance benchmark.[299]

112. Along with performance benchmarks, the NPRM seeks comment on which penalties will most effectively ensure timely build-out. Specifically, the NPRM states that, in the event a licensee fails to meet the first performance benchmark, the licensee's final benchmark and license term would be reduced by two years, thereby requiring it to meet the final performance benchmark two years sooner (at eight years into the license term) and reducing its license term to eight years. If a licensee fails to meet the final performance benchmark for a particular license area, its authorization for each license area in which it fails to meet the performance requirement shall terminate automatically without Commission action. The Commission seeks comment on how, in the event a 12.7 GHz band licensee's authority to operate terminates, its spectrum rights should become available for reassignment pursuant to the licensing framework the Commission adopts for this band. The Commission also seeks comment on whether, consistent with the Commission's rules for other part 27 licenses, the

[299] *See, e.g.,* 47 CFR 27.14(v)(2) (requiring a 3.7 GHz Service licensee providing Internet of Things service to offer geographic area coverage of 35% of the license area within 8 years of initial grant and geographic area coverage of 65% of the license area within 12 years of initial grant); 27.14(w)(1)(iii) (requiring a 3.45 GHz Service licensee providing Internet of Things service to offer geographic area coverage of 35% of the license area within 4 years of initial grant and geographic area coverage of 65% of the license area within 8 years of initial grant); 47 CFR 30.103, 30.104(b) (requiring a UMFUS licensee providing Internet of Things or other services deployed along non-traditional lines to offer geographic area coverage of 25% of the license area within 10 years of initial grant).

Commission should require that any 12.7 GHz band flexible use licensee that forfeits its license for failure to meet its performance requirements be precluded from regaining that license. Finally, the Commission seeks comment on other performance requirements and enforcement mechanisms that would effectively ensure timely buildout.

113. *Compliance Procedures*. In addition to compliance procedures applicable to all part 27 licensees, including the filing of electronic coverage maps and supporting documentation, the NPRM proposes that such electronic coverage maps must accurately depict the boundaries of each license area in the licensee's service territory. If a licensee does not provide reliable signal coverage to an entire license area, the NPRM proposes that its map must accurately depict the boundaries of the area or areas within each license area not being served. Further, the NPRM proposes that each licensee also must file supporting documentation certifying the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology. The Commission seeks comment on these proposals. The Commission also seeks comment on whether small entities face any special or unique issues with respect to the transition such that they would require additional time to comply.

114. *Mobile Spectrum Holdings and Initial Licensing.* Small entities could be impacted by additional requirements pursuant to its request for comment on how to address spectrum holdings issues involving the 12.7 GHz band. The Commission also seeks comment on whether or not to include the 12.7 GHz band in the total spectrum screen or in a separate spectrum screen; on how to address spectrum aggregation issues in the initial licensing of this band; and, on whether there should be a limit on the amount of 12.7 GHz band spectrum held by a single entity at the licensing stage.

115. *Technical Rules.* Small entities and other licensees would also be subject to

certain technical rules established to maximize flexible use of the 12.7 GHz band spectrum while minimizing the impact on adjacent band incumbents, consistent with the public interest. In that context, the NPRM proposes to adopt the same power limits that are applied to UMFUS operations and it seeks comment on whether incumbent satellite services and new terrestrial mobile services can coexist if the latter will be subject to these power limits.

116. For out-of-band-emissions, the NPRM proposes that emissions be kept to a level that will provide protection to incumbent services in adjacent bands, while allowing the full use of the new band, and additionally proposes to adopt a requirement that the conductive power or the total radiated power of any emission outside a licensee's frequency block shall be −13 dBm/MHz or lower. Further, the NPRM seeks comment on whether additional technical protection criteria, beyond out-of-band-emission limits, are necessary to ensure effective coexistence with adjacent band FSS operations. To implement field strength limit at market boundaries, the NPRM proposes to adopt a -77.6 dBm/m^2/MHz power flux density limit at the service-area boundaries. The NPRM also proposes that fixed and mobile operations be subject to international agreements with Mexico and Canada.

117. To comply with the proposed rules in the NPRM, small entities may be required to hire attorneys, engineers, consultants, or other professionals. In particular, for small entities that are not existing operators and do not have existing staffing dedicated to regulatory compliance, engineering and legal expertise may be necessary to make the requisite filings and to demonstrate compliance with the proposed performance obligations. At this time, while the Commission cannot quantify the cost of compliance with the proposed rule changes, the Commission notes that several of the proposed changes are consistent with and mirror existing policies and requirements used for other part 27 flexible use licenses. Therefore, small entities with existing licenses in other bands may already be familiar with such policies and requirements and have the processes and procedures in place to facilitate compliance resulting in minimal incremental costs to comply if similar requirements are adopted for this band. The Commission

also note that for most of the proposals and requests for comments in the NPRM, the Commission also requests cost-benefit analyses. The Commission expects that the information it receives in comments and through cost-benefit analyses will help it identify and evaluate all relevant matters associated with the proposed reallocation and the relocation of public safety operations out of the band, including compliance costs and other burdens on small entities.

D. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

118. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(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."[300]

119. In the NPRM, the Commission seeks to identify potential opportunities for additional flexible access—particularly for wireless broadband services—in the 12.7 GHz band. Throughout the NPRM, the Commission considered the economic impact the proposed rules could have on small businesses. For example, the Commission considered if there were particular instances where certain parameters – such as use of smaller license areas – could help small businesses. The use of smaller license areas could potentially assist those small entities that favor shared licensing regimes, and also could help promote rural deployments by facilitating access to spectrum by small and regional service providers and beyond.[301]

120. The Commission also considered applying ten-year license terms for any

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[300] 5 U.S.C. 603(c)(1)-(4).

[301] *See supra* at para. 46.

licensees issued in the 12.7 GHz band. This approach specifically considers the potential impact to small entities, as they must allocate resources carefully over the length of their license term. Moreover, as small entities tend to have more limited funds, should they be required to compete at auction for a particular license, the certainty of a longer license term would provide licensees with sufficient incentive to make the long-term investments necessary for compliance. In the NPRM, the Commission seeks comments on this matter.

121. With respect to its proposal in the NPRM to protect only those BAS and CARS stations licensed in ULS and COALS for which the licensee timely files the certification required in the *Order*, *see* FCC 23-36, paras. 143-147 (FR 2023-13502), published elsewhere in this issue of the *Federal Register*, to minimize burdens on small and other entities, the Commission exempted from the certification requirement 12.7 GHz band licenses for which the licensee has filed an application in ULS and COALS on or after January 1, 2021. Further, to minimize the economic impact for any small entity that is required to be repacked to a smaller portion of the 12.7 GHz band, the date that the Commission will set for mobile BAS/CARS operators to cease operations in this band will be set to provide them with enough notice to allow them to relocate without causing disruption to their services. Likewise, the sunset period for incumbent FS operations could potentially be set to provide additional time in order to aid small entities.

122. To assist with the Commission's evaluation of the economic impact on small entities that may result from the actions and alternatives that have been proposed in this proceeding, the NPRM seeks alternative proposals and requests information on the potential costs of such alternatives to licensees. The Commission expects to consider more fully the economic impact on small entities following its review of comments filed in response to the NPRM, including costs and benefits information. Alternative proposals and approaches from commenters would also help the Commission further minimize the economic impact on small entities. The Commission's evaluation of the comments filed in this proceeding will shape the final conclusions it reaches, the final alternatives it considers, and the actions it ultimately takes

in this proceeding to minimize any significant economic impact that may occur on small entities from the final rules that are ultimately adopted.

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

123. None.

III. ORDERING CLAUSES

124. IT IS ORDERED that, pursuant to sections 1, 2, 4, 5, 301, 302, 303, 304, 307, 309, 310, and 316 of the Communications Act of 1934, 47 U.S.C. 151, 152, 154, 155, 301, 302a, 303, 304, 307, 309, 310, 316, and § 1.411 of the Commission's rules, 47 CFR 1.411, the Report and Order and Further Notice of Proposed Rulemaking and Notice of Proposed Rulemaking and Order in the captioned dockets IS ADOPTED.

125. The inquiry in *Expanding Flexible Use in Mid-Band Spectrum Between 3.7-24 GHz*, GN Docket No. 17-183, is TERMINATED as to the mid-band spectrum between 12.2 GHz and 13.25 GHz.

