

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

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

Expanding the Economic and Innovation
Opportunities of Spectrum Through Incentive
Auctions

GN Docket No. 12-268

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I. INTRODUCTION AND SUMMARY.

In this proceeding, the Federal Communications Commission (“FCC” or “Commission”) proposes to preserve a minimum of one vacant channel per market for use by television white space devices (“WSDs”) and to preserve a second channel in markets where a television station will occupy the duplex gap between LTE uplink and downlink frequencies in the 600 MHz band. Preserving these channels will help ensure the continued availability of sufficient unlicensed spectrum in the 600 MHz wireless and broadcast bands to support the development of an unlicensed ecosystem, while imposing only a minimal burden on broadcasters. The preservation of sufficient unlicensed channels is critical to achieving the FCC’s goal of expanding the availability and affordability of unlicensed wireless broadband services, and therefore well worth the small practical impact on broadcasters.

Without a policy such as the one the Commission has proposed, there is unlikely to be enough unlicensed 600 MHz band spectrum in total to make the band commercially usable for unlicensed broadband. This useful low-frequency spectrum would be underutilized, contrary to Congress’s intent in the Spectrum Act of 2012.¹ Conversely, preserving vacant channels for unlicensed use would augment other available 600 MHz spectrum, and these available frequencies collectively would support investment in and development of a broad array of white space technologies and networks following the incentive auction.

Google therefore urges the FCC to adopt rules that maximize opportunities for consumer use of the vacant channels while still facilitating a rapid, minimally disruptive transition for full-power and Class A broadcasters. Specifically, the Commission should (1) both during and after

¹ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, §§ 6403, 6407 (codified at 47 U.S.C. §§ 1452, 1454) (“Spectrum Act”).

the 39-month post-auction transition period, require low-power television (“LPTV”), TV translator, and broadcast auxiliary service (“BAS”) licensees to show the continued availability of one vacant channel (or in a small number of cases, two channels) for unlicensed use before modifying their facilities, and (2) after the 39-month transition period, require full-power and Class A broadcasters to make the vacant channel demonstration when filing applications for modification and allotment. The Commission should require broadcasters to account for significant wireless microphone reservations and land mobile exclusion zones near their stations when assessing the availability of vacant channels. The Commission should also ensure that harmonizing the rules governing vacant channel demonstrations with the rules that the Commission adopted in the Part 15 proceeding for Channels 14-20 does not undermine the availability of vacant channels.

II. THE FCC’S CHANNEL PRESERVATION PROPOSALS CORRECTLY RECOGNIZE THE IMPORTANCE AND GROWTH OF UNLICENSED TECHNOLOGIES, AND THE NEED FOR ACCESS TO SUFFICIENT LOW-FREQUENCY SPECTRUM.

A. Use of Unlicensed Technologies Is Ubiquitous, Growing Rapidly, and Contributes Billions to the National Economy Every Year.

As the Commission recognized in its Incentive Auction Order, “[u]nlicensed devices complement licensed services, serve a wide range of consumer needs, and contribute tens of billions of dollars to our economy annually.”² Thus, the FCC decided that, “[i]n addition to repurposing UHF spectrum for new licensed uses,” its incentive auction rules should, and will, “make a significant amount of spectrum available for unlicensed use.”³ The Commission is indisputably right that unlicensed products and services are exceptionally important to the U.S.

² *Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions*, Report and Order, FCC 14-50, 29 FCC Rcd. 6567, 6572 ¶ 8 (2014) (“Incentive Auction Order”).

³ *Id.*

economy, and that the FCC can best foster further unlicensed innovation and investment by providing access to additional spectrum across a range of different frequencies, including spectrum below 1 GHz.

Consumer demand for unlicensed products and services continues to grow at an impressive rate. For example, Wi-Fi device sales passed the 10-billion unit mark in January 2015, with ABI Research estimating that more than 2.3 billion Wi-Fi devices were sold in 2014 alone.⁴ Wi-Fi is a leading unlicensed technology, but it is only one of many innovative unlicensed technologies experiencing meteoric growth. ChainLink Research estimates that RFID sales will grow 25 percent per year, reaching 35 million units sold per year in five years.⁵ MarketsandMarkets expects Bluetooth Smart sales to reach 1.2 billion units by 2020, up from 49 million units in 2013, while shipments for Bluetooth Smart Ready will reach 2.7 billion units by 2020.⁶ Similarly, annual shipments of ZigBee devices—which power ad-hoc and mesh networking solutions such as home automation—doubled in 2014 and are on track to increase by 550 percent by 2020.⁷

Unlicensed products and services also contribute billions of dollars to the U.S. economy every year. Dr. Raul Katz of the Columbia Institute for Tele-Information estimates that unlicensed spectrum generated \$222 billion in value for the U.S. economy in 2013 and

⁴ Wi-Fi Alliance, *Total Wi-Fi® Device Shipments to Surpass Ten Billion this Month* (Jan. 5, 2015), <http://www.wi-fi.org/news-events/newsroom/total-wi-fi-device-shipments-to-surpass-ten-billion-this-month>.

⁵ Ann Grackin, *Looking Forward to 2015—RFID Continues Steady Growth*, CHAINLINK RESEARCH (Jan. 8, 2015), <http://www.clresearch.com/research/detail.cfm?guid=AE182328-3048-79ED-9952-84B9EE140077>.

⁶ Bluetooth Special Interest Group, *Bluetooth SIG Analyst Digest 2H 2014*, at 3 (2014), <https://goo.gl/GliQWq>.

