

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

In the Matter of)
)
Amendment of Parts 15, 73 and 74 of the) MB Docket No. 15-146
Commission’s Rules to Provide for the)
Preservation of One Vacant Channel in the UHF)
Television Band for Use by White Space Devices)
and Wireless Microphones)
)
Expanding the Economic and Innovation) GN Docket No. 12-268
Opportunities of Spectrum Through Incentive)
Auctions)

REPORT AND ORDER

Adopted: December 8, 2020

Released: December 8, 2020

By the Commission:

I. INTRODUCTION

1. In this Report and Order (Order), we decline to adopt rules proposed in the Commission’s 2015 Notice of Proposed Rulemaking (2015 NPRM) in this proceeding and, therefore, terminate the proceeding.1 More than five years ago, in support of a goal to preserve a vacant channel for use by white space devices and wireless microphones, the Commission proposed rules for television (TV) stations applying for a new, displacement, or modified facility in the television band. Specifically, the 2015 NPRM proposed that certain stations must file a study demonstrating that grant of the application would not eliminate the last available, vacant, ultrahigh frequency (UHF) television channel within the station’s protected contour area.2 While we continue to support unlicensed white space devices and wireless microphone user operations and continue to believe they serve important interests, based on the record of this proceeding and in light of other actions we have taken during the years since the rules were proposed, coupled with the increased burden that the 2015 proposal would place on the use by broadcasters of spectrum in the more consolidated TV band that now exists following the Incentive Auction, we find that the rules proposed in the 2015 NPRM would not serve the public interest. In reaching this conclusion, we find other actions the Commission has taken since the 2015 NPRM to support white space devices and wireless microphones are the preferred avenues for the continued support of these services. Accordingly, we terminate this docket.

II. BACKGROUND

1 Amendment of Parts 15, 73 and 74 of the Commission’s Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones, MB Docket No. 15-146, Notice of Proposed Rulemaking, 30 FCC Rcd 6711 (2015). The term “wireless microphones” refers to wireless microphones and other low power auxiliary stations licensed pursuant to Part 74, subpart H, and such similar devices authorized on an unlicensed basis pursuant to waiver. “White space” devices refer to unlicensed devices operating on television channels pursuant to Part 15, subpart H.

2 Id. at 6726, para. 31. The term “protected contour area” means that area in which a broadcast television station is permitted to operate without interference from other users. See 47 CFR § 73.616 & 73.622(e) (full power); 47 CFR § 73.6010 (Class A); and 47 CFR § 74.792 (LPTV).

2. In its 2014 *Incentive Auction R&O*, the Commission recognized that, following the Incentive Auction and repacking of the television bands, there would likely be fewer unused television channels available for use either by unlicensed white space devices or wireless microphones.³ However, the Commission anticipated that, following the repacking of the bands, there would be at least one channel in the UHF broadcast television band in all areas in the United States that would not be assigned to a television station and expressed its tentative view that the vacant channel should be available for shared use by white space devices and wireless microphone operations. Noting the importance of white space devices and wireless microphones to businesses and consumers, the Commission stated its intent, subject to notice and comment, to designate one television channel in each area of the United States for shared use by these devices.⁴

3. Specifically, with regard to white space devices, the Commission sought to make spectrum available for unlicensed use in the post-auction TV bands, the 600 MHz guard bands, and on channel 37, some of it on a *nationwide* basis.⁵ In so doing, it sought to create certainty for the unlicensed industry, thereby promoting greater innovation in new devices and services, including increased access to broadband services across the country.⁶ The Commission expected that there would be a substantial amount of spectrum available for unlicensed use in rural areas and areas outside of central urban areas.⁷ The Commission also anticipated that following the Incentive Auction and repacking process there would be at least one channel not assigned to a television station in all areas of the country.⁸

4. Similarly, with respect to wireless microphones, the Commission expressed concern about the reduced amount of spectrum that would be available for use by wireless microphones in the repacked TV bands, and reiterated its intent, subject to notice and comment, to designate one television channel in each area for shared use with white space devices.⁹ At the same time, recognizing that following the Incentive Auction and repacking there may not be much UHF television spectrum available for wireless microphone operations, the Commission stated its intent to initiate an additional rulemaking proceeding to explore additional steps that it could take, including permitting the use of additional frequency bands, to accommodate the needs of wireless microphone users.¹⁰

5. The 2015 NPRM followed up on the Commission's statements in the *2014 Incentive Auction R&O*.¹¹ It noted that following the Incentive Auction there would be fewer unused television channels available for use by white space devices and wireless microphones, and pointed to the Commission's anticipation in the *Incentive Auction R&O* that there would be at least one unused broadcast channel in every area for use by white space devices and wireless microphones.¹² The Commission tentatively concluded that preserving a vacant channel in every area for use by white space

³ See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, 6683-84, para. 269 and 6701, para. 309 (2014) (*Incentive Auction R&O*) (subsequent history omitted).

⁴ *Id.* at 6683-84, paras. 265, 269, 6701, para. 309.

⁵ *Id.* at 6682, para. 264.

⁶ *Id.*

⁷ *Id.* at 6683, para. 265.

⁸ *Id.*

⁹ *Id.* at 6683-84, 6701-02, paras. 269, 310.