126. IT IS FURTHER ORDERED that, pursuant to applicable procedures set forth in §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comment on the Further Notice of Proposed Rulemaking in WT Docket No. 20-443 and the Notice of Proposed Rulemaking in GN Docket No. 22-352 on or before the number of days shown on the first page of this document after publication in the *Federal Register*, and reply comment on or before the number of days shown on the first page of this document after publication in the *Federal Register*.

127. IT IS FURTHER ORDERED that the Commission's Office of the Secretary, Reference Information Center, SHALL SEND a copy of the Report and Order and Further Notice of Proposed Rulemaking and Notice of Proposed Rulemaking and Order, including the

associated Initial Regulatory Flexibility Analyses, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects

47 CFR Part 1

Administrative practice and procedure.

47 CFR Part 25

Administrative practice and procedure, Satellites.

47 CFR Part 27

Common carriers, Communications, Radio.

47 CFR Part 74

Mexico, Television.

47 CFR Part 78

Cable television, Television.

47 CFR Part 101

Administrative practice and procedure.

Federal Communications Commission.

Marlene Dortch,

Secretary,

Office of the Secretary.

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 1, 2, 25, 27, 74, 78, and 101 as follows:

PART 1—PRACTICE AND PROCEDURE

1. The authority citation for part 1 continues to read as follows:

Authority: 47 U.S.C. chs. 2, 5, 9, 13; 28 U.S.C. 2461 note, unless otherwise noted.

2. Amend § 1.907 by revising the definition of "Covered geographic licenses" to read as follows:

§ 1.907 Definitions.

* * * * *

Covered geographic licenses. Covered geographic licenses consist of the following services: 1.4 GHz Service (part 27, subpart I of this chapter); 1.6 GHz Service (part 27, subpart J); 24 GHz Service and Digital Electronic Message Services (part 101, subpart G of this chapter); 218-219 MHz Service (part 95, subpart F, of this chapter); 220-222 MHz Service, excluding public safety licenses (part 90, subpart T, of this chapter); 600 MHz Service (part 27, subpart N); 700 MHz Commercial Services (part 27, subparts F and H); 700 MHz Guard Band Service (part 27, subpart G); 800 MHz Specialized Mobile Radio Service (part 90, subpart S); 900 MHz Specialized Mobile Radio Service (part 90, subpart S); 900 MHz Broadband Service (part 27, subpart P); 3.45 GHz Service (part 27, subpart Q); 3.7 GHz Service (part 27, subpart O); Advanced Wireless Services (part 27, subparts K and L); 12.7 GHz Service (part 27, subpart R); Air-Ground Radiotelephone Service (Commercial Aviation) (part 22, subpart G, of this chapter); Broadband Personal Communications Service (part 24, subpart E, of this chapter); Broadband Radio Service (part 27, subpart M); Cellular Radiotelephone Service (part 22, subpart H); Citizens Broadband Radio Service (part 96, subpart C, of this chapter); Dedicated Short Range Communications Service, excluding public safety licenses (part 90, subpart M); Educational Broadband Service (part 27, subpart M); H Block Service (part 27, subpart K); Local Multipoint

Distribution Service (part 101, subpart L); Multichannel Video Distribution and Data Service (part 101, subpart P); Multilateration Location and Monitoring Service (part 90, subpart M); Multiple Address Systems (EAs) (part 101, subpart O); Narrowband Personal Communications Service (part 24, subpart D); Paging and Radiotelephone Service (part 22, subpart E; part 90, subpart P); VHF Public Coast Stations, including Automated Maritime Telecommunications Systems (part 80, subpart J, of this chapter); Upper Microwave Flexible Use Service (part 30 of this chapter); and Wireless Communications Service (part 27, subpart D of this chapter).

* * * * *

3. Amend § 1.9005 by:

a. Removing the word "and" at the end of paragraph (nn);

b. Removing the period at the end of paragraph (pp) and adding "; and" in its place; and

c. Adding paragraph (qq).

The addition reads as follows:

§ 1.9005 Included services.

* * * * *

(qq) The 12.7 GHz Service in the 12.7-13.25 GHz band (part 27 of this chapter).

PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

4. The authority citation for part 2 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted

5. Amend § 2.106, as amended June 7, 2023, at 88 FR 37318, effective July 7, 2023, by revising "Page 49" in the Table of Frequency Allocations and paragraphs (d)(52), (53), (57), and (118) to read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
11.2-11.45 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	11.2-11.45 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile		(See previous page)		
11.45-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	11.45-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile				
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	11.7-12.1 FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.488 Mobile except aeronautical mobile 5.485	11.7-12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	11.7-12.2	11.7-12.2 FIXED-SATELLITE (space-to-Earth) 5.485 5.488 NG143 NG527A	Satellite Communications (25)
	12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.488 5.485 5.489	5.487 5.487A			
5.487 5.487A	12.2-12.7 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487A 5.488 5.490	12.2-12.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.484B MOBILE except aeronautical mobile BROADCASTING 5.484A 5.487	12.2-12.75	12.2-12.7 FIXED BROADCASTING-SATELLITE 5.487A 5.488 5.490	Satellite Communications (25) Fixed Microwave (101)
12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.494 5.495 5.496	12.7-12.75 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	12.5-12.75 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493		12.7-12.75 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE NG53 NG57	TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
12.75-13.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)			12.75-13.25 US251	12.75-13.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE US251 NG53 NG57	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499			13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A	13.25-13.4 AERONAUTICAL RADIONAVIGATION 5.497 Earth exploration-satellite (active) Space research (active)	Aviation (87)

* * * * *

(d) * * *

(52) NG 52 Except as provided for by paragraph (d)(527) of this section, use of the band 10.7-11.7 GHz (space-to-Earth) by geostationary satellites in the fixed-satellite service shall be limited to international systems, *i.e.*, other than domestic systems.

(53) NG53 The mobile BAS/CARS repack band(s) is reserved for eligible incumbent television pickup (TVPU) and cable television relay service (CARS) pickup stations (collectively, mobile BAS/CARS) that were licensed to operate in the 12.7-13.25 GHz band pursuant to applications filed before September 19, 2022.

* * * * *

(57) NG57 In the band 12.7-13.25 GHz, the following provisions shall apply:

(i) *Emerging Technologies.* Except as provided in paragraph (d)(53) of this section and this paragraph (d)(57), the band is designated for emerging technologies under part 27 of this chapter.

(ii) *Fixed Satellite Service incumbents*. Any FSS space station or earth station authorized to serve or operate in the United States in accordance with the Table of Allocations based on a petition for market access or application filed before September 19, 2022, may continue such Earth-to-space operations on a primary basis. For such incumbent FSS stations, the use of the band 12.75-13.25 GHz by geostationary satellites is limited to international systems, i.e., other than domestic systems; non-geostationary-satellite systems are limited to communications with individually licensed incumbent earth stations. In the sub-band 13.15-13.2125 GHz, NGSO FSS gateway uplink transmissions shall be limited to a maximum e.i.r.p. of 3.2 dBW towards 0° on the radio horizon.

(A) On or after September 19, 2022, petitions for market access or applications for new or modified FSS space stations and earth stations are unacceptable for filing and shall be dismissed, with the following exceptions:

(*1*) *Space stations*. Applications for space stations limited to serving earth stations outside the United States, applications for modification of existing space station authorizations, see § 25.117 of this chapter, applications to relocate existing space stations pursuant to the Commission's fleet management policy, see § 25.118(e) of this chapter, and applications for replacement space stations.

(*2*) *Earth stations*. Applications for renewal or cancellation of incumbent earth station authorizations, modifications to correct location or other data required in the incumbent earth station file, and modifications not requiring prior Commission authorization, see § 25.118(a) and (b) of this chapter.

(B) [Reserved]

(iii) *Fixed Service and Mobile Service incumbents*. Licensees of Fixed Service or Mobile Service authorized based on an application filed before September 19, 2022, pursuant to part 74, 78, or 101 of this chapter may continue to operate as authorized until the applicable sunset date.

(A) On or after September 19, 2022, applications for new or modified Fixed Service or Mobile Service operations under parts 74, 78, and 101 are unacceptable for filing and shall be dismissed, with the following exceptions:

(*1*) *Mobile BAS/CARS repack.* Applications for modification by incumbent mobile BAS/CARS licensees to relocate to the mobile BAS/CARS repack band (see paragraph (d)(53) of this section).

(*2*) *Other*. Applications for renewal, cancellation, or minor modification (if the incumbent licensee establishes that the modification would not add to any relocation costs).