⁷ PRWeb, *ZigBee and 802.15.4 Shipments to Reach 2.5 Billion by 2020, Says ON World* (June 17, 2015), <http://www.prweb.com/releases/2015/06/prweb12791048.htm>.

contributed \$6.7 billion to U.S. Gross Domestic Product (“GDP”) over the same period.⁸ Dr. Katz also estimates that by 2017, unlicensed technologies will contribute at least \$547.22 billion in economic surplus and \$49.78 billion in GDP annually to the U.S. economy—provided that the FCC makes enough additional spectrum available to meet demand for unlicensed products and services.⁹

The FCC thus was correct to establish as one goal of the incentive auction to “repurpose the maximum amount of UHF band spectrum for flexible licensed *and unlicensed* use in order to unleash investment and innovation, benefit consumers, drive economic growth, and enhance our global competitiveness.”¹⁰ Under the Spectrum Act, this goal is appropriately advanced within an overall framework that protects non-participating high-power and Class A broadcasters and maximizes recovery for licensed wireless uses.¹¹

B. Television White Spaces and the 600 MHz Band Are Essential Low-Frequency Spectrum for Unlicensed Technologies.

Unlicensed spectrum availability in the broadcast and 600 MHz bands is critical to the future of unlicensed technologies because these bands provide access to low-frequency spectrum. As the FCC has recognized, access to sub-1-GHz spectrum is critical to enabling next-generation licensed and unlicensed services. In the FCC’s proceeding regarding mobile spectrum holdings,

⁸ Raul Katz, *Assessment of the Economic Value of Unlicensed Spectrum in the United States*, at 8 (Feb. 2014), <http://www.wififorward.org/wp-content/uploads/2014/01/Value-of-Unlicensed-Spectrum-to-the-US-Economy-Full-Report.pdf>.

⁹ Raul Katz, *Assessment of the Future Economic Value of Unlicensed Spectrum in the United States*, at 4, 12-13 (Aug. 2014), <http://www.wififorward.org/wp-content/uploads/2014/01/Katz-Future-Value-Unlicensed-Spectrum-final-version-1.pdf>.

¹⁰ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, FCC 12-118, 27 FCC Rcd. 12,357, 12,361 ¶ 10 (2012) (emphasis added).

¹¹ See generally Spectrum Act.

the Commission found that high- and low-frequency spectrum are not substitutes, and FCC competition rules explicitly recognize that companies need access to both to compete.¹²

Spectrum below 1 GHz has unique propagation characteristics that can enable high-quality mobile broadband Internet access with broad coverage, using unlicensed as well as licensed technologies.¹³

As the record in the incentive auction proceeding demonstrates, the FCC can support investment in and deployment of unlicensed technologies in the low-frequency 600 MHz band by preserving at least three usable unlicensed channels in every market after the incentive auction.¹⁴ For example, chip manufacturers have said that at least three channels are necessary

¹² *Policies Regarding Mobile Spectrum Holdings*, Report and Order, FCC 14-63, 29 FCC Rcd. 6133, 6135 ¶¶ 3, 5 (2014) (“But not all spectrum is created equal. Spectrum below 1 GHz has, compared to spectrum above 1 GHz, distinct propagation advantages for network deployment over long distances, while also reaching deep into buildings and urban canyons. . . . While other cost-related factors exist, ensuring that multiple providers are able to access a sufficient amount of low-band spectrum is a threshold requirement for extending and improving service in both rural and urban areas.”).

¹³ See Incentive Auction Order at 6685 ¶ 271.

¹⁴ See, e.g., Letter from Austin C. Schlick, Director, Communications Law, Google Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (filed Mar. 25, 2014); Letter from Paula Boyd, Director of Government and Regulatory Affairs, Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, at 1, GN Docket No. 12-268 (filed Mar. 12, 2014); Letter from Paul Margie, Counsel to Broadcom Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (filed Sept. 25, 2014) (“2014 Broadcom Letter”) (noting “the importance of adopting technical rules that would permit the use of three 801.11af channels in the 600 MHz band”); Reply Comments of IEEE 802 LAN/MAN Standards Committee, at 2, GN Docket No. 12-268 (filed Mar. 12, 2013) (“IEEE 802 Reply Comments”) (noting the need for at least three 6 MHz channels); Letter from H. Nwana, Executive Director, Dynamic Spectrum Alliance, to Marlene H. Dortch, Secretary, FCC, at 1, GN Docket No. 12-268 (filed May 7, 2014) (requesting 24 MHz for unlicensed use); Comments of the Wireless Internet Service Providers Association at 1, GN Docket No. 12-268 (filed June 14, 2013) (requesting 36 MHz of contiguous spectrum above Channel 20 in each market).

to support the large upfront investment required to develop technology for the band.¹⁵ This assessment is consistent with industry’s experience in the 2.4 GHz unlicensed band, which relies upon three non-overlapping unlicensed channels.¹⁶ The FCC itself has found that designating sufficient 600 MHz spectrum for unlicensed use will “help to create certainty for the unlicensed industry, thereby promoting greater innovation in new devices and services, including increased access for broadband services across the country.”¹⁷ Therefore, in keeping with the flexibility that Congress gave the FCC in the Spectrum Act to authorize unlicensed use in portions of the 600 MHz band,¹⁸ the FCC should ensure that sufficient spectrum is available in every market for unlicensed use. Because the Commission has determined that unlicensed devices will have access to no more than two nationwide channels in the new 600 MHz band—Channel 37 and the duplex gap¹⁹—this means that ensuring unlicensed access to at least one vacant broadcast

¹⁵ See 2014 Broadcom Letter; Letter from Scott Blake Harris, Counsel to Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, at 1, GN Docket No. 12-268, ET Docket No. 14-165, MB Docket No. 15-146 (filed July 29, 2015) (“[D]evice and chipmakers have said that at least three usable channels must generally be available in every market in order for mass-market personal/portable white space devices to support investment. This is because they believe consumers will not be interested in devices that cannot operate in all markets.”).