¹⁰ *Id.* at 6704-05, para. 316.

¹¹ 2015 NPRM, 30 FCC Rcd at 6712, para. 2.

¹² *Id.* at 6716, para. 10 (citing the 2014 *Incentive Auction R&O*, 29 FCC at 6683-84, para. 269, 6701, para. 309).

devices and wireless microphones would help ensure that the public continues to have access across the nation to the benefits of those uses. In so doing, Commission sought to “strike a balance” between the interests of all users of the television bands for access to the UHF TV spectrum, including secondary broadcast stations as well as white space devices and wireless microphones.¹³ In the 2015 NPRM, the Commission stated its belief that its channel preservation proposal “will not significantly burden broadcast applicants in terms of either the continued availability of channels in all areas or the administrative burdens of compliance.”¹⁴

6. The substance of the 2015 NPRM focused on how the Commission would accomplish the goal of preserving a vacant channel. Specifically, the Commission proposed new rules that television stations applying for new or modified facilities be required to demonstrate that there would still be one (or possibly two) vacant channels within its protected contour area after grant of the application.¹⁵ The central proposal of the plan proposed in the 2015 NPRM was to require applicants for low power television (LPTV), TV translator, and Broadcast Auxiliary Service (BAS) facilities to file a study demonstrating that their proposed new, displacement, or modified facilities would not eliminate the last available vacant UHF television channel for use by white space devices and wireless microphones in an area. This requirement would apply beginning with the post-Incentive Auction special displacement window for LPTV and TV translator stations (Special Displacement Window)¹⁶ and then to all future applications in these services.¹⁷ The Commission also proposed that the preservation requirement begin for Class A stations after the post-Incentive Auction transition period¹⁸ and sought comment on whether it should apply to full power stations after the post-auction transition period.¹⁹ Finally, the Commission proposed a technical methodology for identifying and providing evidence that a vacant channel would in fact be preserved if the application was granted.²⁰

¹³ *Id.* at 6716, para. 10.

¹⁴ *Id.* at 6716, para. 11.

¹⁵ *Id.* at 6717-24, paras. 12-31.

¹⁶ The Special Displacement Window refers to the filing window opened following the completion of the auction for existing DRT, LPTV, and TV translator stations displaced by repacking to file displacement applications. *Incentive Auction Task Force and Media Bureau Announce Post Incentive Auction Special Displacement Window April 10, 2018, Through May 15, 2018, and Make Location and Channel Data Available*, Public Notice, 32 FCC Rcd 1234 (IATF and MB 2018) (*Special Displacement Window PN*); *Incentive Auction Task Force and Media Bureau Extend Post Incentive Auction Special Displacement Window Through June 1, 2018*, Public Notice, 33 FCC Rcd 3794 (IATF and MB 2018).

¹⁷ 2015 NPRM, 30 FCC Rcd at 6717-21, paras. 13-19.

¹⁸ The post-Incentive Auction Transition Period refers to the 39-month period from April 13, 2017 to July 13, 2020 during which repacked broadcast TV stations were required to vacate their pre-auction channel. *See Incentive Auction Closing and Channel Reassignment Public Notice: The Broadcast Television Incentive Auction Closes; Reverse Auction and Forward Auction Results Announced; Final Television Band Channel Assignments Announced; Post-Auction Deadlines Announced*, Public Notice, 32 FCC Rcd 2786 (2017) (*Closing and Channel Reassignment Public Notice*).

¹⁹ *Id.* at 6722 and 6723, paras. 23 and 26.

²⁰ *Id.* at 6727-31, paras. 41-51. When the 2015 NPRM was adopted, one Commissioner dissented and a second approved in part and dissented in part. Both issued statements. *Id.* at 6741-45, Dissenting Statement of Commissioner Pai and Statement of O’Reilly. Commissioner Pai noted that the primary purpose of the band is broadcast television and the 2015 NPRM “suggests a switcheroo, giving unlicensed white space devices priority over full-power television stations in some circumstances . . . [and] I cannot support the Commission’s proposal to prioritize the spectrum needs of unlicensed white space devices over those of translators and LPTV stations.” *Id.* at 6741-2, Dissenting Statement of Commissioner Pai. Similarly, Commissioner O’Reilly stated “secondary users should not have a superior claim over primary users for any spectrum in the TV band . . . The idea that we would

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7. The Commission received comments from a range of interested parties in response to the 2015 NPRM. White space device proponents such as Microsoft Corporation, Google, Inc., Wireless Internet Service Providers Association, the Wi-Fi Alliance, and the Consumer Electronics Association supported the Commission's proposal stating that it would help promote investment and innovation in these technologies.²¹ Wireless microphone manufacturers such as Sennheiser Electronic Corporation (Sennheiser) and Shure Incorporated (Shure), and trade associations such as the Performing Arts Wireless Microphone Working Group, supported the Commission's proposals to preserve one UHF channel for wireless microphone operations.²²

8. Various television broadcasters and broadcaster associations, including the National Association of Broadcasters (NAB), the Society of Broadcast Engineers, full power and Class A broadcasters such as the television networks ABC, CBS, Fox, and NBC, and station owners such as Gray Television, Inc., public broadcasters such as Public Broadcasting System, America's Public Television Service, and the Corporation for Public Broadcasting, and low power television broadcasters and associations such as Advanced Television Broadcasting Alliance, Low Power Spectrum Rights Coalition and National Translator Association, opposed the Commission's proposals.²³ They generally argued that the Commission's proposals would hinder efforts by television stations to offer new or improved services including ATSC 3.0; that the Commission had not sufficiently studied their impact and had underestimated how many stations would be affected; and that the proposed rules run counter to long-standing precedent of favoring licensed services over unlicensed.