(B) [Reserved]

* * * * *

(118) NG118 In the bands 2025-2110 MHz~~,~~ and 6875-7125 MHz, television translator relay stations may be authorized to use frequencies on a secondary basis to other stations in the Television Broadcast Auxiliary Service that are operating in accordance with the Table of

Frequency Allocations in this section.

* * * * *

PART 25 – SATELLITE COMMUNICATIONS

6. The authority citation for part 25 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

7. Amend § 25.115 by revising the paragraph (e) heading and adding paragraphs (e)(2) and (f)(4) to read as follows:

§ 25.115 Applications for earth station authorizations.

* * * * *

(e) *GSO FSS earth stations in 12.7-13.25 GHz and 17.8–30 GHz.* * * *

(2) On or after September 19, 2022, applications for new or modified GSO FSS earth station licenses in the 12.7-13.25 GHz band are unacceptable for filing and shall be dismissed, with the exception of applications for renewal or cancellation of incumbent earth station authorizations, and modifications to correct location or other data required in the incumbent earth station file, and modifications not requiring prior Commission authorization, see § 25.118(a) and (b).

(f) * * *

(4) On or after September 19, 2022, applications for new or modified earth station licenses in the 12.7-13.25 GHz band are unacceptable for filing and shall be dismissed, with the exception of applications for renewal or cancellation of incumbent earth station authorizations, and modifications to correct location or other data required in the incumbent earth station file, and modifications not requiring prior Commission authorization, see § 25.118(a) and (b).

* * * * *

PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

8. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

9. Amend § 27.1 by adding paragraph (b)(18) to read as follows:

§ 27.1 Basis and purpose.

* * * * *

(b) * * *

(18) 12.7–13.25 GHz.

* * * * *

10. Amend § 27.2 by adding paragraph (f) to read as follows:

§ 27.2 Permissible communications.

* * * * *

(f) *12.7-13.25 GHz band*. The 12.7-13.25 GHz frequencies may not be used for downlink satellite transmission.

11. Amend § 27.4 by adding a definition for "12.7 GHz Service" in alphanumerical order to read as follows:

§ 27.4 Terms and definitions.

* * * * *

12.7 GHz Service. A radiocommunication service licensed under this part for the frequency bands specified in § 27.5(p) (12.7-13.25 GHz band).

* * * * *

12. Amend § 27.5 by adding paragraph (p) to read as follows:

§ 27.5 Frequencies.

* * * * *

(p) *12.7-13.25 GHz band*. The 12.7 GHz Service is licensed as five individual 100 megahertz blocks [and one smaller block depending on resolution of mobile BAS/CARS repack band] available for assignment on a Partial Economic Area basis, *see* § 27.6(o).

13. Amend § 27.6 by adding paragraph (o) to read as follows:

§ 27.6 Service areas.

* * * * *

(o) *12.7-13.25 GHz band.* Service areas in the 12.7 GHz Service are based on Partial Economic Areas (PEAs) as defined by appendix A to this subpart.

14. Amend § 27.11 by adding paragraph (n) to read as follows:

§ 27.11 Initial authorization.

* * * * *

(n) *12.7-13.25 GHz band*. Authorizations for licenses in the 12.7 GHz Service will be based on Partial Economic Areas (PEAs), as specified in § 27.6(o), and the frequency blocks specified in § 27.5(p).

15. Amend § 27.13 by adding paragraph (p) to read as follows:

§ 27.13 License period.

* * * * *

(p) *12.7-13.25 GHz band*. Authorization for the band will have a term not to exceed ten (10) years from the date of issuance.

16. Amend § 27.14 by revising paragraphs (a) and (k) and adding paragraph (x) to read as follows:

§ 27.14 Construction requirements.

(a) AWS and WCS licensees, with the exception of WCS licensees holding authorizations for the 600 MHz band, Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block E in the 722-728 MHz band, Block C, C1 or C2 in the 746-757 MHz and 776-787 MHz bands, Block A in the 2305-2310 MHz and 2350-2355 MHz bands, Block B in the 2310-2315 MHz and 2355-2360 MHz bands, Block C in the 2315-2320 MHz band, Block D in the 2345-2350 MHz band, in the 3450-3550 MHz band, in the 3700-3980 MHz band, and in the 12.7-13.25 GHz band, and with the

exception of licensees holding AWS authorizations in the 1915-1920 MHz and 1995-2000 MHz bands, the 2000-2020 MHz and 2180-2200 MHz bands, or 1695-1710 MHz, 1755-1780 MHz and 2155-2180 MHz bands, must, as a performance requirement, make a showing of "substantial service" in their license area within the prescribed license term set forth in § 27.13. "Substantial service" is defined as service which is sound, favorable and substantially above a level of mediocre service which just might minimally warrant renewal. Failure by any licensee to meet this requirement will result in forfeiture of the license and the licensee will be ineligible to regain it.

* * * * *

(k) Licensees holding WCS or AWS authorizations in the spectrum blocks enumerated in paragraphs (g), (h), (i), (q), (r), (s), (t), (v), (w), and (x) of this section, including any licensee that obtained its license pursuant to the procedures set forth in paragraph (j) of this section, shall demonstrate compliance with performance requirements by filing a construction notification with the Commission, within 15 days of the expiration of the applicable benchmark, in accordance with the provisions set forth in § 1.946(d) of this chapter. The licensee must certify whether it has met the applicable performance requirements. The licensee must file a description and certification of the areas for which it is providing service. The construction notifications must include electronic coverage maps, supporting technical documentation and any other information as the Wireless Telecommunications Bureau may prescribe by public notice.

* * * * *

(x) The following provisions apply to any licensee holding an authorization in the 12.7-13.25 GHz band:

(1) Licensees relying on mobile or point-to-multipoint service shall provide reliable signal coverage and offer service within five (5) years from the date of the initial license to at least forty-five (45) percent of the population in each of its license areas ("First Buildout Requirement"). Licensee shall provide reliable signal coverage and offer service within ten (10)

years from the date of the initial license to at least eighty (80) percent of the population in each of its license areas ("Second Buildout Requirement"). Licensees relying on point-to-point service shall demonstrate within five years of the license issue date that they have four links operating and providing service to customers or for internal use if the population within the license area is equal to or less than 268,000 and, if the population is greater than 268,000, that they have at least one link in operation and providing service to customers, or for internal use, per every 67,000 persons within a license area ("First Buildout Requirement"). Licensees relying on point-to-point service shall demonstrate within 10 years of the license issue date that they have eight links operating and providing service to customers or for internal use if the population within license area is equal to or less than 268,000 and, if the population within the license area is greater than 268,000, shall demonstrate they are providing service and have at least two links in operation per every 67,000 persons within a license area ("Second Buildout Requirement").

(2) In the alternative, a licensee offering Internet of Things-type services shall provide geographic area coverage within five (5) years from the date of the initial license to at least thirty-five (35) percent of the license ("First Buildout Requirement"). A licensee offering Internet of Things-type services shall provide geographic area coverage within ten (10) years from the date of the initial license to at least sixty-five (65) percent of the license ("Second Buildout Requirement").

(3) If a licensee fails to establish that it meets the First Buildout Requirement for a particular license area, the licensee's Second Buildout Requirement deadline and license term will be reduced by two years. If a licensee fails to establish that it meets the Second Buildout Requirement for a particular license area, its authorization for each license area in which it fails to meet the Second Buildout Requirement shall terminate automatically without Commission action, and the licensee will be ineligible to regain it if the Commission makes the license available at a later date.

(4) To demonstrate compliance with these performance requirements, licensees shall use

the most recently available decennial U.S. Census Data at the time of measurement and shall base their measurements of population or geographic area served on areas no larger than the Census Tract level. The population or area within a specific Census Tract (or other acceptable identifier) will be deemed served by the licensee only if it provides reliable signal coverage to and offers service within the specific Census Tract (or other acceptable identifier). To the extent the Census Tract (or other acceptable identifier) extends beyond the boundaries of a license area, a licensee with authorizations for such areas may include only the population or geographic area within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license. If a licensee does not provide reliable signal coverage to an entire license area, the license must provide a map that accurately depicts the boundaries of the area or areas within each license area not being served. Each licensee also must file supporting documentation certifying the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology.

17. Amend § 27.50 by adding paragraph (l) to read as follows:

§ 27.50 Power limits and duty cycle.