¹⁶ IEEE 802 Reply Comments at 2.

¹⁷ Incentive Auction Order at 6683 ¶ 264.

¹⁸ See Spectrum Act § 6407(c); see also 158 Cong. Rec. H915 (daily ed. Feb. 17, 2012) (statement of Rep. Waxman) (noting that Section 6407(c) was a compromise intended by the conferees to “create a nationwide band of spectrum that can be used for innovative, unlicensed applications”).

¹⁹ As discussed further below, access to the duplex gap may be impaired in some markets. In addition, unlicensed operations will be secondary to radio astronomy observation and wireless medical telemetry operations in Channel 37. *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, and Amendment of Part 74 of the Commission’s Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 MHz Duplex Gap, Expanding the Economic and Innovation*

channel is essential to making three usable channels available to support an unlicensed ecosystem. It further requires unlicensed access to a second vacant channel in the small number of markets where the Commission places a television station in the duplex gap in order to meet clearing targets.²⁰ Assuming that the number of megahertz cleared for auction generally allows WSD use in just Channel 37, the duplex gap, and one vacant channel, then in markets where a broadcaster will operate in the duplex gap, the number of available channels will be reduced from three to two. To preserve the three necessary channels in such markets, the Commission must designate a second vacant channel for unlicensed use.

III. THE COMMISSION HAS THE AUTHORITY TO REQUIRE BROADCAST LICENSEES TO MAKE A VACANT CHANNEL DEMONSTRATION.

The Commission has correctly determined that it has the authority to require broadcast licensees to make vacant channel demonstrations. The Commission's broad public interest authority in the area of spectrum management, as well as the Spectrum Act and Administrative Procedure Act, establish the FCC's discretion to adjust its channel assignment rules to encourage the development of innovative unlicensed technologies.

The Communications Act specifically empowers the Commission "to foster innovative methods of exploiting the radio spectrum in order to 'generally encourage the larger and more effective use of radio.'"²¹ With respect to licensing and allocation matters, the Act provides the Commission authority to "allocate electromagnetic spectrum so as to provide flexibility of use,"

Opportunities of Spectrum Through Incentive Auctions, Report and Order, FCC 15-99, 2015 WL 4764221, *69 ¶¶ 193-94 (rel. Aug. 11, 2015) ("Part 15 Order").

²⁰ Letter from Gary M. Epstein, Chair, Incentive Auction Task Force, to Marlene H. Dortch, Secretary, FCC, at 2, Attachment at 3, GN Docket No. 12-268, WT Docket No. 12-269, AU Docket No. 14-252 (filed July 10, 2015).

²¹ *Telocator Network of Am. v. FCC*, 691 F.2d 525, 538 (D.C. Cir. 1982) (quoting 47 U.S.C. § 303(g)).

to “assign frequencies for each individual station and determine the power which each station shall use and the time during which it may operate,” and to “determine the location of classes of stations or individual stations.”²² The Commission may also “[m]ake such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the” Act’s provisions on radio frequency regulation.²³ As a general matter then, spectrum management decisions are “precisely the sort that Congress intended to leave to the broad discretion of the Commission, by imposing a broad public convenience, interest, or necessity standard.”²⁴ Absent additional specific restrictions imposed by Congress, the FCC’s authority to manage commercial spectrum in the public interest allows it to adopt rules and conditions for television broadcast licensees and other users, including requiring broadcasters to make the proposed vacant channel demonstrations.

Nothing in the Spectrum Act limits the FCC’s ability to establish vacant channel demonstration conditions for broadcast licenses. The Spectrum Act provides the FCC with the authority to assemble spectrum for the forward auction of wireless licenses in two ways: (1) buying spectrum rights from television broadcasters in a reverse auction, and (2) reassigning existing television band channels (or repacking) in order to create additional reallocation opportunities.²⁵ Although the Spectrum Act places some conditions on the FCC’s authority to

²² 47 U.S.C. § 303(c)-(d), (y).

²³ *Id.* § 303(r).

²⁴ *National Ass’n of Regulatory Util. Comm’rs v. FCC*, 525 F.2d 630, 636 (D.C. Cir. 1976); *see also Cellco P’ship v. FCC*, 700 F.3d 534, 541-42 (D.C. Cir. 2012).

²⁵ Letter from Austin Schlick, Director, Communications Law, Google Inc., to Gary Epstein, Senior Advisor and Chair, Incentive Auction Task Force, FCC, at 1-2, GN Docket No. 12-268 (filed Apr. 21, 2014).

engage in the reverse²⁶ and forward²⁷ auction processes and repacking,²⁸ as described below, the law’s protections for broadcasters do not restrict the FCC’s ability to require these licensees to make a vacant channel demonstration when applying to add or modify facilities during and after the transition.

The Spectrum Act requires the FCC to “make all reasonable efforts to preserve . . . the coverage area and population served of each [full-power and Class A] broadcast television licensee,” and prevents the FCC from involuntarily relocating such licensees from the UHF to VHF band.²⁹ But these “factors for consideration” apply only where the Commission is making “reassignments or reallocations” of television channels under the Spectrum Act’s provisions relating to repacking.³⁰ They do not dictate the Commission’s policies for managing 600 MHz spectrum following completion of the repacking process.