9. The Incentive Auction took place from March 16, 2016, to April 17, 2017, and the post-auction transition period lasted 39 months thereafter, until July 13, 2020.²⁴ The first-of-a-kind two-sided spectrum auction used market forces to align the use of broadcast airwaves with the nation's accelerating spectrum needs for mobile broadband services. It included a "reverse auction" for full power and Class A stations to bid to receive payment to voluntarily relinquish spectrum rights and a "forward auction" for wireless carriers to bid to purchase new spectrum usage rights. The lynchpin to the success of the auction was the repacking process that reorganized and assigned new channels to full power and Class A broadcast TV stations that would remain on the air after the auction in order to create a contiguous block of cleared spectrum.

10. The Incentive Auction established a more efficient spectrum plan and preserved a robust broadcast television industry. It repurposed 84 megahertz (MHz) of low-band spectrum, including 70 MHz of licensed spectrum for 600 MHz wireless services. To clear the 600 MHz band for wireless use,

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even consider measures that could possibly freeze the broadcasting industry in place after the completion of the incentive auction is ludicrous." *Id.* at 6743-45, Statement of Commissioner O'Reilly.

²¹ See Comments of Microsoft Corporation (Microsoft 2015 Comments); Google, Inc. (Google 2015 Comments); Wireless Internet Service Provides Association (WISPA 2015 Comments); Wi-Fi Alliance (Wi-Fi Alliance 2015 Comments); and Consumer Electronics Association (CEA 2015 Comments); MB Docket No. 15-146, filed September 30, 2015.

²² See Comments of Sennheiser Electronic Corporation (Sennheiser 2015 Comments); Shure Incorporated (Shure 2015 Comments); and Performing Arts Wireless Microphone Working Group (PAWMWG 2015 Comments); MB Docket No. 15-146, filed September 30, 2015.

²³ See Comments of National Association of Broadcasters; the Society of Broadcast Engineers; Sinclair Broadcast Group, Inc.; Gray Television, Inc.; Public Broadcasting System, America's Public Television Service and the Corporation for Public Broadcasting; Advanced Television Broadcasting Alliance; Low Power Spectrum Rights Coalition; and National Translator Association; MB Docket No. 15-146, filed September 30, 2015; and Reply Comments of 21st Century Fox, Inc., CBS Corporation, The Walt Disney Company, NBC Owned Television Stations, MB Docket No. 15-146, filed October 30, 2015.

²⁴ *Closing and Channel Reassignment Public Notice.*

channels 38 through 51 were reallocated from the television band, decreasing the number of channels available for use by television stations and other users of the broadcast television spectrum to the new “core” channels, 2 through 36. A total of 987 full power and Class A stations were repacked during the transition.²⁵ All of the repacked stations were granted construction permits for new facilities and all have now vacated their pre-auction channels in favor of their new channel assignments.²⁶ In 2018, the post-auction Special Displacement Window was conducted and over 2,100 LPTV/translator stations filed for and were awarded new channel assignments within the new, smaller, television band.²⁷

11. After reply comments were received, no further action was taken in the docket. Due to the age and lack of activity in this docket, in June 2020, and pursuant to section 0.141(h) of the Commission’s rules,²⁸ the Commission’s Consumer and Governmental Affairs Bureau (CGB) sought comment on whether this proceeding should be deemed a “dormant docket” and terminated.²⁹ In response, only two commenters supported moving forward with this proceeding. Specifically, wireless microphone manufacturers Sennheiser, Shure, and Lectrosonics, and professional engineer Edgar C. Reihl (Reihl) asked that the docket remain open and that the Commission refresh the record and act to adopt the vacant channel proposals.³⁰ These commenters assert that, as the Commission reaches the completion of the post-Incentive Auction transition, “it is critically important to preserve at least one channel for wireless microphone and white space device operation.”³¹ Rather than terminate this proceeding, they maintain that the Commission “should follow through and enact its well-considered proposals to preserve a needed vacant channel for the operation of wireless microphones.”³²

12. NAB, however, filed reply comments arguing that “[c]losure of this docket is long overdue.”³³ NAB maintains that “the only new fact before the Commission in years in this proceeding is the reduction of available channels due to the incentive auction and repack.”³⁴ NAB asserts that “there is no reason to continue to dedicate Commission resources to this long dormant proceeding” and urges “the Commission to disregard as moot comments seeking to prolong the inevitable, and to promptly close this docket.”³⁵ On September 28, 2020, CGB issued an order terminating dormant dockets but did not

²⁵ *Id.*

²⁶ See *Post-Incentive Auction Transition Successfully Meets 39-Month Deadline*, News Release, July 13, 2020, copy available: <https://docs.fcc.gov/public/attachments/DOC-365479A1.docx>.

²⁷ See *Special Displacement Window PN*.

²⁸ 47 CFR § 0.141(h).