* * * * *

(l) The following power requirements apply to stations transmitting in the 12.7-13.25 GHz band:

(1) For fixed and base stations operating in connection with mobile systems, the average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75dBm/100 MHz. For channel bandwidths less than 100 megahertz the EIRP must be reduced proportionally and linearly based on the bandwidth relative to 100 megahertz.

(2) For mobile stations, the average power of the sum of all antenna elements is limited to

a maximum EIRP of +43 dBm.

(3) For transportable stations (transmitting equipment that is not intended to be used while in motion, but rather at stationary locations), the average power of the sum of all antenna elements is limited to a maximum EIRP of +55 dBm.

(4) Equipment employed must be authorized in accordance with the provisions of § 27.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (j)(5) of this section.

(5) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, and any other relevant factors, so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

* * * * *

18. Amend § 27.53 by adding paragraph (p) to read as follows:

§ 27.53 Emission limits.

* * * * *

(p) *12.7 GHz Service*. The following emission limits apply to stations transmitting in the 12.7-13.25 GHz band:

(1) For base station operations in the 12.7-13.25 GHz band, the conducted power or the total radiated power of any emission outside the licensee’s authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (p)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the

fundamental emission of the transmitter may be employed.

(2) For mobile operations in the 12.7-13.25 GHz band, the conducted power or the total radiated power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (p)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

19. Amend § 27.55 by adding paragraph (f) to read as follows:

§ 27.55 Power strength limits.

* * * * *

(f) *Power flux density for* stations *operating in the 12.7-13.25 GHz band.* For base and fixed stations operation in the 12.7-13.25 GHz band in accordance with the provisions of § 27.50(j), the power flux density (PFD) at any location on the geographical border of a licensee's service area shall not exceed −77.6 dBm/m^2/MHz. This power flux density will be measured at 1.5 meters above ground. Licensees in adjacent geographic areas may voluntarily agree to operate under a higher PFD at their common boundary.

20. Amend § 27.57 by revising paragraph (c) to read as follows:

§ 27.57 International coordination.

* * * * *

(c) Operation in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, 2180-2200 MHz, 3450-3550 MHz, 3700-3980 MHz, and 12.7-13.25 GHz bands is subject to international agreements with Mexico and Canada.

21. Add subpart R to read as follows:

Subpart R – 12.7 GHz Service (12.7-13.25 GHz)

Sec.

RELOCATION OF INCUMBENT OPERATIONS IN THE 12.7-13.25 GHZ BAND

27.1711 Relocation of fixed microwave services, broadcast auxiliary services, and cable

television relay services in the 12.7-13.25 GHz band.

PROTECTION OF INCUMBENT OPERATIONS IN THE 12.7-13.25 GHZ BAND

COST-SHARING POLICIES GOVERNING RELOCATION FROM THE 12.7-13.25 GHZ BAND

Subpart R – 12.7 GHz Service (12.7-13.25 GHz)

RELOCATION OF INCUMBENT OPERATIONS IN THE 12.7-13.25 GHZ BAND

§ 27.1711 Relocation of fixed microwave services, broadcast auxiliary services, and cable television relay services in the 12.7-13.25 GHz band.

This part and parts 74, 78, and 101 of this chapter contain provisions governing the relocation of incumbent Fixed Microwave Services (FS) (see part 101), Broadcast Auxiliary Services (BAS) (see part 74), and Cable Television Relay Services (CARS) (see part 78) in the 12.7-13.25 GHz bands. The relocation of fixed microwave, BAS, and CARS are governed by this part and part 101. The relocation of mobile BAS and CARS licensees are governed, respectively, by §§ 74.690 and 78.40 of this chapter.

PROTECTION OF INCUMBENT OPERATIONS IN THE 12.7-13.25 GHZ BAND

§ 27.1712 Protection of fixed operations in the 12.7-13.25 GHz band.

All Emerging Technologies (ET) licensees, prior to initiating operations from any base or fixed station in the 12.7-13.25 GHz band, must coordinate their frequency usage with co-channel and adjacent-channel fixed incumbents authorized under parts 74, 78, and 101 of this chapter. Coordination shall be conducted in accordance with the provisions of § 24.237 of this chapter.

§ 27.1713 Protection of Federal Government operations in the 12.7-13.25 GHz band.

The band 12.75-13.25 GHz is allocated to the space research (deep space) (space-to-Earth) service for reception only at Goldstone, CA (35°20′ N, 116°53′ W). See § 2.106(c)(251) of this chapter. The 12.7-13.25 GHz band includes a Federal allocation for reception-only by a satellite ground station at the Goldstone Deep Space Communications Complex (Goldstone Observatory), operated by the National Aeronautics and Space Administration (NASA).

§ 27.1714 Interference to Emerging Technologies licensees in the 12.7-13.25 GHz band from Earth stations in the Fixed Satellite Service.

An ET licensee in the 12.7-13.25 GHz band must accept or protect itself from interference from earth stations that were authorized to transmit (Earth-to-space) in the band based on an application filed before September 19, 2022.

COST-SHARING POLICIES GOVERNING RELOCATION FROM THE 12.7-13.25 GHZ BAND

§ 27.1760 Cost-sharing requirements for Emerging Technologies in the 12.7-13.25 GHz band.

Frequencies in the 12.7-13.25 GHz band have been reallocated from Fixed Microwave Services (FS) (see part 101 of this chapter), Broadcast Auxiliary Services (BAS) (see part 74 of this chapter), Cable Television Relay Services (CARS) (see part 78 of this chapter), and Fixed Satellite Services (FSS) (see part 25 of this chapter) to use by Emerging Technologies (ET) (as reflected in § 2.106 of this chapter). The relocation of fixed microwave links, including fixed BAS and CARS, are governed by this part and part 101 and referred to as microwave licensee(s) in this section. The relocation of mobile BAS and CARS operations are governed, respectively, by §§ 74.690 and 78.40 of this chapter. ET entities are required to relocate an existing microwave licensee in these bands if interference to the existing microwave licensee would occur. All ET entities that benefit from the clearance of this spectrum by other ET entities or by a voluntarily relocating microwave incumbent must contribute to such relocation costs. ET entities may satisfy their reimbursement requirement by entering into private cost-sharing

agreements or agreeing to terms other than those specified in § 27.1762. However, ET entities are required to reimburse other ET entities or voluntarily relocating microwave incumbents that incur relocation costs and are not parties to the alternative agreement. In addition, parties to a private cost-sharing agreement may seek reimbursement through the clearinghouse (as discussed in § 27.1761) from ET entities that are not parties to the agreement. The cost-sharing plan is in effect during all phases of the relocation. If an ET licensee enters into a spectrum leasing arrangement (as set forth in part 1, subpart X, of this chapter) and the spectrum lessee triggers a cost-sharing obligation, the licensee is the ET entity responsible for satisfying the cost-sharing obligations under §§ 27.1760 through 27.1767.

§ 27.1761 Administration of the cost-sharing plan.

The Wireless Telecommunications Bureau, under delegated authority, will select one or more entities to operate as a neutral, not-for-profit clearinghouse(s). This clearinghouse(s) will administer the cost-sharing plan by, inter alia, determining the cost-sharing obligation of ET entities for the relocation of incumbents from the 12.7-13.25 GHz band. The clearinghouse filing requirements (see §§ 27.1763 through 27.1765) will not take effect until an administrator is selected.

§ 27.1762 The cost-sharing formula.

An ET relocator who relocates an interfering microwave link, *i.e.*, one that is in all or part of its market area and in all or part of its frequency band or a voluntarily relocating microwave incumbent, is entitled to *pro rata* reimbursement based on the following formula:

Figure 1 to § 27.1762 introductory text

$$RN = \frac{C}{N} \cdot \frac{[120 - (T_m)]}{120}$$

(a) *RN* equals the amount of reimbursement.

(b) *C* equals the actual cost of relocation. Actual relocation costs include, but are not limited to, such items as: Radio terminal equipment (TX and/or RX—antenna, necessary feed

lines, MUX/Modems); towers and/or modifications; back-up power equipment; monitoring or control equipment; engineering costs (design/path survey); installation; systems testing; FCC filing costs; site acquisition and civil works; zoning costs; training; disposal of old equipment; test equipment (vendor required); spare equipment; project management; prior coordination notification under § 101.103(d) of this chapter; site lease renegotiation; required antenna upgrades for interference control; power plant upgrade (if required); electrical grounding systems; Heating Ventilation and Air Conditioning (HVAC) (if required); alternate transport equipment; and leased facilities. Increased recurring costs represent part of the actual cost of relocation and, even if the compensation to the incumbent is in the form of a commitment to pay five years of charges, the ET relocator is entitled to seek immediate reimbursement of the lump sum amount based on present value using current interest rates, provided it has entered into a legally binding agreement to pay the charges. *C* also includes voluntarily relocating incumbent's independent third-party appraisal of its compensable relocation costs and incumbent transaction expenses that are directly attributable to the relocation, subject to a cap of two percent of the "hard" costs involved. Hard costs are defined as the actual costs associated with providing a replacement system, such as equipment and engineering expenses. *C* may not exceed $125,000 per link, with an additional $150,000 permitted if a new or modified tower is required.