The Spectrum Act provides no additional protections for LPTV. Congress stated only that “[n]othing in this subsection shall be construed to alter the spectrum usage rights of low-power television stations.”³¹ In other words, Congress left the Commission the same powers with respect to managing LPTV that it possessed before the Spectrum Act. The spectrum usage rights of LPTV broadcasters, like the spectrum usage rights of any other Commission licensee, always have been and remain subject to the Commission’s right and duty to regulate in the public

²⁶ See Spectrum Act § 6403(a).

²⁷ See *id.* § 6403(c).

²⁸ See *id.* § 6403(b).

²⁹ *Id.* § 6403(b)(2)-(3); see also *id.* § 6001(6) (defining “broadcast television licensee” to include only full-power and Class A television stations).

³⁰ See *id.* § 6403(b)(2).

³¹ *Id.* § 6403(b)(5).

interest. Consequently, the Spectrum Act does not prevent the FCC from adopting a rule that requires LPTV operators to make vacant channel demonstrations during and after the transition.

Furthermore, the protections for broadcasters described above apply only when the FCC makes reallocations and assignments as part of the incentive auction—not when broadcasters separately elect to apply for modification or allotment. For example, Section 6403, paragraph (b) of the Spectrum Act governs reorganization of broadcast television spectrum and provides that the Commission must make “all reasonable efforts to preserve . . . the coverage area and population served of each broadcast television licensee” when (i) the *Commission* “make[s] such reassignments of television channels as [it] considers appropriate” and (ii) the *Commission* “reallocate[s] such portions of such spectrum as [it] determines are available for reallocation.”³² The Spectrum Act does not prevent the FCC from limiting a broadcaster’s discretion to select a channel when a broadcaster applies voluntarily for new or modified facilities. Where a broadcaster—not the government—is seeking to relocate or otherwise modify its own facilities, the Spectrum Act’s broadcaster protections do not apply, and the Commission may impose reasonable licensing conditions such as the vacant channel showing.

The FCC has on previous occasions required spectrum licensees to demonstrate that their proposed services would not undermine unlicensed operations. For instance, in the 900 MHz band, the Commission “condition[ed] [the] grant of each [Major Trading Area LMS] multilateration license on the licensee’s ability to demonstrate . . . that their systems do not cause unacceptable levels of interference to Part 15 devices.”³³ The Commission has also protected

³² *Id.* § 6403(b)(1)(B), (b)(2) (emphases added).

³³ *Amendment of Part 90 of the Commission’s Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems*, Report and Order, FCC 95-41, 10 FCC Rcd. 4695, 4737 ¶ 82 (1995); see also *Request by Progeny LMS, LLC for Waiver of Certain Multilateration*

unlicensed operations from intentional interference.³⁴ Similarly here, the Commission may protect the vacant channels necessary for viable unlicensed operations by requiring broadcast licensees to make a minimally invasive and low-cost showing that their proposed modifications or allotments will not displace unlicensed operations in the last vacant channel (or, in a small number of cases, the last two vacant channels).

Once broadcasters have been licensed for a particular channel, they have primary (full-power, Class A) or secondary (LPTV) rights in the band and are entitled to interference protection from unlicensed devices in individual interference disputes. But neither legislation nor regulation in any way cabins the FCC's ability to modify its rules for broadcast operations to enable or advance unlicensed operations, including by creating reasonable conditions on grants of new broadcast licenses or modification applications. The FCC routinely places all manner of restrictions on licensees to advance its policy goals—by adopting interoperability requirements, build-out requirements, ownership requirements, or other conditions. Conditioning the grant of applications for new licenses or license modifications on a showing that the proposed change will not eliminate vacant television band spectrum is a similar exercise, and similarly falls within the Commission's authority.

Finally, so long as the FCC presents a reasoned justification,³⁵ the Administrative Procedure Act allows it to depart from “prior Commission decisions stating that future use of the

Location and Monitoring Service Rules, Order, FCC 13-78, 28 FCC Rcd. 8555, 8560 ¶ 11 (2013).

³⁴ FCC, *Enforcement Advisory: Warning: Wi-Fi Blocking Is Prohibited*, Public Notice, DA 15-113, 30 FCC Rcd. 387 (2015).

³⁵ *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 845, 866 (1984) (stating that the relevant question when evaluating an agency action is whether the agency's view is “a reasonable one”).

TV bands by primary and secondary broadcast users has priority over . . . white space devices.”³⁶ An agency action changing prior policy is subject to the same standard of reasonableness as any other agency action.³⁷ “[I]t suffices that the new policy is permissible under the statute, that there are good reasons for it, and that the agency *believes* it to be better This means that the agency need not always provide a more detailed justification than what would suffice for a new policy created on a blank slate.”³⁸

The reasons set forth in the Notice of Proposed Rulemaking (“NPRM”) and the public notice on bidding procedures (“Bidding Procedures PN”), discussed in further detail in Part IV below, amply justify the proposed change here. Therefore, in order to protect the “significant public benefits” offered by WSDs and demonstrated on the record spanning multiple proceedings and more than a decade, the Commission can and should preserve one vacant channel in every market and a second vacant channel in markets where the Commission places a broadcaster in the duplex gap.³⁹ As discussed in further detail below, even if the FCC adopted a band plan that triggered vacant channel protection, the practical impact on broadcasters would be minimal. The database query required for the vacant channel showing is easy and low-cost, and in most cases the vacant channel showing will not impair the broadcaster’s ability to make its proposed move or modification.

³⁶ *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*, Notice of Proposed Rulemaking, FCC 15-68, 30 FCC Rcd. 6711, 6720 ¶ 19 & n.54 (2015) (“Vacant Channel NPRM”).

