

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

In the Matter of:)
)
Expanding Use of the 12.7-13.25 GHz Band for) GN Docket No. 22-352
Mobile Broadband or Other Expanded Use)
)

COMMENTS OF
THE NATIONAL ASSOCIATION OF BROADCASTERS

1 M Street SE
Washington, DC 20003
(202) 429-5430

Rick Kaplan
Patrick McFadden
Alison Martin
Robert Weller

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I. INTRODUCTION AND SUMMARY

The National Association of Broadcasters (NAB)¹ hereby submits comments in response to the Commission’s Notice of Proposed Rulemaking in the above captioned matter.² NAB does not oppose exploring how to accommodate expanded use of the 12.7–13.25 GHz band (the “12.7 GHz band”) by repacking incumbent broadcasters into a smaller portion of the band or by relocating some facilities to other bands or media. While it may be possible to relocate incumbent stations in the Broadcast Auxiliary Services (BAS) to a smaller portion of the 12.7 GHz band, there are no reasonable options for relocating all broadcaster operations out of the band, and complete clearing the band of broadcast operations will not

¹ The National Association of Broadcasters (NAB) is the nonprofit trade association that advocates on behalf of free local radio and television stations and broadcast networks before Congress, the Federal Communications Commission and other federal agencies, and the courts.

² *Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use*, Notice of Proposed Rulemaking, GN Docket No. 22-352, FCC 23-36 (May 19, 2023) (NPRM).

be possible. Both fixed and mobile BAS operations in the 12.7 GHz band are necessitated by lack of available spectrum in other, lower-frequency bands and by the Commission's restrictions on minimum path length in those bands.³

Therefore, as the Commission considers how to permit expanded use of the band, it must provide robust protections against interference to broadcasters' existing uses that cannot be relocated elsewhere, including both fixed and mobile operations. Further, all costs associated with repacking or relocation of incumbent facilities, including studies, equipment, permits, and fees, must be borne by the new entrants. Comprehensive studies are needed to identify which fixed links might be relocated to other frequency bands, and to ascertain how much spectrum in the 12.7 GHz band must be reserved for exclusive broadcaster use in each market.

II. INCUMBENT BROADCASTER OPERATIONS MUST BE FULLY AND INDEFINITELY PROTECTED FROM INTERFERENCE FROM NEW ENTRANTS

The wholesale relocation of broadcasters out of the 12.7 GHz band is simply not possible.⁴ While the number of BAS licenses in the 12.7 GHz band is relatively small, the authorized facilities are essential to broadcast operations. It is true that certain BAS operations are also permitted in the 2 and 6 GHz bands,⁵ but those lower frequency bands are already at capacity in many markets and are increasingly encumbered by interference from other services operating either within those bands or in adjacent frequency bands. Making matters worse, the Commission has either been unwilling or unable to enforce its

³ See e.g., 47 CFR § 74.644.

⁴ Reply comments of the National Association of Broadcasters, *Expanding Use of the 12.7-13.25 GHz Band for Mobile Broadband or Other Expanded Use*, Notice of Inquiry and Order, GN Docket No.22-352, January 10, 2023 (NAB NOI Reply Comments)

⁵ 47 CFR § 74.602.

rules concerning interference to BAS from those other services, and there is no right of private action in such matters.⁶

Further, the suggestion that BAS facilities could be relocated to the 12.2 GHz band ignores the fundamental incompatibility between the broadcasting satellite service (BSS) incumbent to the 12.2 to 12.7 GHz band, which has poor and ill-defined downlink antenna performance, and fixed services. The Commission is well aware of the challenges of sharing between the BSS and terrestrial users.⁷ The fact that most BAS fixed links in the 12.7 GHz band are bidirectional makes such sharing especially challenging. Even in the C-band (3.7 to 4.2 GHz) where high-performance downlink antennas were the norm, detailed and expensive frequency coordination studies were needed to allow sharing between the fixed satellite service and terrestrial links, often resulting in large preclusion areas around downlink sites. Accordingly, the Commission must fully protect broadcast operations in the 12.7 GHz band by carefully crafted technical rules, not by case-by-case enforcement or reliance on the time-consuming and expensive hearing process.⁸

Fixed Links

NAB respectfully disagrees with the Commission's proposal to set an arbitrary sunset date for the fixed terrestrial incumbents in this band – a date after which incumbents may not cause harmful interference to new band entrants (and presumably are no longer protected from such interference).⁹ Fixed BAS links in the 12.7 GHz band provide the essential studio-

⁶ 47 USC § 401.