(c) *N* equals the number of ET entities that have triggered a cost-sharing obligation. For the ET relocator, $N = 1$. For the next ET entity triggering a cost-sharing obligation, $N = 2$, and so on. In the case of a voluntarily relocating incumbent, $N = 1$ for the first ET entity triggering a cost-sharing obligation. For the next ET entity triggering a cost-sharing obligation, $N = 2$, and so on.

(d) *Tm* equals the number of months that have elapsed between the month the ET relocator or voluntarily relocating incumbent obtains reimbursement rights for the link and the month in which an ET entity triggers a cost-sharing obligation. An ET relocator obtains reimbursement rights for the link on the date that it signs a relocation agreement with an

incumbent. A voluntarily relocating incumbent obtains reimbursement rights for the link on the date that the incumbent notifies the Commission that it intends to discontinue, or has discontinued, the use of the link, pursuant to § 101.305, if applicable, or § 1.953 of this chapter.

§ 27.1763 Reimbursement under the cost-sharing plan.

(a) *Registration of reimbursement rights*. Claims for reimbursement under the cost-sharing plan are limited to relocation expenses incurred on or after the date when the first ET license is issued in the relevant 12.7-13.25 GHz band (start date). If a clearinghouse is not selected by that date (see § 27.1764) claims for reimbursement under this section and notices of operation (see § 27.1765) for activities that occurred after the start date but prior to the clearinghouse selection must be submitted to the clearinghouse within 30 calendar days of the selection date.

(1) To obtain reimbursement, an ET relocator must submit documentation of the relocation agreement to the clearinghouse within 30 calendar days of the date a relocation agreement is signed with an incumbent. In the case of involuntary relocation, an ET relocator must submit documentation of the relocated system within 30 calendar days after the end of the relocation.

(2) To obtain reimbursement, a voluntarily relocating incumbent must submit documentation of the relocation of the link to the clearinghouse within 30 calendar days of the date that the incumbent notifies the Commission that it intends to discontinue, or has discontinued, the use of the link, pursuant to § 101.305 of this chapter.

(b) *Documentation of expenses*. Once relocation occurs, the ET relocator, or the voluntarily relocating incumbent, must submit documentation itemizing the amount spent for items specifically listed in § 27.1762(b), as well as any reimbursable items not specifically listed in § 27.1762(b) that are directly attributable to actual relocation costs. Specifically, the ET relocator, or the voluntarily relocating incumbent must submit, in the first instance, only the uniform cost data requested by the clearinghouse along with a copy, without redaction, of either

the relocation agreement, if any, or the third party appraisal described in paragraph (b)(1) of this section, if relocation was undertaken by the microwave incumbent. ET relocators and voluntarily relocating incumbents must maintain documentation of cost-related issues until the applicable sunset date and provide such documentation upon request, to the clearinghouse, the Commission, or entrants that trigger a cost-sharing obligation. If an ET relocator pays an incumbent a monetary sum to relocate its own facilities, the ET relocator must estimate the costs associated with relocating the incumbent by itemizing the anticipated cost for items listed in § 27.1762(b). If the sum paid to the incumbent cannot be accounted for, the remaining amount is not eligible for reimbursement.

(1) *Third party appraisal*. A voluntarily relocating incumbent, must also submit an independent third party appraisal of its compensable relocation costs. The appraisal should be based on the actual cost of replacing the incumbent's system with comparable facilities and should exclude the cost of any equipment upgrades or items outside the scope of § 27.1762(b).

(2) *Identification of links*. The ET relocator or the voluntarily relocating incumbent must identify the particular link associated with appropriate expenses (i.e., costs may not be averaged over numerous links).

(c) *Full reimbursement*. An ET relocator who relocates a microwave link that is either fully outside its market area or its licensed frequency band may seek full reimbursement through the clearinghouse of compensable costs, up to the reimbursement cap as defined in § 27.1762(b). Such reimbursement will not be subject to depreciation under the cost-sharing formula.

(d) *Good faith requirement*. New entrants and incumbent licensees are expected to act in good faith in satisfying the cost-sharing obligations under §§ 27.1760 through 27.1767. The requirement to act in good faith extends to, but is not limited to, the preparation and submission of the documentation required in paragraph (b) of this section.

(e) *Reimbursement for self-relocating incumbents in the 12.7-13.25 GHz band*. Where a voluntarily relocating incumbent relocates its own links, it is entitled to reimbursement from the

first ET beneficiary for its actual costs for relocating the links, subject to the reimbursement cap in § 27.1762(b). This amount is subject to depreciation as specified in § 27.1762(b). An ET licensee who is obligated to reimburse relocation costs under this paragraph (e) is entitled to obtain reimbursement from other ET beneficiaries in accordance with §§ 27.1762 and 27.1764. For purposes of applying the cost-sharing formula relative to other ET licensees that benefit from the self-relocation, depreciation shall run from the date on which the clearinghouse issues the notice of an obligation to reimburse the voluntarily relocating microwave incumbent.

§ 27.1764 Triggering a reimbursement obligation.

(a) The clearinghouse will apply the following test to determine when an ET entity has triggered a cost-sharing obligation and therefore must pay an ET relocator or a voluntarily relocating incumbent in accordance with the formula detailed in § 27.1762:

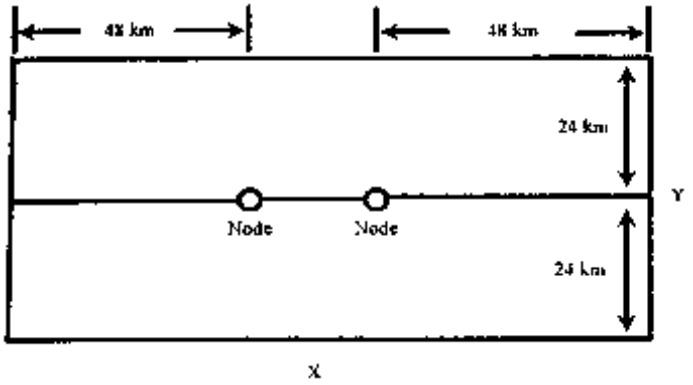
(1) All or part of the relocated microwave link was initially co-channel with the licensed ET band of the ET entity;

(2) An ET relocator or a voluntarily relocating incumbent has paid the relocation costs of the incumbent; and

(3) The ET entity is operating or preparing to turn on a fixed base station at commercial power and the fixed base station is located within a rectangle (Proximity Threshold) described as follows:

(i) The length of the rectangle shall be x where x is a line extending through both nodes of the microwave link to a distance of 48 kilometers (30 miles) beyond each node. The width of the rectangle shall be y where y is a line perpendicular to x and extending for a distance of 24 kilometers (15 miles) on both sides of x. Thus, the rectangle is represented as follows:

Figure 1 to paragraph (a)(3)(i)



(ii) If the application of the Proximity Threshold Test indicates that a reimbursement obligation exists, the clearinghouse will calculate the reimbursement amount in accordance with the cost-sharing formula and notify the ET entity of the total amount of its reimbursement obligation.

(b) Once a reimbursement obligation is triggered, the ET entity may not avoid paying its cost-sharing obligation by deconstructing or modifying its facilities.

§ 27.1765 Payment issues.

Prior to initiating operations for a newly constructed site or modified existing site, an ET entity is required to file a notice containing site-specific data with the clearinghouse. The notice regarding the new or modified site must provide a detailed description of the proposed site's spectral frequency use and geographic location, including but not limited to the applicant's name and address, the name of the transmitting base station, the geographic coordinates corresponding to that base station, the frequencies and polarizations to be added, changed or deleted, and the emission designator. If a prior coordination notice (PCN) under § 101.103(d) of this chapter is prepared, ET entities can satisfy the site-data filing requirement by submitting a copy of their PCN to the clearinghouse. ET entities that file either a notice or a PCN have a continuing duty to maintain the accuracy of the site-specific data on file with the clearinghouse. Utilizing the site-specific data, the clearinghouse will determine if any reimbursement obligation exists and notify the ET entity in writing of its repayment obligation, if any. When the ET entity receives a written copy of such obligation, it must pay directly to the relocator the amount owed within 30

calendar days.