²⁹ See *Consumer and Governmental Affairs Bureau Seeks Comment on Termination of Certain Proceedings as Dormant*, Public Notice, 35 FCC Rcd 5525 (CGB 2020).

³⁰ See Comments of Sennheiser Electronic Corporation, MB Docket No. 15-146, filed August 5, 2020 (Sennheiser 2020 Comments); Reply Comments of Sennheiser Electronic Corporation, MB Docket No. 15-146, filed August 20, 2020 (Sennheiser 2020 Reply Comments); Reply Comments of Shure Incorporated, MB Docket No. 15-146, filed August 20, 2020 (Shure 2020 Reply Comments); Comments of Edgar C. Reihl (Reihl), MB Docket No. 15-146, filed August 5, 2020 (Reihl 2020 Comments); Lectrosonics, Inc. Comments, CG Docket No. 20-158 (rec. Aug. 4, 2020) (Lectrosonics 2020 Comments).

³¹ Reihl 2020 Comments at 1.

³² Sennheiser 2020 Comments at 5; see also Sennheiser 2020 Reply Comments at 2-4; Shure 2020 Reply Comments at 2-4.

³³ Reply Comments of National Association of Broadcasters, MB Docket No. 15-146, filed August 5, 2020 at 1 (NAB 2020 Comments).

³⁴ *Id.* at 3.

³⁵ *Id.* We also note that several parties representing wireless microphone interests have commented in other proceedings about their support for the Commission to adopt its 2015 proposal to preserve one vacant channel in the
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terminate this proceeding, given the existence of opposing comments.³⁶

III. DISCUSSION

13. We decline to adopt the proposals in the 2015 NPRM. As explained below, we find that support of white space device and wireless microphone users is now more effectively being achieved through other Commission proceedings, and, as a result, the proposals to preserve a vacant channel for shared use by white space devices and wireless microphone operations do not serve the public interest. Accordingly, we terminate this proceeding.

14. The spectrum landscape has changed significantly since 2015. Without question, today's TV band is smaller and more densely packed than it was at the time the Commission adopted the 2015 NPRM. To illustrate, at the time the 2015 NPRM was adopted, there were 1,384 full power and Class A television stations operating on UHF channels 21 through 51 for an average of 46 stations per channel. Today, there are 1,088 such stations operating on channels 21 through 36, an average of 68 stations per channel, many with expanded facilities. In addition, the TV band is more densely packed as a result of changes made by stations after the Incentive Auction³⁷ and because reverse auction winners continue to operate in the new TV band.³⁸ Analyses using the Commission's TVStudy software reveal that there are numerous major metropolitan areas in the United States that have no vacant, 6 MHz channels.³⁹ This reality undermines the Commission's goal of creating a *nationwide* solution. Indeed, proponents of the 2015 NPRM proposal argued on behalf of the proposal on the grounds that such a nationwide vacant channel was essential.⁴⁰

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UHF broadcast television band for shared by wireless microphones and white space devices. *See, e.g.,* Reply Comments of Comments of Sennheiser Electronic Corporation, ET Docket No. 20-36, filed June 2, 2020 at 8 (requesting that we not close the vacant channel 2015 NPRM in order to preserve on vacant UHF channel for wireless microphones).

³⁶ *See Termination of Certain Proceedings as Dormant*, Order, CG Docket No. 20-158, DA 20-1138 (CGB Sept. 28, 2020).

³⁷ Several stations made changes to their post-auction channel facilities through two "priority filing windows" that allowed certain eligible stations to change channels and/or expand their facilities. *See Incentive Auction Task Force And Media Bureau Announce The Opening Of The First Priority Filing Window For Eligible Full Power And Class A Television Stations From August 9 Through September 8, 2017*, Public Notice, 32 FCC Rcd 5785 (MB 2017); *Incentive Auction Task Force And Media Bureau Announce The Opening Of The Second Priority Filing Window For Eligible Full Power And Class A Television Stations From October 3 Through November 2, 2017*, 32 FCC Rcd 6989 (MB 2017).

³⁸ A total of 175 full power and Class A stations were reverse auction winners, accepting over \$10 billion to relinquish their licenses to broadcast on their own 6 MHz channel. Only 45 of those winning bidder television stations, however, went off the air as a result of accepting a winning bid while the other 130 stations are either using VHF channels or channel sharing to make more efficient use of spectrum in the television band. The sharing stations are still making their content available to viewers as the sharee of the spectrum licensed to another television broadcaster, now with an influx of capital that can be invested into programming and services to the communities they serve.

³⁹ For instance, a cursory analysis reveals that there are no vacant 6 MHz channels available today, or none will be available pending the construction of granted permits, in areas in and/or around Los Angeles, Dallas, Houston, Miami, or Salt Lake City, all together including approximately 10 percent of the U.S. population. *See e.g.,* General Purpose Studies in TVStudy of stations on channels 14-36 in or near each city with contours set to 41 dBu demonstrate all of the contours overlap and thus no UHF channels are available when land mobile restrictions are considered. *See* Creating a New General Study in TVStudy 2.2.5 Manual available at <https://www.fcc.gov/oet/tvstudy>; 47 CFR § 15.712(d).