⁷ See, e.g., MITRE Corporation, "Analysis of Potential MVDDS Interference to DBS in the 12.2–12.7 GHz Band," MITRE Technical Report 01W0000024 to Federal Communications Commission, ET Docket No. 98-206 (April 2001).

⁸ 47 CFR § 101.103(a).

⁹ NPRM ¶ 68.

transmitter link (STL) that allows a station's programming to reach its transmitter site, reach TV Translators and cable headends, and other functions without which a station could not reach its audience. There is no basis for sunseting broadcast auxiliary operations in the band, as it is presently unclear where broadcaster operations could be relocated. Establishing an arbitrary sunset date for interference protection of incumbent BAS facilities assumes without any basis that new spectrum or other media will become available at some point. This is optimism, not analysis. In fact, the present trajectory of increasing congestion and lack of incentives to run dark fiber to remote locations suggests that the remaining BAS incumbents will be locked into their 12.7 GHz facilities indefinitely.

Mobile BAS Uses

With respect to mobile BAS facilities, the Commission has proposed setting aside 25 MHz of dedicated spectrum in the 12.7 GHz band for those facilities and repacking incumbent mobile operations into that band segment.¹⁰ NAB tentatively supports this proposal based on available information, but no sunset date should apply to BAS operations in that exclusive-use band segment. To ensure predictable BAS operations and to provide a buffer between sensitive systems in adjacent bands as discussed above, NAB urges specifying a common 25 MHz segment nationwide for exclusive mobile use.

Interference to mobile BAS operations from new broadband entrants has a fairly long history. For example, in 2002, as the Commission was developing the rules that established Advanced Wireless Services (AWS), it recognized that AWS-to-BAS interference was likely to

¹⁰ NPRM at ¶ 75.

occur.¹¹ As a result, the Commission established rules that require AWS licensees to coordinate the location of any base or fixed stations operating in adjacent bands with BAS licensees, and implement technical solutions as necessary (including the installation of filters in AWS transmitters) to mitigate interference to BAS receivers.¹² As the Commission correctly predicted, AWS equipment was deployed and interference occurred to BAS systems. BAS licensees experienced varying degrees of cooperation from AWS licensees to resolve the interference, with external filtering commonly required on AWS transmitters to eliminate interference to BAS receivers. In many cases, however, the AWS licensees refused to cooperate and install the necessary filters, resulting in the upper portion of the 2 GHz BAS band (2025–2110 MHz) becoming unusable in some large markets and forcing BAS licensees to abandon some channels. Receiver filtering (at the BAS receiver) by itself is often not sufficient to eliminate adjacent-band interference. Although the AWS transmitters were presumably compliant with the Commission’s rules concerning out-of-band emissions (OOBE), the proximity of AWS base station transmitters to BAS receivers in both frequency and space resulted in interference that could only be mitigated by the full cooperation of both parties. Based on this experience, the Commission should mandate coordination and cooperation between BAS licensees and new entrants in the 12.7 GHz band with reasonable time periods (such as 30 days) required for advanced notice and testing of new entrant’s planned operation. If such testing reveals interference, then the new entrant may not bring the site into service until the interference is mitigated. With regard to mobile operation by new entrants, a

¹¹ *Service Rules for Advanced Wireless Services in the 1.7 and 2.1 GHz Bands*, Notice of Proposed Rulemaking, 17 FCC Rcd 24135, ¶ 63 (2002). These AWS stations operate in the 2110–2155 MHz band, while BAS stations operate in the adjacent 2025–2110 MHz band.

¹² 47 CFR § 27.1133; see also *Service Rules for Advanced Wireless Services in the 1.7 and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, ¶¶ 129-130 (2003).

small amount of guard band spectrum or a preclusion zone could be required in the vicinity of BAS receivers. The particulars of any guard band or preclusion zone should be adequate to avoid placing a power spectral density of -108 dBm/MHz or greater at the input of the BAS receiver.