§ 27.1766 Dispute resolution under the cost-sharing plan.

(a) *Disputes*. Disputes arising out of the cost-sharing plan, such as disputes over the amount of reimbursement required, must be brought, in the first instance, to the clearinghouse for resolution. To the extent that disputes cannot be resolved by the clearinghouse, parties are encouraged to use expedited Alternative Dispute Resolution (ADR) procedures, such as binding arbitration, mediation, or other ADR techniques.

(b) *Evidentiary requirement*. Parties of interest contesting the clearinghouse's determination of specific cost-sharing obligations must provide evidentiary support to demonstrate that their calculation is reasonable and made in good faith. Specifically, these parties are expected to exercise due diligence to obtain the information necessary to prepare an independent estimate of the relocation costs in question and to file the independent estimate and supporting documentation with the clearinghouse.

§ 27.1767 Termination of cost-sharing obligations.

The cost-sharing plan will sunset for all ET entities on the same date on which the relocation obligation for the 12.7-13.25 GHz band terminates. ET entrants that trigger a cost-sharing obligation prior to the sunset date must satisfy their payment obligation in full.

PART 74 - EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES

22. The authority citation for part 74 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, 307, 309, 310, 325, 336 and 554.

23. Amend § 74.602 by revising paragraph (a) introductory text and footnote 2 in the table following paragraph (a) introductory text to read as follows:

§ 74.602 Frequency assignment.

(a) The following frequencies are available for assignment to television pickup, television

STL, television relay and television translator relay stations. The band segments 17,700-18,580, and 19,260-19,700 MHz are available for broadcast auxiliary stations as described in paragraph (g) of this section. The band segment 6425-6525 MHz is available for broadcast auxiliary stations as described in paragraph (i) of this section. The bands 6875-7125 MHz and 12700-13200 MHz are co-equally shared with stations licensed pursuant to parts 78 and 101 of this chapter. Broadcast network-entities may also use the 1990-2110, 6425-6525 and 6875-7125 MHz bands for mobile television pickup only. On or after September 19, 2022, applications for new or modified stations in the 12.7-13.25 GHz band under this part and parts 78 and 101 are unacceptable for filing and shall be dismissed, except for applications of eligible incumbent television pickup (TVPU) and cable television relay service (CARS) pickup stations (collectively, mobile BAS/CARS) licensees to modify incumbent authorizations to the repacked mobile BAS/CARS sub-band.

* * * * *

[2] The mobile BAS/CARS repack band(s) is reserved for mobile BAS/CARS licensees that were licensed to operate in the 12.7-13.25 GHz band pursuant to applications filed before September 19, 2022, that timely certified such authorizations as required in accordance with the procedures set-forth in GN Docket No. 22-352.

* * * * *

24. Amend § 74.690 by revising the section heading and paragraphs (a) through (d) and adding paragraph (f) to read as follows:

§ 74.690 Transition of the 1990-2025 MHz and 12,700-13,250 MHz bands from the Broadcast Auxiliary Service to emerging technologies and reimbursement and cost-sharing.

(a) New Entrants are collectively defined as those licensees proposing to use emerging technologies to implement Mobile Satellite Services in the 2000-2020 MHz band (MSS licensees), those licensees authorized after July 1, 2004, to implement new Fixed and Mobile services in the 1990-1995 MHz band, those licensees authorized after September 9, 2004, in the 1995-2000 MHz and 2020-2025 MHz bands, and those licensees authorized under part 27 of this

chapter after September 19, 2022, in the 12,700-13,250 MHz band. New entrants may negotiate with Broadcast Auxiliary Service licensees operating on a primary basis and fixed service licensees operating on a primary basis in the 1990–2025 MHz band (Existing Licensees) for the purpose of agreeing to terms under which the Existing Licensees would relocate their operations to the 2025–2110 MHz band, to other authorized bands, or to other media; or, alternatively, would discontinue use of the 1990–2025 MHz band. New licensees in the 1995–2000 MHz and 2020–2025 MHz bands are subject to the specific relocation procedures adopted in WT Docket 04–356. New Entrants in the 12,700-13,250 MHz band are subject to the specific relocation procedures adopted in GN Docket No. 22-352. New Entrants may negotiate with Broadcast Auxiliary Service (BAS) licensees operating on a primary basis and fixed service licensees operating on a primary basis in the 12,700-13,250 MHz band (Existing 12.7 GHz Licensees) for the purpose of agreeing to terms under which the Existing 12.7 GHz Licensees in the 12,700-13,250 MHz band would relocate their authorized operation, if timely certified as required in accordance with the procedures set-forth in GN Docket No. 22-352, or discontinue use of the 12,700-13,250 MHz band.

(b) An Existing Licensee and Existing 12.7 GHz Licensee will maintain primary status in the band until the operations of the Existing Licensee or Existing 12.7 GHz Licensee are relocated by a New Entrant, are discontinued under the terms of paragraph (a) of this section, or become secondary under the terms of paragraph (e)(6) or (f)(6) of this section or the Existing Licensee or Existing 12.7 GHz Licensee indicates to a New Entrant that it declines to be relocated.

(c) The Commission will amend the operating license of the Existing Licensee or Existing 12.7 GHz Licensee, other than the mobile operations of an Existing 12.7 GHz Licensee that has been transitioned to the repack band, to secondary status only if the following requirements are met:

(1) The service applicant, provider, licensee, or representative using an emerging

technology guarantees payment of all relocation costs, including all engineering, equipment, site and FCC fees, as well as any reasonable additional costs that the relocated Existing Licensee or Existing 12.7 GHz Licensee might incur as a result of operation in another authorized band or migration to another medium;

(2) The New Entrant completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are used, identifying and obtaining, on the incumbents' behalf, new microwave or Local Television Transmission Service frequencies and frequency coordination.

(3) The New Entrant builds the replacement system and tests it for comparability with the existing system.

(d) The Existing Licensee or Existing 12.7 GHz Licensee is not required to relocate until the alternative facilities are available to it for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff. If, within one year after the relocation to new facilities the Existing Licensee or Existing 12.7 GHz Licensee demonstrates that the new facilities are not comparable to the former facilities, the New Entrant must remedy the defects.

* * * * *

(f) Subject to the terms of this paragraph (f), the relocation of Existing 12.7 GHz Licensees will be carried out by New Entrants in the following manner:

(1) Existing 12.7 GHz Licensees and New Entrants may negotiate individually or collectively for relocation of Existing 12.7 GHz Licensees to comparable facilities, as that term is used in § 101.73 of this chapter. Parties may not decline to negotiate, though Existing 12.7 GHz Licensees may decline to be relocated.

(i) New Entrants are required to relocate the fixed microwave links of Existing 12.7 GHz Licensees prior to commencing operations if interference would occur. A New Entrant must conform to the technical criteria specified in TIA Bulletin TSB 10-F, or procedures other than TSB 10-F that follow generally acceptable good engineering practices pursuant to § 101.105(c)

of this chapter, to determine if interference would occur such that their relocation would be necessary before a New Entrant's operations could commence.

(ii) New Entrants must relocate the non-fixed and mobile operations of all Existing 12.7 GHz Licensees on a market-by-market basis in a Nielsen Designated Market Areas (DMA), as such DMAs existed on September 19, 2022, in which it seeks to provide service prior to commencing operations, except those Existing 12.7 GHz Licensees that decline relocation.

(iii) Such relocation negotiations shall be conducted as "mandatory negotiations," as that term is used in § 101.73 of this chapter. If these parties are unable to reach a negotiated agreement prior to the expiration of the mandatory negotiation period, New Entrants may involuntarily relocate such Existing 12.7 GHz Licensees in accordance with procedures set-forth in § 101.75 of this chapter.

(iv) After the end of the mandatory negotiation period, a New Entrant may involuntary relocate any Existing 12.7 GHz Licensees with which they have been unable to reach a negotiated agreement.