⁴⁰ *See* Microsoft 2015 Comments at 5 (stating that the economic feasibility of investment in unlicensed operations requires a "minimum of three usable 6 MHz-wide channels *nationwide*" (emphasis added)); Letter from Paul

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15. Subsequent to adoption of the 2015 NPRM, the Commission took a number of significant steps to ensure that white space device and wireless microphone operations can flourish. In responding to the 2015 NPRM, white space device proponents cited the need to create certainty that vacant channels would be available for their use in order to promote greater innovation in new devices and services, including increased access to broadband services across the country.⁴¹ We believe that our more recent actions in other proceedings have helped to create such certainty by allowing for more robust service and efficient spectral use in the post-Incentive Auction television band as well as in the 600 MHz guard bands and 600 MHz wireless services and by revising our rules to allow for enhanced fixed white space device operations in rural areas.⁴² We find that these actions have achieved the benefits sought by white space device proponents and obviate the need to impose the burdensome vacant channel preservation requirement on television broadcasters. Similarly, when responding to the 2015 NPRM, wireless microphone users expressed concerns about the reduced amount of spectrum that would be available for use by wireless microphones in the repacked TV bands, and they cited to such concerns to support their call to preserve a vacant channel for shared use with white space devices.⁴³ Once again, we believe that

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Margie, Counsel to Microsoft, Corp., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 et al., Attach. at 8 (filed Dec. 29, 2019) (stating “the key is a stable legal and regulatory environment that creates a nationwide (scale) marketplace”); Letter from Paul Margie, Counsel to Microsoft, Corp., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 et al., at 2 (filed Feb. 15, 2018) (requesting preservation of spectrum “nationwide . . . to ensure that three channels will remain available in every market, including in urban areas.”).

⁴¹ *Incentive Auction R&O*, 29 FCC Rcd at 6682, para. 264; *see also* Microsoft 2015 Comments at 1 (adoption of the Commission’s preservation proposal will contribute significantly to the future success of unlicensed white space technologies); Google 2015 Comments at 11-12 (Commission’s preservation proposal will provide investors and manufacturers the certainty they need to justify the development of a full range of equipment for the delivery of wireless broadband to consumers and will support commitments to other innovative unlicensed technologies); Wi-Fi Alliance 2015 Comments at 3 (the business model for white space devices requires the certainty that sufficient spectrum be available on a nationwide basis); and CEA 2015 Comments at 3 (preserving vacant UHF channels will ensure that the operation of unlicensed devices will remain an important part of our nation’s communications capabilities).

⁴² *Amendment of Part of the Commission’s Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Amendment of Part 74 of the Commission’s Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and the 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, ET Docket No. 14-165 and GN Docket No. 12-268, Report and Order, 30 FCC Rcd 9551 (2015) (*White Spaces R&O*); *Amendment of Part 15 of the Commission’s Rules for Unlicensed White Space Devices; Amendment of Part 15 of the Commission’s Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, ET Docket Nos. 16-56 and 14-165 and GN Docket No. 12-268, Report and Order and Order on Reconsideration, 34 FCC Rcd 1827 (2019) (*White Spaces Order on Reconsideration*); *Unlicensed White Space Device Operations in the Television Bands*, ET Docket No. 20-36, Notice of Proposed Rulemaking, 35 FCC Rcd 2101 (2020) (*White Spaces NPRM*); *Unlicensed White Space Device Operations in the Television Bands*, ET Docket No. 20-36, Report and Order and Further Notice of Proposed Rulemaking, FCC 20-156, (Oct. 28, 2020) (*2020 White Spaces R&O and FNPRM*).

⁴³ *See* 2015 NPRM, 30 FCC Rcd at 6683-84, 6701-02, paras. 269, 310; and Sennheiser 2015 Comments at 3 (adoption of the vacant channel proposal would allow for licensed wireless microphone users to register for protection from white space devices and would allow users access to much needed protected spectrum); Shure 2015 Comments at 8 (the availability of vacant UHF channels would provide professional wireless microphone users with a modicum of reliable, interference-free spectrum critical to meeting the existing and growing demand for wireless microphones); and PAWMWG 2015 Comments at 2 (urging the Commission to maintain access to interference protection and ensure sufficient spectrum to operate wireless microphones); Reihl 2020 Comments at 1 (it is important to preserve at least one TV channel in each market for wireless microphone operation because other bands such as the 600 MHz duplex gap and the lower guard band are contaminated with out-of-block emissions produced

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the steps we have taken in other proceedings since the 2015 NPRM will ensure that wireless microphone operators have access to sufficient spectrum, including spectrum outside of the broadcast television band, to meet their needs.⁴⁴ These actions underscore the conclusion that the regulatory approach proposed in the 2015 NPRM is no longer needed and is outweighed by the burden that such an action would place on the broadcast users of the TV band.