³⁷ *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-16 (2009).

³⁸ *Id.* at 515.

³⁹ Vacant Channel NPRM at 6715-16 ¶ 10.

IV. THE COMMISSION SHOULD ADOPT VACANT CHANNEL PRESERVATION RULES.

A. The Commission Should Require LPTV, TV Translator, and BAS Licensees to Make a Vacant Channel Demonstration during and after the 39-Month Transition Period.

The Commission should adopt its proposal to require LPTV, TV translator, and BAS licensees to make a vacant channel demonstration when they wish to add, displace, or modify facilities both during and after the 39-month transition period.⁴⁰ Recognizing that “[w]ireless broadband is poised to become a key platform for innovation in the United States over the next decade,” the National Broadband Plan recommended that the FCC make available 500 MHz of new spectrum “for mobile, fixed and unlicensed broadband use over the next 10 years.”⁴¹

In the incentive auction proceeding, the FCC strives to make available additional licensed and unlicensed spectrum for wireless broadband. The Commission has said that unlicensed devices in particular

are an important part of this nation’s communications capabilities, serving to augment the operations of licensed services and to meet the needs of a wide range of wireless applications The Part 15 rules specify the minimal technical requirements necessary to prevent harmful interference to authorized services. This approach has provided manufacturers and developers with the flexibility to devise a wide variety of innovative standards and devices, like WiFi and Bluetooth, which are thriving in bands that were formerly considered to be lacking significant commercial value.⁴²

However, as the Commission has recognized, “[a]fter the incentive auction and repacking of the television bands, . . . there will be fewer unused television channels available for use by

⁴⁰ See *id.* at 6717 ¶ 13.

⁴¹ FCC, *Connecting America: The National Broadband Plan*, at 75, 84 (2010), <https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf>.

⁴² Incentive Auction Order at 6681 ¶ 259.

[unlicensed] white space devices.”⁴³ The Commission therefore properly plans to preserve a vacant channel in every market for use by WSDs to “ensure that the public continues to have access across the nation to the significant benefits [associated with WSDs], consistent with [its] intent to strike ‘a balance between the interests of all users of the television bands, including secondary broadcast stations as well as [white space] devices and wireless microphones, for access to the UHF TV spectrum.’”⁴⁴ It has also properly proposed to reserve a second vacant channel for WSD use in markets where a broadcaster will displace unlicensed operations in the duplex gap.⁴⁵ The FCC’s proposal reflects the best policy trade-off—it is worth establishing a minimally invasive and low-cost vacant channel process for broadcasters in order to ensure a viable unlicensed ecosystem in the 600 MHz band.

LPTV interests are likely to assert that the Commission should grant LPTV stations the right to eliminate the spectrum available for unlicensed operations in a community because of LPTV’s role in delivering local content to its viewers. The Commission is not, of course, proposing to eliminate LPTV. All that is at issue is the LPTV industry’s ability to claim one incremental channel in some spectrum-constrained markets. And with respect to the public interest factors governing assignment of that channel, the fact is that while LPTV stations are capable of playing an important role in delivering local content, today Americans rely more on

⁴³ Vacant Channel NPRM at 6716 ¶ 10.

⁴⁴ *Id.* (quoting Incentive Auction Order at 6684 ¶ 269).

⁴⁵ *Broadcast Incentive Auction Scheduled to Begin on March 29, 2016, Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward)*, Public Notice, FCC 15-78, 2015 WL 4764219, *15 ¶ 32 (rel. Aug. 11, 2015) (“Bidding Procedures PN”).

Internet access—which urgently requires greater spectrum resources—than on LPTV for local news and content.

The Pew Research Center’s 2011 *How People Learn About Their Local Community* study found a growing consumer preference for web-based news compared to broadcast programming.⁴⁶ Pew found that adults under 40 years old relied most upon web-based media for 11 of 16 local news topics inquired about in the survey.⁴⁷ Moreover, for all individuals with access to the Internet, Pew found that the Internet was the “first or second most relied-upon source for 15 of the 16 local topics examined.”⁴⁸ In contrast, a separate Pew study found that between 2006 and 2012, the number of 18-to-29 year-olds who watched local television for news dropped from 42 percent to only 28 percent.⁴⁹

Increasingly, the most important way that Americans access the Internet is through wireless services, making access to unlicensed white spaces even more important. As the Commission recently discussed, “many low-income Americans,” in particular, “rely heavily on their mobile device and, for some, that mobile device is their only access to the Internet.”⁵⁰ Indeed, “evidence shows that consumers in certain demographic groups, including low income and rural consumers and communities of color, are more likely to rely on mobile as their only

⁴⁶ See Tom Rosenstiel et al., *How People Learn About Their Local Community*, PEW RESEARCH CENTER, at 21 (Sept. 2011), <http://www.pewinternet.org/files/old-media/Files/Reports/2011/Pew%20Knight%20Local%20News%20Report%20FINAL.pdf>.

⁴⁷ *Id.* at 2.

⁴⁸ *Id.*

⁴⁹ Andrew Kohut et al., *In Changing News Landscape, Even Television is Vulnerable*, PEW RESEARCH CENTER, at 3 (Sept. 27, 2012), <http://www.people-press.org/2012/09/27/in-changing-news-landscape-even-television-is-vulnerable/>.

⁵⁰ *Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, FCC 15-24, 30 FCC Rcd. 5601, 5917 (2015).

access to the Internet.”⁵¹ Pew agrees, finding that “[s]ome 13% of Americans with an annual household income of less than \$30,000 per year are smartphone-dependent. Just 1% of Americans from households earning more than \$75,000 per year rely on their smartphones to a similar degree for online access.”⁵² Access to affordable unlicensed broadband services is especially important for these low-income users.