(2) Notwithstanding paragraph (f)(1) of this section, the non-fixed and mobile operations of Existing 12.7 GHz Licensees' operations in an adjacent market may need to be relocated even though the New Entrant does not initiate operations in that adjacent market. A New Entrant undertaking clearing would be obligated to relocate all incumbent non-fixed and mobile operations of Existing 12.7 GHz Licensees in all affected markets, including those markets where the New Entrant provides partial, minimal, or even no service. A New Entrant must conform to the technical criteria specified in TIA Bulletin TSB 10-F, or procedures other than TSB 10-F that follow generally acceptable good engineering practices pursuant to § 101.105(c) of this chapter, to determine any additional market(s) where a New Entrant would cause interference to the non-fixed and mobile operations of Existing 12.7 GHz Licensees, such that their relocation would be necessary before a New Entrant commences operations.

(3) The obligations of a New Entrant to relocate an Existing 12.7 GHz Licensee will

terminate on the sunset date for Existing 12.7 GHz Licensee to retain primary operations in the band. On this date, all Existing 12.7 GHz Licensees will become secondary in the 12.7-13.25 GHz band with the exception of mobile BAS relocated to the repacked band. Upon written demand by a New Entrant that intends to commence operations in the 12.7-13.25 GHz band, Existing 12.7 GHz Licensees that have not been relocated to the repacked band must cease operations in the 12.7-13.25 GHz band within six months.

(4) The cost-sharing obligations of New Entrants for the relocation of the fixed microwave links of Existing 12.7 GHz Licensees is governed by §§ 27.1760 through 27.1767 of this chapter. The cost-sharing obligations of New Entrants for the relocation of non-fixed and mobile operations of Existing 12.7 GHz Licensee is governed by this paragraph (f)(4). All New Entrants to the 12.7-13.25 GHz band are required to bear a proportional share of the costs incurred in the relocation of the non-fixed or mobile operations of an Existing 12.7 GHz Licensees, on a *pro rata* basis according to the amount of spectrum each licensee is assigned relative to the amount of 12.7 GHz spectrum that has been licensed. New Entrants that incur relocation costs may seek reimbursement for compensable costs from other New Entrants that have been licensed to provide service in a relocated market prior to the sunset date, *i.e.*, the date on which the relocation obligation terminates. New Entrants that are licensed prior to the sunset date must satisfy their reimbursement obligations for relocated markets in full. Because a New Entrant may be required to relocate the non-fixed and mobile operations of Existing 12.7 GHz Licensees in adjacent markets pursuant to paragraph (f)(2) of this section, the New Entrant may seek full reimbursement of compensable costs for the relocation of an adjacent market from New Entrants that have been licensed to provide service in the adjacent market. Reimbursement of compensable costs for a relocated market is not subject to depreciation. Compensable costs are limited to the actual costs of relocation and based on the definition set-forth in § 27.1762(b) of this chapter, as adjusted to reflect mobile operations of Existing 12.7 GHz Licensees. New Entrants must maintain and, as requested, share documentation of relocation costs consistent

with § 27.1763(b) of this chapter, as modified to reflect mobile operations of Existing 12.7 GHz Licensees. New entrants are expected to act in good faith in satisfying the cost-sharing obligations. Parties are encouraged to use expedited Alternative Dispute Resolution (ADR) procedures, such as binding arbitration, mediation, or other ADR techniques to resolve disputes arising out of reimbursement and cost-sharing, such as disputes over the amount of reimbursement required. Parties of interest contesting cost-sharing obligations must provide evidentiary support to demonstrate that their calculation is reasonable and made in good faith. Specifically, these parties are expected to exercise due diligence to obtain the information necessary to prepare an independent estimate of the relocation costs in question and to file the independent estimate and supporting documentation with other affected parties and, if necessary, with the Commission.

PART 78 – CABLE TELEVISION RELAY SERVICE

25. The authority citation for part 78 continues to read as follows:

Authority: 47 U.S.C. 152, 153, 154, 301, 303, 307, 308, 309.

26. Amend § 78.18 by:

a. Revising paragraph (b); and

b. Removing paragraph (m).

The revision reads as follows:

§ 78.18 Frequency assignments.

* * * * *

(b) On or after September 19, 2022, applications for new or modified stations in the 12.7-13.25 GHz band under this part and parts 74 and 101 of this chapter are unacceptable for filing and shall be dismissed, except for applications of eligible incumbent Television pickup (TVPU) and cable television relay service (CARS) pickup stations (collectively, mobile BAS/CARS) to modify incumbent authorizations to the repacked mobile BAS/CARS sub-band. The mobile BAS/CARS repack band(s) is reserved for eligible incumbent that were licensed to operate in the

12.7-13.25 GHz band pursuant to applications filed before September 19, 2022.

* * * * *

27. Amend § 78.40 by revising the section heading and paragraphs (a) through (e) and adding paragraph (g) to read as follows:

§ 78.40 Transition of the 1990-2025 MHz and 12,700-13,250 MHz bands from the Cable Television Relay Service to emerging technologies and reimbursement and cost-sharing in the 12,700-13,250 MHz band.

(a) New Entrants are collectively defined as those licensees proposing to use emerging technologies to implement Mobile Satellite Services in the 2000-2020 MHz band (MSS licensees), those licensees authorized after July 1, 2004, to implement new Fixed and Mobile services in the 1990-1995 MHz band, those licensees authorized after September 9, 2004, in the 1995-2000 MHz and 2020-2025 MHz bands, and those licensees authorized after September 19, 2022, in the 12,700-13,250 MHz band. New entrants may negotiate with Cable Television Relay Service licensees operating on a primary basis and fixed service licensees operating on a primary basis in the 1990–2025 MHz band (Existing Licensees) for the purpose of agreeing to terms under which the Existing Licensees would relocate their operations to the 2025–2110 MHz band, to other authorized bands, or to other media; or, alternatively, would accept a sharing arrangement with the New Entrants that may result in an otherwise impermissible level of interference to the Existing Licensee's operations. New licensees in the 1995–2000 MHz and 2020–2025 MHz bands are subject to the specific relocation procedures adopted in WT Docket 04–356. New Entrants in the 12,700-13,250 MHz band are subject to the specific relocation procedures adopted in GN Docket No. 22-352. New entrants may negotiate with Cable Television Relay Service licensees operating on a primary basis and fixed service licensees operating on a primary basis in the 12,700-13,250 MHz bands (Existing 12.7 GHz Licensees) for the purpose of agreeing to terms under which the Existing 12.7 GHz Licensees in the 12,700-13,250 MHz band would relocate their operations to the repacked band, to other authorized

bands, or to other media; or, alternatively, would accept a sharing arrangement with the New Entrants that may result in an otherwise impermissible level of interference to the Existing 12.7 GHz Licensee's operations in the 12,700-13,250 MHz band.

(b) An Existing Licensee and Existing 12.7 GHz Licensee will maintain primary status in the band until the operations of the Existing Licensee or Existing 12.7 GHz Licensee are relocated by a New Entrant, or become secondary under the terms of paragraph (g)(3) of this section or the Existing Licensee or Existing 12.7 GHz Licensee indicates to a New Entrant that it declines to be relocated.

(c) The Commission will amend the operating license of the Existing Licensee or Existing 12.7 GHz Licensee to secondary status only if the following requirements are met:

(1) The service applicant, provider, licensee, or representative using an emerging technology guarantees payment of all relocation costs, including all engineering, equipment, site and FCC fees, as well as any reasonable additional costs that the relocated Existing Licensee or Existing 12.7 GHz Licensee might incur as a result of operation in another authorized band or migration to another medium.

(2) The New Entrant completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are used, identifying and obtaining, on the incumbents' behalf, new microwave or Cable Television Relay Service frequencies and frequency coordination.

(3) The New Entrant builds the replacement system and tests it for comparability with the existing system.

(d) The Existing Licensee or Existing 12.7 GHz Licensee is not required to relocate until the alternative facilities are available to it for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff.

(e) If, within one year after the relocation to new facilities the Existing Licensee or Existing 12.7 GHz demonstrates that the new facilities are not comparable to the former

facilities, the New Entrant must remedy the defect.

* * * * *

(g) Subject to the terms of this paragraph (g), the relocation of Existing 12.7 GHz Licensees will be carried out by New Entrants in the following manner:

(1) Existing 12.7 GHz Licensees and New Entrants may negotiate individually or collectively for relocation of Existing 12.7 GHz Licensees to comparable facilities, as that term is used in § 101.73 of this chapter. Parties may not decline to negotiate, though Existing 12.7 GHz Licensees may decline to be relocated.