16. *White space devices.* In August 2015, recognizing the significantly altered regulatory landscape for unlicensed white space devices in the broadcast television bands, the Commission adopted its *White Spaces R&O*.⁴⁵ In that proceeding, the Commission modified several rules to allow for more robust service and efficient spectral use in the post-Incentive Auction television band as well as in the 600 MHz guard bands and 600 MHz wireless services band that would be created as a result of repurposing the television bands following the Incentive Auction.⁴⁶ Specifically, the Commission enabled lower powered operations closer to television stations, as well as higher powered operations in less-congested rural areas that enhance broadband services in these areas.⁴⁷ The Commission also established rules permitting white space device operations on spectrum outside of the broadcast television band in the 600 MHz guard bands (including duplex gap) and the 600 MHz wireless service band, and on channel 37.⁴⁸

17. In the Commission's *White Spaces Reconsideration Order* in that proceeding, it took additional action to promote white spaces operations.⁴⁹ Recognizing that white space device operations served to provide vital links for broadband services to Americans especially in rural and underserved areas,⁵⁰ the Commission increased the maximum permissible fixed white space device antenna height above ground level in less congested areas such as rural areas.⁵¹

18. In 2020, we initiated a new proceeding proposing actions to “spur the continued growth of the white space device ecosystem” that had been evolving.⁵² In the *White Spaces NPRM*, we focused chiefly on providing additional opportunities for unlicensed white space devices operating in the broadcast television bands to deliver wireless broadband services in rural and underserved areas and

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by mobile wireless systems operating on adjacent frequencies); Sennheiser 2020 Comments at 5 and 2020 Reply Comments at 2-4 (adoption of the preservation proposal is still needed because a vacant channel in the 600 MHz band is uniquely suited to the vastly growing needs of wireless microphone operations); Shure 2020 Reply Comments at 2-4 (due to desirable technical and operating characteristics and compatible international frequency allocations, the UHF band still remains the primary spectrum supporting professional wireless microphone operations).

⁴⁴ *Promoting Spectrum Access for Wireless Microphone Operations; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 14-166 and GN Docket No. 12-268, Report and Order, 30 FCC Rcd 8739 (2015) (*Wireless Microphones R&O*); *Promoting Spectrum Access for Wireless Microphone Operations; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 14-166, ET Docket No. 14-165, and GN Docket No. 12-268, Order on Reconsideration and Further Notice of Proposed Rulemaking, 32 FCC Rcd 6077 (2017) (*Wireless Microphones Order on Reconsideration and FNPRM*).

⁴⁵ See generally *White Spaces R&O*, 30 FCC Rcd 9551.

⁴⁶ *White Spaces R&O*, 30 FCC Rcd at 9553, para. 3.

⁴⁷ *Id.* at 9553-4, para. 6.

⁴⁸ *Id.*

⁴⁹ *White Spaces Order on Reconsideration*, 34 FCC Rcd 1827.

⁵⁰ *Id.* at 1828, para. 1.

⁵¹ *Id.* at 1841, 1850-53, paras. 41, 62-67.

⁵² See *White Spaces NPRM*, 35 FCC Rcd 2101, 2101-02, para. 1 (2020).

applications associated with the Internet of Things (IoT).⁵³ We initiated the proceeding largely in response to Microsoft’s 2019 petition for rulemaking, which had proposed revisions to promote greater flexibility for white space device operations in rural areas; which had garnered broad support from many white space device proponents.⁵⁴ On October 28, 2020, we issued a Report and Order and Further Notice of Proposed Rulemaking adopting new targeted rules with this focus, which will benefit American consumers in rural and underserved areas while protecting broadcast television stations and other protected services initiated from harmful interference. Specifically, we permitted higher power and higher antennas for fixed white space devices in “less congested” geographic areas where there continue to be vacant TV channels available for use by white space devices (and wireless microphones), and permitted higher power mobile operation within “geo-fenced” areas in these “less congested” areas.⁵⁵ We also adopted rule changes designed to facilitate the development of new and innovative narrowband IoT services in these bands.⁵⁶ Finally, we sought comment on whether the Commission should permit use of a terrain-based model (e.g., Longley-Rice Irregular Terrain Model) when determining available TV channels for white space device operations, which if adopted could potentially expand the areas available for white space device operations in this spectrum.⁵⁷

19. In the 2015 vacant channel proceeding, white space device proponents argued that the proposals in the 2015 NPRM would ensure that the public has access to these services and would help promote investment and innovation in these technologies.⁵⁸ The Commission’s more recent actions as described herein, however, reflect the subsequent evolution of white space device operations, as indicated by support from major white space device proponents over the last few years, to focus on rural and underserved areas where a substantial amount of spectrum remains available for white space devices after repacking. We find that these alternative actions are an effective means for the Commission to support white space device operations and the white space device ecosystem as it has evolved since 2015. We conclude that the rationale behind the Commission’s tentative conclusion concerning the need to preserve a vacant channel in the broadcast television band to provide certainty for the white space device industry no longer holds.

20. *Wireless microphones.* In 2015, in a proceeding that had been initiated to explore steps to address wireless microphone users’ long-term needs following the Incentive Auction and repacking of the broadcast television band, the Commission adopted several changes to ensure sufficient spectrum would continue to be available for wireless microphone use.⁵⁹ With respect to the reconfigured broadcast television band following the Incentive Auction and repacking, the Commission revised its rules to provide more opportunities for wireless microphones to access spectrum by allowing greater use of the VHF broadcast television channels and more co-channel operations with television stations, and adopted more efficient analog and digital technical standards to ensure more efficient use of the available spectrum. The Commission also expanded eligibility for the licensed use of the 600 MHz duplex gap to all entities now eligible to hold wireless microphone licenses to use television band spectrum. The Commission also took several actions to promote use of spectrum bands outside of the broadcast

⁵³ See generally *id.*

⁵⁴ *Id.* at 2103, paras. 6-7.