OOBE and Power Limits

While limits for OOBE and co-channel power density limits could be determined and specified that would protect BAS receivers under all reasonable conditions – as was done at 3.7 GHz¹³ – NAB believes that the relatively small number of BAS receivers in the 12.7 GHz band and the availability of after-market high-power filters can allow for the additional suppression of OOBE from new entrant transmitters to be determined and implemented on a case-by-case basis. This should generally reduce equipment costs for new entrants with the understanding that external filters or other actions may be needed in specific situations. In authorizing expanded use of the 12.7 GHz band by new entrants, therefore, the Commission must stipulate a requirement for coordination with BAS licensees and require prompt cooperation and corrective action, as necessary, to mitigate interference problems consistent with the Commission’s recent policy statement concerning shared responsibilities for interference.¹⁴

III. INCUMBENT USES MUST INCLUDE ITINERANT AND SHORT-TERM FACILITIES

NAB notes that BAS operations do not require a license that specifies operation in the 12.7 GHz band and broadcasters may own and use equipment in that band without having a license specifying such use. Broadcasters also often operate BAS facilities well outside their

¹³ 47 CFR § 27.1423.

¹⁴ *Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services* Policy Statement, ET Docket 23-122, FCC 23-27 (April 21, 2023).

station's licensed coverage areas, as permitted under the Commission's rules. The Commission's rules provide for short-term *de jure* operation of up to 720 hours annually under color of a Part 73 or other broadcast auxiliary license.¹⁵ Such itinerant operations are often needed to accommodate major media events such as parades, marathons, and significant weather events, including hurricanes. As it did in the relocation of BAS equipment in the 2 GHz band, the Commission must include such users and equipment in its definition of incumbent operations and recognize that such operations may not be fully reflected in current Commission licensing records.¹⁶ The Commission must include such equipment in its definition of "incumbent operations entitled to protection or relocation."¹⁷

IV. NEW ENTRANTS SHOULD BE LIMITED TO LICENSED SERVICES

As discussed above, many broadcasters will need to maintain facilities in the 12.7 GHz band going forward and will need to coordinate with new entrants to avoid interference from both co-channel and adjacent-channel operations. Broadcasters' long experience with spectrum sharing demonstrates that licensed operations are far less likely to cause unmitigable interference than unlicensed operations, and far more responsible with respect to resolving interference when it occurs. With proper technical rules, sharing of spectrum bands among licensed users results in more consistent service quality for all parties, with high reliability being particularly important for broadcasters. Achieving these desirable outcomes when unlicensed uses are involved is difficult or impossible because unlicensed uses are unpredictable in both time and location.

¹⁵ 47 CFR § 74.24.

¹⁶ NPRM at ¶ 83.

¹⁷ *Id.*

BAS Channels A8 and A9 (2450–2467 and 2467–2483.5 MHz), which overlap with or suffer from out-of-band emissions from Wi-Fi Channels 9 and 10 (2449.5–2454.5 and 2454.5–2459.5 MHz), provide a good example of failed sharing with unlicensed systems. Although Commission rules provide that unlicensed operations are secondary to BAS uses and permitted “only on a noninterference basis to other operations that have been authorized the use of these bands under other Parts of the Rules” and “must not cause any harmful interference to these operations,”¹⁸ the ubiquitous and uncoordinated use of these channels by unlicensed Wi-Fi devices, even when used indoors, has rendered licensed operations at BAS Channels 8 and 9 practically impossible. There is no reason to believe that similar interference from unlicensed systems would not result in the 12.7 GHz band and the Commission should not attempt to force incompatible uses to coexist in the same spectrum in the same geographic area.

Apart from improved ability to control interference, licensed use also offers reduced complexity in frequency coordination, often a one-time exercise, as well as reduced implementation and transition costs for all users. While NAB prefers exclusive, licensed users that would be co-primary and must coordinate with BAS users using well-established methods,¹⁹ any dynamic sharing alternatives²⁰ must be limited to protection of BAS fixed links and cannot be used to protect electronic newsgathering (ENG) or other mobile operations.²¹ NAB is particularly concerned about premature adoption of controversial dynamic

¹⁸ 47 CFR § 74.602(a) and “Authorization of spread spectrum and other wideband emissions not presently provided for in the FCC Rules and Regulations,” First Report and Order, 101 FCC 2d 419, FCC 85-245 (May 24, 1985) at ¶ 24.

¹⁹ See, e.g., 47 CFR § 101.103(d).

²⁰ NPRM at ¶ 87.

²¹ *Id.* at ¶ 91.

coordination systems such as the AFC system being considered at 6 GHz.²² The Commission should wait until there is a proven record of satisfactory operation before expanding the use of such systems as a basis for preventing harmful interference.