While Americans depend more and more on mobile and fixed wireless access to the Internet for local news and information, fewer LPTV stations remain in operation every year, and the amount of local programming that they offer continues to decline. According to FCC statistics, the number of licensed LPTV broadcasters has declined nearly 19 percent since 2000 to reach a new low in June 2015 of 1,920 licensed LPTV broadcasters.⁵³ And according to a 2008 survey, 35 percent of those LPTV and Class A stations that air local content broadcast fewer than five hours of local programming per week and more than half (51 percent) broadcast fewer than ten hours of local programming per week.⁵⁴

Because the FCC does not require LPTV broadcasters to submit data on their programming, it is unclear to what extent today’s LPTV licensees actually are meeting the particular needs of the local communities they are authorized to serve. As the U.S. Government

⁵¹ *Id.* at 5636.

⁵² Aaron Smith & Dana Page, *U.S. Smartphone Use in 2015*, PEW RESEARCH CENTER, at 3, 17 (Apr. 1, 2015), http://www.pewinternet.org/files/2015/03/PI_Smartphones_0401151.pdf.

⁵³ FCC, *Broadcast Station Totals as of June 30, 2015*, Press Release (July 8, 2015), <https://www.fcc.gov/document/broadcast-station-totals-june-30-2015>; FCC, *Broadcast Station Totals as of September 30, 2000*, Press Release (Nov. 29, 2000), https://apps.fcc.gov/edocs_public/attachmatch/DOC-207694A1.pdf.

⁵⁴ The Community Broadcasters Association, *Diversity Defined: A Report on the Diversity and Localism Provided by Class A and Low Power Television Stations*, at slides 18-19 (2009), <http://www.spectrumevolution.org/wp-content/uploads/2010/10/LPTV-Industry-Survey-1.pdf>.

Accountability Office (“GAO”) has noted, “[a]lthough FCC’s low-power television goals—meeting the needs of underserved communities, and contributing to localism and diversity—are well documented, FCC has not collected data to evaluate the extent to which the stations fulfill unmet needs or contribute to meeting FCC’s policy goals.”⁵⁵ The FCC is therefore “not able to determine the extent to which low-power television stations provide local programming and meet the programming needs of underserved communities.”⁵⁶

Despite this lack of reliable data about the LPTV industry as a whole, GAO indicates that some LPTV licensees may be obtaining licenses for purely speculative purposes—broadcasting only the minimal amount of time needed to maintain their license while hoping to sell it—while others have ceased broadcasting without the FCC’s permission.⁵⁷ Many LPTV stations, moreover, carry predominantly or exclusively programming that has nothing to do with serving the needs of local communities, such as home shopping channels.⁵⁸

Unlike full-power television service, LPTV broadcasters do not have to meet detailed public interest obligations. For instance, while full-power and Class A television stations are subject to specific programming-related requirements,⁵⁹ “[l]ow power TV stations are subject to

⁵⁵ U.S. Government Accountability Office, Report to Congressional Requesters, *Telecommunications: Enhanced Data Collection and Analysis Could Inform FCC’s Efforts to Complete the Digital Transition of Low-Power Television Stations and Reallocate Spectrum*, GAO-11-790, at 23 (Sept. 2011), <http://www.gao.gov/assets/330/322839.pdf>.

⁵⁶ *Id.* at 24.

⁵⁷ *Id.* at 25.

⁵⁸ See Robert L. Hilliard & Michael C. Keith, *The Hidden Screen: Low-Power Television in America* 70 (M. E. Sharpe, Inc. 1999) (“Many stations also pick up the regional or national home shopping channels.”).

⁵⁹ See, e.g., 47 C.F.R. §§ 73.670-71 (providing children’s programming requirements for full-power stations), 73.6001(b) (requiring Class A broadcasters to broadcast for a minimum of 18 hours per day and to broadcast a certain amount of locally produced programming each quarter).

no minimum required hours of operation and may operate in any of the 3 modes . . . for any number of hours.”⁶⁰ These comparatively lax rules are intertwined with LPTV’s largely unprotected status. As Congress explained, while “the FCC’s rules for obtaining and operating an LPTV license are minimal,” LPTV licensees accept an uncertain future with risk of displacement “in return for [this] ease of licensing.”⁶¹ Similarly, the Commission has observed that LPTV and TV translator stations have invested in facilities with “explicit, full and clear prior notice that operation in the LPTV [and TV translator service] entails the risk of displacement.”⁶²

In fact, when Congress created the Class A television service in 1999, it found that LPTV stations were not “guaranteed a certain future.”⁶³ Congress further determined at the time that “it is not clear that all LPTV stations *should* be given such a guarantee in light of the fact that many existing LPTV stations provide little or no original programming service.”⁶⁴ It is no surprise, therefore, that the Spectrum Act did not protect LPTV operations, or that the Commission declined to protect LPTV broadcasters during the post-auction repacking.⁶⁵

Note that the Commission has tentatively concluded that it will allow channel sharing between LPTV and TV translator stations as one way to “mitigate the impact of the auction and repacking process.”⁶⁶ Displaced LPTV and TV translator stations, even if they cannot make the

⁶⁰ *Id.* § 74.731(i).

⁶¹ 145 Cong. Rec. 29,948, 29,977 (1999) (“Section-by-Section Analysis”).