⁵⁵ *2020 White Spaces R&O and FNPRM*, para. 7.

⁵⁶ *Id.*

⁵⁷ *Id.* at paras. 2, 79-93.

⁵⁸ See T-Mobile USA Comments at 2, OTI/PK Comments at 3-5, CEA Comments at 3, Microsoft Comments at 1-3, Google Reply at 19.

⁵⁹ See generally *Wireless Microphones R&O*, 30 FCC Rcd 8739. In the 2015 *White Spaces R&O*, issued contemporaneously the *Wireless Microphones R&O*, the Commission codified rules for unlicensed wireless microphone operations in the broadcast television bands. *White Spaces R&O*, 30 FCC Rcd at 9554-55, para.7.

television band, including providing new opportunities for use in UHF spectrum in the 900 MHz band.⁶⁰

21. In 2017, in the *Wireless Microphones Reconsideration Order and Further Notice*, the Commission furthered its goal of promoting wireless microphone operations and ensuring sufficient spectrum would be available following the Incentive Auction and repacking process.⁶¹ Specifically, it made technical revisions to rules it had adopted for both licensed and unlicensed wireless microphone operations in the TV bands, and in the 600 MHz guard band and duplex gap, as well as to rules for licensed wireless microphone operations in several frequency bands outside of the TV and 600 MHz bands, including the UHF spectrum in the 900 MHz band.⁶² It also issued a Further Notice of Proposed Rulemaking seeking to ensure that certain professional theater, music, performing arts, or similar organizations that currently operate wireless microphones on an unlicensed basis can obtain licenses to operate in the broadcast television bands as well as other frequency bands, including UHF spectrum in the 900 MHz band, if necessary, to ensure that they can provide the public interest benefits of significantly enhanced event productions to the American people.⁶³

22. We are not persuaded by wireless microphone commenters in the dormant docket proceeding who maintain that we should refresh the record in this proceeding and adopt the vacant channel preservation proposals.⁶⁴ As we discussed above, we find that these proposals are no longer necessary to further their stated objective.

23. *Public Interest Analysis.* While we recognize the important benefits provided by white space devices and wireless microphones in the TV bands, we find that the other actions that the Commission has taken to support these users subsequent to issuance of the 2015 NPRM provide a better alternative for addressing their needs than through efforts to preserve a vacant channel. Moreover, we can no longer say that the 2015 NPRM's proposals "will not significantly burden broadcast applicants."⁶⁵ NAB has stated the vacant channel proposals "would impose significant burdens on broadcasters both by restricting innovation and by imposing new and costly administrative burdens on broadcasters seeking to construct new or modified facilities."⁶⁶ We agree. In light of changed circumstances we conclude that the Commission should not deviate from previous Commission decisions that use of the TV bands by primary and secondary broadcast users have priority over wireless microphones and white space

⁶⁰ *Wireless Microphones R&O*, 30 FCC Rcd at 8744, para. 11. Specifically, the Commission adopted revisions to provide new opportunities for wireless microphone operations in the 169-172 MHz band and the 944-952 MHz band, and opened up portions of three other sets of spectrum bands – the 941-944 MHz and 952-960 MHz bands (on each side of the 944-952 MHz band), the 1435-1525 MHz band, and the 6875-7125 MHz band – for sharing with licensed wireless microphone operations under specified conditions. *Id.*

⁶¹ See *Wireless Microphones Order on Reconsideration and FNPRM*, 32 FCC Rcd 6077.

⁶² *Id.* at 6079-70, para. 2.

⁶³ *Id.* at 6119, para. 77.

⁶⁴ Sennheiser 2020 Comments at 5 (other high frequency bands available to wireless microphone users do not mimic the characteristics of low-band UHF TV spectrum and their use requires prior coordination); see also Shure 2020 Reply Comments at 2 (due to desirable technical and operating characteristics and compatible international frequency allocations, the UHF band has traditionally been -- and still remains -- the primary spectrum supporting professional wireless microphone operations integral to users in wide range of sectors in the United States).

⁶⁵ 2015 NPRM, 30 FCC Rcd at 6716, para. 11. See Media General 2015 Comments at 5; NAB 2015 Comments (stating the "proposal would cause real, tangible harm in the near term, yet would produce benefits that are speculative at best"); NAB 2015 Reply Comments (the proposal will severely damage LPTV and translator services, significantly restrict broadcaster innovation, remove channels available for potential increased diversity in media ownership).