V. RELOCATION AND REPACKING OF INCUMBENT FIXED-LINK FACILITIES REQUIRES DILIGENT STUDY

Frequency coordination is essential to ensure the interference-free operation of fixed microwave facilities. The Commission generally requires new entrants to conduct detailed technical analyses that consider the geometry, polarization, antenna beamwidth, sidelobe performance, power, modulation, and other characteristics of both existing and proposed operations before a new facility can be authorized. These studies are not trivial and often require that existing facilities be modified to accommodate a new entrant. As the Commission is aware, there are few firms that are qualified to undertake such studies. Once the Commission obtains the necessary certifications from licensees concerning existing fixed operations in the 12.7 GHz band, it must conduct comprehensive studies to ascertain whether those operations can reasonably be relocated to other bands or repacked within the 12.7 GHz band. Only then can it make an informed decision concerning which facilities might be relocated from the 12.7 GHz band and determine the amount of dedicated spectrum required to accommodate those BAS facilities that cannot be relocated to other bands.

The NPRM observes that incumbent fixed links in the 12.7 GHz band “are concentrated in major cities along the coasts.”²³ These same areas generally have the greatest amount of spectrum congestion in other frequency bands. The costs of relocation to other frequency bands or repacking within the 12.7 GHz band can be substantial and could

²² *Id.* at ¶ 90.

²³ NPRM at ¶ 63.

impact users who are not 12.7 GHz licensees. For example, analysis may determine that a 12.7 GHz fixed link might be relocated to a frequency in the 6875–7125 MHz band, provided several existing licensees in the 6 GHz band upgrade their antennas. Antenna upgrades typically result in greater stresses on the mounting structure (a tower, for example), which could require that the entire tower be replaced or that a new tower be constructed, which could then require obtaining zoning and building permits, public hearings, and other complications. The process of relocating a single 12.7 GHz link to another band could become both lengthy and expensive, with all costs and risks of delay being the responsibility of the new entrant. New entrants must be fully aware of these potential issues at the time of bidding to ensure they have clear expectations, and we therefore urge the Commission to carefully study the estimated costs of relocation.

With regard to relocation within the 12.7 GHz band of both mobile BAS systems and fixed systems that cannot be relocated out of the band, NAB suggests that exclusive broadcaster spectrum might be placed at the upper or lower band limits to maximize the amount of contiguous spectrum available for new entrants. Such placement could also provide a helpful buffer between new mobile broadband operations and sensitive services in adjacent frequency bands.²⁴ NAB expects that some markets will have a few BAS fixed links that cannot be relocated from the 12.7 GHz band, but the spectrum required to accommodate those links will vary from market to market. While the fixed operations of new entrants can easily be coordinated with BAS fixed links, any mobile operations by new entrants will need to be excluded, at least from co-channel operation to those BAS links.

²⁴ NPRM at ¶ 138.

VI. INCUMBENT LICENSEES MUST DETERMINE COMPARABILITY OF REPLACEMENT OR ALTERNATIVE FACILITIES

NAB disagrees that most existing 12.7 GHz broadcast auxiliary facilities can be accommodated by fiber or through use of public wireless networks, such as 5G.²⁵ Such replacement facilities may not be comparable or practical and the incumbent licensee must be allowed to make the final determination whether to accept changes in the medium of transmission. For example, while many sites supporting 12.7 GHz BAS facilities are remote and without access to fiber, mere access to fiber at a site does not guarantee reliability and may incur substantial recurring costs. These matters are both critically important to broadcasters. Similarly, public wireless networks often offer no guarantees of quality, precedence, or reliability and so-called “network slicing” used to create a more predictable non-public network within a public one can be prohibitively expensive. Further, public networks are among the first to fail or become overloaded in times of emergency – precisely the times at which the public relies on broadcasters to provide critical and life-saving information. Simply put, forcibly relocating broadcasters’ operations to other media is likely to increase costs and reduce system reliability, increasing the risk that broadcast news and emergency information will be unable to reach the public.

NAB again emphasizes that it may ultimately be possible to relocate broadcasters to a smaller portion of the 12.7 GHz band, as has occurred in other spectrum reallocation proceedings impacting BAS operations. The 550 MHz of spectrum under consideration in the proceeding (525 MHz with a reserved 25 MHz band for mobile BAS operations) is sufficient to

²⁵ NPRM at ¶ 69.

accommodate significant expanded uses while still protecting critical BAS (including both fixed and mobile) operations that cannot be reasonably relocated.