⁶² *Petition by Community Broadcasters Association to Amend Part 74 of the Commission’s Rules*, Memorandum Opinion and Order, 59 Rad. Reg. 2d (P&F) 1216, 1217 ¶ 4 (1986).

⁶³ Section-by-Section Analysis at 29,978.

⁶⁴ *Id.* (emphasis added).

⁶⁵ *See supra* Part III.

⁶⁶ *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Digital Low Power Television and Television Translator Stations, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, Amendment of Part 15 of*

relevant vacant channel showing, may still agree either to file a displacement application to share a single channel, or agree to share the channel of a non-displaced station.⁶⁷ The channel sharing option likely to be approved by the Commission for LPTV and TV translators should therefore help to mitigate the impact on LPTV and TV translators of the vacant channels proposal.

Finally, as the Commission notes in the NPRM, because LPTV and TV translator stations operate at lower power, they can occupy the same channels between full-power television stations that are available to WSDs, and are therefore more likely than full-power stations to occupy channels that might otherwise be available for unlicensed operations.⁶⁸ Given the decline of LPTV, the rise of wireless Internet access as a critical source for local information, and the fact that LPTV stations are the most likely among broadcasters to eliminate vacant channels, the Commission's proposal to require LPTV, TV translator, and BAS licensees to make a showing both during and after the transition period that their proposed facilities will not eliminate the last remaining vacant channels in a given market best serves the public interest. This is particularly true when the burden on LPTV, TV translator, and BAS licensees is minimal, involving only a database query and possibly review of one section of the Commission's rules prior to filing for a modification.

LPTV proponents appear to believe that in markets with only one existing LPTV licensee, that licensee will be pushed out if the FCC preserves a vacant channel for unlicensed operations.⁶⁹ However, this view assumes that in such markets, television licensees occupy all

the Commission's Rules to Eliminate the Analog Tuner Requirement, Third Notice of Proposed Rulemaking, FCC 14-151, 29 FCC Rcd. 12,536, 12,542-43 ¶ 14 (2014).

⁶⁷ *Id.*

⁶⁸ Vacant Channel NPRM at 6717-18 ¶ 14.

⁶⁹ John Eggerton, *LPTVs Unconvinced by FCC Chair*, BROADCASTING & CABLE (July 29, 2015), <http://www.broadcastingcable.com/news/washington/lptvs-unconvinced-fcc->

available television channels. In reality, the small number of LPTV stations in many markets may reflect a lack of interest in LPTV licenses rather than the amount of spectrum available for LPTV use. In the rural areas where many LPTV stations operate, unused television spectrum is abundant,⁷⁰ and preserving a vacant channel for white space use will have no impact on the ability of LPTV stations to secure spectrum for their operations. Moreover, as discussed in further detail above, the Commission is considering whether to allow LPTV stations to share channels, which would make it even more unlikely that requiring the vacant channel showing would result in displacement of LPTV stations. The practical impact of the vacant channel showing on LPTV stations' overall ability to make proposed modifications is likely to be small.

B. The Commission Should Require Full-Power and Class A Broadcasters to Make a Vacant Channel Demonstration after the 39-Month Transition Period.

1. Requiring both full-power and Class A stations to make a vacant channel demonstration after the 39-month transition period is an easily administered rule that will support a rapid and non-disruptive transition.

Google also agrees with the NPRM's proposal that Class A and full-power television stations should not have to make a vacant channel demonstration during the 39-month transition period.⁷¹ During the 39 months, these stations and the FCC may need to make changes to channel assignments as they "make all reasonable efforts to preserve . . . the coverage area and population served of each [full-power and Class A] broadcast television licensee."⁷²

chair/142903 ("[T]here are over 900 cities of license where there is only one LPTV or TV translator license, meaning unlicensed would get that last remaining channel.").

⁷⁰ See *Spectrum Database*, GOOGLE INC., <https://www.google.com/get/spectrumdatabase/channel/> (last visited Sept. 29, 2015) ("Google Spectrum Database").

⁷¹ Vacant Channel NPRM at 6721 ¶ 20, 6723 ¶ 26.

⁷² See Spectrum Act § 6403(b)(2)-(3); see also *id.* § 6001(6) (defining "broadcast television licensee" to include only full-power and Class A television stations).

The NPRM tentatively concludes that the FCC should require Class A broadcasters to make the vacant channel showing after the 39-month transition,⁷³ and requests comment on whether it should require full-power broadcasters to do the same.⁷⁴ Google urges the Commission to adopt its tentative conclusion and require both classes of broadcasters to make the showing for applications filed after the conclusion of the 39-month transition period. After the auction process is complete, implementing the vacant channel condition is warranted to provide much-needed certainty to investors and inventors developing unlicensed technology and networks for the 600 MHz band. This will come at a minimal cost to full power and Class A broadcasters, which will be able to make channel moves and other modifications of their choice at any time during the 39-month transition without a vacant channel showing.

The Commission's proposal in fact goes beyond what is necessary to protect broadcasters in connection with the incentive auction. In many cases, individual broadcasters will have completed their transition well before the 39-month period ends. The FCC envisions that broadcasters will complete and file their construction permit applications within the first three months of the transition, while the Media Bureau will adopt varying construction deadlines for different stations during the remaining 36 months, which "may vary by region, by the complexity of construction tasks, or by other factors the Media Bureau finds appropriate."⁷⁵ Consequently, many broadcasters will have completed their transition well before the formal transition period closes. In this situation, the Commission could, consistent with the Spectrum Act and FCC policy, require the broadcaster to make a vacant channel showing as soon as its individual

⁷³ Vacant Channel NPRM at 6721 ¶ 20.

⁷⁴ *Id.* at 6723 ¶ 26.