(i) New Entrants are required to relocate the fixed microwave links of Existing 12.7 GHz Licensees prior to commencing operations if interference would occur. A New Entrant must conform to the technical criteria specified in TIA Bulletin TSB 10-F, or procedures other than TSB 10-F that follow generally acceptable good engineering practices pursuant to § 101.105(c) of this chapter, to determine if interference would occur such that their relocation would be necessary before a New Entrant's operations could commence.

(ii) New Entrants must relocate all non-fixed and mobile operations of Existing 12.7 GHz Licensees on a market-by-market basis in a Nielsen Designated Market Areas (DMA), as such DMAs existed on September 19, 2022, where it seeks to provide service prior to commencing operations, except those Existing 12.7 GHz Licensees that decline relocation.

(iii) Relocation negotiations shall be conducted as "mandatory negotiations," as that term is used in § 101.73 of this chapter. If these parties are unable to reach a negotiated agreement prior to the expiration of the mandatory negotiation period, New Entrants may involuntarily relocate such Existing 12.7 GHz Licensees in accordance with procedures set forth in § 101.75 of this chapter.

(iv) After the end of the mandatory negotiation period, a New Entrant may involuntary relocate any Existing 12.7 GHz Licensees with which they have been unable to reach a negotiated agreement.

(2) Notwithstanding paragraph (g)(1) of this section, the non-fixed and mobile operations of Existing 12.7 GHz Licensees' operations in an adjacent market may need to be relocated even though the New Entrant does not initiate operations in that adjacent market. A New Entrant undertaking clearing would be obligated to relocate all incumbent non-fixed and mobile operations of Existing 12.7 GHz Licensees in all affected markets, including those markets where the New Entrant provides partial, minimal, or even no service. A New Entrant must conform to the technical criteria specified in TIA Bulletin TSB 10-F, or procedures other than TSB 10-F that follow generally acceptable good engineering practices pursuant to § 101.105(c) of this chapter, to determine any additional market(s) where a New Entrant would cause interference to the non-fixed and mobile operations of Existing 12.7 GHz Licensees, such that their relocation would be necessary before a New Entrant commences operations.

(3) The obligations of a New Entrant to relocate an Existing 12.7 GHz Licensee will terminate on the sunset date for Existing 12.7 GHz Licensee to retain primary operations in the band. On this date, all Existing 12.7 GHz Licensees will become secondary in the 12.7-13.25 GHz band with the exception of those relocated to the repacked band. Upon written demand by a New Entrant that intends to commence operations in the 12.7-13.25 GHz band, Existing 12.7 GHz Licensees that have not been relocated to the repacked band must cease operations in the 12.7-13.25 GHz band within six months.

(4) The cost-sharing obligations of New Entrants for the relocation of the fixed microwave links of Existing 12.7 GHz Licensees is governed by §§ 27.1760 through 27.1767 of this chapter. The cost-sharing obligations of New Entrants for the relocation of non-fixed and mobile operations of Existing 12.7 GHz Licensee is governed by this paragraph (g)(4). All New Entrants to the 12.7-13.25 GHz band are required to bear a proportional share of the costs incurred in the relocation of the non-fixed or mobile operations of an Existing 12.7 GHz Licensees, on a *pro rata* basis according to the amount of spectrum each licensee is assigned relative to the amount of 12.7 GHz spectrum that has been licensed. New Entrants that incur

relocation costs may seek reimbursement for compensable costs from other New Entrants that have been licensed to provide service in a relocated market prior to the sunset date, *i.e.*, the date on which the relocation obligation terminates. New Entrants that are licensed prior to the sunset date must satisfy their reimbursement obligations for relocated markets in full. Because a New Entrant may be required to relocate the non-fixed and mobile operations of Existing 12.7 GHz Licensees in adjacent markets pursuant to paragraph (g)(2) of this section, the New Entrant may seek full reimbursement of compensable costs for the relocation of an adjacent market from New Entrants that have been licensed to provide service in the adjacent market. Reimbursement of compensable costs for a relocated market is not subject to depreciation. Compensable costs are limited to the actual costs of relocation and based on the definition set forth in § 27.1762(b) of this chapter, as adjusted to reflect mobile operations of Existing 12.7 GHz Licensees. New Entrants must maintain and, as requested, share documentation of relocation costs consistent with § 27.1763(b) of this chapter, as modified to reflect mobile operations of Existing 12.7 GHz Licensees. New entrants are expected to act in good faith in satisfying the cost-sharing obligations. Parties are encouraged to use expedited Alternative Dispute Resolution (ADR) procedures, such as binding arbitration, mediation, or other ADR techniques to resolve disputes arising out of reimbursement and cost-sharing, such as disputes over the amount of reimbursement required. Parties of interest contesting cost-sharing obligations must provide evidentiary support to demonstrate that their calculation is reasonable and made in good faith. Specifically, these parties are expected to exercise due diligence to obtain the information necessary to prepare an independent estimate of the relocation costs in question and to file the independent estimate and supporting documentation with other affected parties and, if necessary, with the Commission.

PART 101 - FIXED MICROWAVE SERVICES

28. The authority citation for part 101 continues to read as follows:

Authority: 47 U.S.C. 154, 303.

29. Revise the undesignated center heading immediately preceding § 101.69 to read as follows:

Policies Governing Microwave Relocation From the 1850-1990, 2110-2200, and 12,700-13,250 MHz Bands

30. Amend § 101.69 by revising the introductory text, paragraph (a) introductory text, and the first sentence of paragraph (d) introductory text to read as follows:

§ 101.69 Transition of the 1850-1990 MHz, 2110-2150 MHz, 2160-2200, and 12,700-13,250 MHz bands from the fixed microwave services to personal communications services and emerging technologies.

Fixed Microwave Services (FMS) in the 1850-1990 MHz, 2110-2150 MHz, 2160-2200, and 12,700-13,250 MHz bands have been allocated for use by emerging technology (ET) services, including Personal Communications Services (PCS), Advanced Wireless Services (AWS), and Mobile Satellite Services (MSS). The rules in this section provide for a transition period during which ET licensees may relocate existing FMS licensees using these frequencies to other media or other fixed channels, including those in other microwave bands.

(a) ET licensees may negotiate with FMS licensees authorized to use frequencies in the 1850-1990 MHz, 2110-2150 MHz, 2160-2200 MHz and 12,700-13,2500 MHz bands, for the purpose of agreeing to terms under which the FMS licensees would:

* * * * *

(d) Relocation of FMS licensees in the 2110-2150, 2160-2200, and 12,700-13,250 MHz band will be subject to mandatory negotiations only. * * *

* * * * *

31. Amend § 101.73 by revising paragraph (a) and the paragraph (d) heading to read as follows:

§ 101.73 Mandatory negotiations.

(a) A mandatory negotiation period may be initiated at the option of the ET licensee.

Relocation of FMS licensees by Mobile Satellite Service (MSS) operators and AWS licensees in the 2110-2150 MHz and 2160-2200 MHz bands or ET licensee in the 12,700-13,250 MHz band will be subject to mandatory negotiations only.

* * * * *

(d) *Provisions for Relocation of Fixed Microwave Licensees in the 2110-2150, 2160-2200 MHz, and 12,700-13,250 MHz bands*. * * *

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32. Amend § 101.79 by revising the section heading and paragraph (a) introductory text and adding paragraph (a)(3) to read as follows:

§ 101.79 Sunset provisions for licensees in the 1850-1990 MHz, 2110-2150 MHz, 2160-2200 MHz, and 12,700-13,250 MHz bands.

(a) FMS licensees will maintain primary status in the 1850-1990 MHz, 2110-2150 MHz, 2160-2200 MHz, and 12,700-13,250 MHz bands unless and until an ET licensee requires use of the spectrum. ET licensees are not required to pay relocation costs after the relocation rules sunset. Once the relocation rules sunset, an ET licensee may require the incumbent to cease operations, provided that the ET licensee intends to turn on a system within interference range of the incumbent, as determined by TIA TSB 10–F (for terrestrial-to-terrestrial situations) or TIA TSB 86 (for MSS satellite-to-terrestrial situations) or any standard successor. ET licensee notification to the affected FMS licensee must be in writing and must provide the incumbent with no less than six months to vacate the spectrum. After the six-month notice period has expired, the FMS licensee must turn its license back into the Commission, unless the parties have entered into an agreement which allows the FMS licensee to continue to operate on a mutually agreed upon basis. The date that the relocation rules sunset is determined as follows:

* * * * *

(3) For the 12,700-13,250 MHz band, the sunset date shall be three years after the first ET license is issued in the band.

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