VII. REPACKING OF ENG AND OTHER MOBILE BAS OPERATIONS TO A DEDICATED PORTION OF THE 12.7 GHZ BAND

NAB agrees with the Commission's proposal to repack mobile BAS "to a discrete portion of the 12.7 GHz band."²⁶ Further, the proposed 25 MHz appears to be a sufficient amount of bandwidth,²⁷ provided the Commission adopts technical rules that will ensure new entrants operating in adjacent spectrum do not cause interference to mobile BAS receivers and broadcasters do not bear any costs associated with such repacking.²⁸

NAB believes that the current state-of-the-art might reasonably allow for at least three simultaneous mobile operations within a 25 MHz channel. Such equipment would need to include high-efficiency video codecs and use modern modulation and channel coding methods. While many stations report using equipment in the 12.7 GHz band for ENG and other mobile BAS applications, much of that equipment is not state-of-the-art and may occupy an entire 25 MHz channel. Despite its age, this equipment continues to be useful and is often essential to providing real-time coverage of breaking news events in spectrum congested areas. A technology upgrade, funded by new entrants, would allow continued reliable broadcast operations while occupying less bandwidth. If the Commission wants to repack broadcasters to just 25 MHz of the band for mobile operations, this technology upgrade will be a necessary first step.

²⁶ NPRM at ¶ 65.

²⁷ NPRM at ¶ 75.

²⁸ NPRM at ¶ 74.

In response to the Commission’s questions concerning broadcaster use of the 12.7 GHz band for mobile BAS, NAB has spoken with some of its member stations to gain a better understanding of these operations.²⁹ Use of the 12.7 GHz band for mobile BAS operations is divided into three types of application. The most common application appears to be for itinerant “around a corner” facilities that allow for ENG signals to emerge from urban canyons where no direct path exists from the news truck to a central receiver site. Such 12.7 GHz equipment is often located temporarily on building roofs, ledges, or windowsills, providing short-range coverage and/or relays that cannot be accommodated in the 2 or 6 GHz bands. A second common 12.7 GHz mobile application provides reliable back-up to ENG operations in the lower frequency bands. ENG trucks often have “tri-band” (2, 6, and 12.7 GHz) antennas that allow for ENG operations in lower-frequency bands to fall up to 12.7 GHz in the event of interference or other outage. Finally, some number of stations rely on the 12.7 GHz band as the primary ENG band to avoid interference conflicts in the lower frequency bands. As discussed above, much of the equipment is older, but has proven reliable with satisfactory performance in this band, and a technology upgrade will be needed to allow for a successful repack of mobile operations into a smaller sub-band, such as 25 MHz.

VIII. RELOCATION AND REPACKING SHOULD OCCUR ON A MARKET BASIS

The Commission has previously cleared BAS operations on a market-by-market basis before any new entrant could commence operations.³⁰ NAB suggests that practice be continued in the 12.7 GHz band. As previously discussed, the most common broadcaster use of the band is for fixed links in situations where the lower frequency bands are congested or

²⁹ NPRM at ¶ 76.

³⁰ NPRM at ¶ 77

the Commission's rules concerning minimum path length cannot be met. Thus, NAB believes that many situations involving relocation to lower-frequency bands will be complex, involving modifying the facilities of stations in those lower bands in order to accommodate the relocation. Specific situations may be drawn out for many months or years, and a nationwide changeover would needlessly delay making the 12.7 GHz band available to new entrants.

IX. CONCLUSION

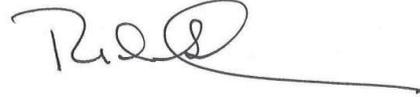
As NAB has previously stressed, the Commission must recognize that the task of accommodating expanded use of the 12.7 GHz band has been made more complicated by the Commission's actions reducing broadcasters' access to alternative spectrum. There is simply no way for broadcasters to provide the kind of breaking news coverage viewers expect without access to adequate spectrum resources, and broadcasters are already being squeezed in other bands.

This does not mean that it is impossible for the FCC to authorize expanded operations in the 12.7 GHz band. Broadcasters look forward to working with the Commission and reasonable stakeholders to develop a balanced approach to the 12.7 GHz band that will accommodate expanded operations while ensuring that broadcasters retain reliable access to spectrum to cover live events and breaking news, and that broadcasters do not bear any costs associated with relocation.

Respectfully submitted,

**NATIONAL ASSOCIATION OF
BROADCASTERS**

1 M Street SE
Washington, DC 20003
(202) 429-5430

A handwritten signature in black ink, appearing to read "Rick Kaplan", with a long horizontal line extending to the right from the end of the signature.

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Patrick McFadden
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Robert Weller

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