⁶⁶ Letter from Patrick McFadden, Deputy General Counsel to NAB, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-146 et al. (filed Oct. 29, 2020) (NAB 2020 Letter).

devices.⁶⁷ We believe that preserving robust over-the-air broadcast television service remains an important spectrum allocation priority, especially to rural areas without adequate MVPD and broadband service alternatives.⁶⁸ In addition, we have recognized the promise of next generation ATSC 3.0 service by over-the-air television broadcasters to expand the universe of potential uses of broadcast spectrum capacity for new and innovative services in ways that will complement the nation's burgeoning 5G networks and usher in a new wave of innovation and opportunity.⁶⁹ As NAB and a number of broadcasters noted in their 2015 comments, adoption of the proposed rules would serve to freeze full power stations in place and hamstring their ability to expand or innovate to better serve their viewers.⁷⁰ Having restructured the TV band, we find that to now adopt a requirement that primary and/or secondary television stations protect spectrum availability for white space devices and wireless microphones in the smaller, more densely packed television band, would not serve the public interest. Moreover, NAB points out that the proposals would require “novel engineering studies” that “would be expensive and time-consuming, particularly for smaller broadcasters” where “the cost of conducting such studies is likely to be multiples of current engineering design costs.”⁷¹ Significantly, television stations would bear the administrative burden of studying and proving the availability of channels for other users in order to have an application that is otherwise in the public interest granted – both in congested areas where a vacant channel may not be available in the television band and in less congested areas where more spectrum is

⁶⁷ See 2015 NPRM, 30 FCC Rcd at 6721, para 19 (citing *TV White Spaces Second Report and Order*, 23 FCC Rcd at 16827, para. 50 (“[F]uture broadcast uses of the television band will have the right to interference protection from TV band devices.”). Cf. *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Digital Low Power Television*, Further Notice of Proposed Rulemaking and Memorandum Opinion and Order, 25 FCC Rcd 13833, 13849, para. 47 (2010) (dismissing as moot request to condition the authorization of LPTV digital companion channels on the acceptance of unlicensed operations on the channel, stating that “[i]ssues related to the relative spectrum use priorities of licensed stations and unlicensed devices were appropriately addressed in the unlicensed devices proceeding (citing *TV White Spaces Second Report and Order*)); *Digital Television Distributed Transmission System Technologies*, MB Docket No. 05-312, Report and Order, 23 FCC Rcd 16731, 16743, para. 19 (2008) (declining to restrict TV operations to provide “more vacant channels” for the operation of unlicensed devices)).

⁶⁸ See Meredith 2015 Reply Comments at 1-2 (free over-the-air broadcasting provides an opportunity for viewers to receive high-quality programming without paying for an expensive monthly Internet subscription and provides rural and other hard-to-reach viewers the opportunity to experience the same benefits as their urban counterparts); One Media 2015 Reply Comments at 4 (broadcasters must be able to make changes in their facilities to adapt to changing conditions, whether that be the need to serve new or larger communities or to deploy new and better technology).

⁶⁹ *Promoting Broadcast Innovation Through ATSC 3.0*, MB Docket No. 20-145, Declaratory Rulemaking and Notice of Proposed Rulemaking, 35 FCC Rcd 5916 (2020); see Media General 2015 Comments at 5-6 (adoption of the preservation plan would remove broadcasters’ flexibility for post-auction facility changes and hinder their deployment of innovative services, such as ATSC 3.0); One Media 2015 Reply Comments at 2 (proposed vacant channel showing could severely limit and may altogether preclude broadcasters’ efforts to deploy ATSC 3.0 in a manner that provides the greatest public interest benefits); Pearl 2015 Comments at 2 (television stations must retain their flexibility to offer expanded and innovative services such as ATSC 3.0 in the future).

⁷⁰ See NAB 2020 Letter (the proposal “would unreasonably restrict the ability of broadcasters to expand service to viewers or offer new and improved service through ATSC 3.0 . . . hamper broadcasters’ ability to undertake a successful transition to an improved technology by preventing them from modifying their coverage to facilitate successful sharing and simulcasting arrangements that preserve or improve service to viewers.”); NAB 2015 Comments at 2 and Reply Comments at 17 (adoption of the preservation plan will cause harm to existing television services that viewers rely on today by freezing broadcasters in time and preventing the potential for dynamic and innovative new service offerings); One Media 2015 Reply Comments at 3 (for several years after repacking has been completed broadcasters will need flexibility to adjust their service areas to the extent possible); Sinclair 2015 Comments at 3 (adoption of the plan would destroy vast numbers of broadcast facilities and limit the service area and future growth potential of all others simply to promote availability of an unlicensed service).

⁷¹ NAB 2020 Letter.

available such that analysis is not warranted.⁷² Therefore, we find that, on balance, seeking to preserve a vacant channel for shared use by white space devices and wireless microphone operations at this time, considering all of the actions that the Commission has taken since 2015 to promote those users' interests, are outweighed by the burdens of the proposals on broadcasters and we terminate the proceeding.

IV. ORDERING CLAUSES

24. Accordingly, **IT IS ORDERED** that, pursuant to the authority found in sections 1, 4(i), 4(j), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), and 303(r), this Order **IS ADOPTED**.

25. **IT IS FURTHER ORDERED** that, should no petitions for reconsideration or petitions for judicial review be timely filed, MB Docket No. 15-146 **SHALL BE TERMINATED**, and its docket closed.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

⁷² NAB 2015 Comments (stating, “Troublingly, the Commission does not acknowledge the harms associated with its proposal. Instead, the [2015] NPRM simply asserts that there should be a large number of vacant channels available for displaced LPTV and translator stations, so the impact should be minimal. Of course, if this were true, there would be no reason for the Commission to propose reserving a channel for unlicensed – there would be plenty of channels available for everyone. In short, the Commission’s proposal would cause real, tangible harm in the near term, yet would produce benefits that are speculative at best. For these reasons, the Commission should not adopt its initial proposal.”).