⁷⁵ Incentive Auction Order at 6797 ¶ 563.

transition is complete. Nevertheless, for reasons of administrative convenience, Google supports the Commission's proposal to give full-power broadcasters greater protection: it could be difficult to determine precisely when the auction transition ends for each broadcaster, and therefore difficult to enforce a vacant channel preservation rule that applies based on individual broadcaster transitions.

The FCC's proposal similarly does not distinguish between channel moves, or other changes made for auction-related reasons, and the same changes made for non-auction-related reasons. During the 39-month transition, the FCC envisions that both broadcasters assigned a new channel during the auction and broadcasters not directly affected by the auction may wish to apply for modifications to their facilities.⁷⁶ The FCC proposes to exempt both classes of applicants from the vacant channel showing during the transition.⁷⁷ Exempting broadcasters that were not assigned a new channel as part of the auction process likely is not necessary to facilitate a rapid and non-disruptive transition, and is not required by the Spectrum Act or previous FCC policy. Still, Google supports the Commission's proposal as a reasonable approach that should be sufficient to preserve a genuine service option for unlicensed operators.

After the transition, the FCC should provide the certainty needed for investment in unlicensed technologies by requiring full-power and Class A television stations to make a vacant channel demonstration in modification and allotment proceedings, absent extraordinary circumstances, which should be considered on a case-by-case basis under the Commission's normal waiver rules.⁷⁸ This approach will impose only a minimal burden on broadcasters, which

⁷⁶ Vacant Channel NPRM at 6721 ¶ 21, 6723 ¶ 28.

⁷⁷ *Id.*

⁷⁸ *See* 47 C.F.R. § 1.3.

may make moves of their choice without a vacant channel showing at any time during the 39-month transition. But, as explained in Part II above, it will be important to the success of unlicensed operations.

2. Because Class A stations are more likely to displace unlicensed operations, requiring Class A licensees to make a vacant channel showing is particularly important.

Because Class A stations, like other low-power stations, are more likely than full-power stations to displace unlicensed operations, it is particularly important that the Commission require Class A users to make a vacant channel demonstration after the transition. As the Commission notes in the NPRM, “as compared to full power stations, a proposed modification of a Class A station has increased potential to impact the availability of the last remaining vacant channel in an area,” because Class A stations operate at lower powers, have smaller coverage areas, and can “engineer facilities in the unused spectrum between full power stations.”⁷⁹ At the same time, the fact that the Commission has determined that there is only a small chance that a full-power television modification would need to eliminate the last vacant channel⁸⁰ means that requiring the showing by full-power stations would not impose a substantial burden on that class of licensee.

3. The FCC should not wait until broadcasters deploy the ATSC 3.0 standard before implementing the vacant channel showing.

Some broadcasters have argued that the FCC should delay implementation of the vacant channel showing for six years while broadcasters adopt the next-generation television broadcast

⁷⁹ Vacant Channel NPRM at 6722 ¶ 23.

⁸⁰ *Id.* at 6723-24 ¶ 29.

standard, ATSC 3.0.⁸¹ According to a filing by Pearl TV, ATSC 3.0 will facilitate channel sharing, and broadcasters will need an unrestricted opportunity post-repacking to apply for modifications that allow for broadcaster coordination and any necessary changes to their service area contours.⁸² This argument is misleading in several respects. First, if broadcasters intend to reduce their spectrum needs by sharing channels using the ATSC 3.0 standard, it should never be a problem for such broadcasters to make a vacant channel demonstration when applying for license modifications. Broadcasters that formerly operated on two channels either will share one channel (freeing up a vacant channel, not depleting vacant channels), or they will share their existing channels in order to continue to broadcast using ATSC 1.0 on some channels while transitioning to ATSC 3.0 on others (which would preserve the status quo in terms of vacant spectrum for WSD use).⁸³ In other words, broadcasters that wish to share channels while implementing ATSC 3.0 will either free up more spectrum for WSD use or will not change the amount of spectrum available for unlicensed use. Either way, use of ATSC 3.0 should not affect a broadcaster's ability to make the vacant channel demonstration.

Second, the argument implies that the adoption of ATSC 3.0 has something to do with the FCC's incentive auction process, when in fact, the ATSC 3.0 standard will not even be finalized until after the auction and will take several years after that to implement.⁸⁴ Nothing in

⁸¹ Letter from Gerard J. Waldron and Kurt A. Wimmer, Counsel to Pearl TV, to Marlene H. Dortch, Secretary, FCC, at 2, GN Docket No. 12-268, MB Docket Nos. 15-137 & 15-146 (filed July 30, 2015).

⁸² *Id.*

⁸³ See Doug Halonen, *Path to Next-Gen Broadcasting Not Easy*, TVNEWSCHECK (Jan. 13, 2015), <http://www.tvnewscheck.com/article/82140/pathtonextgenbroadcastingnoteasy>.

⁸⁴ James K. Willcox, *When the ATSC 3.0 Digital Broadcast Standard Arrives, Your TV Tuner Will Stop Working*, FOX NEWS (July 29, 2015), <http://www.foxnews.com/tech/2015/07/29/when-atsc-30-digital-broadcast-standard-arrives-your-tv-tuner-will-stop-working/> (noting that the ATSC 3.0 standard will not be finalized and approved until 2017).

the Spectrum Act or the FCC's previous rulings on the incentive auction obligate it to make special accommodations for non-auction-related technological developments that will occur after the auction is complete.

Not only can the FCC decline to provide such special protections, but it also should do so here in order to foster broadband deployment. Among its incentive auction goals, the FCC seeks to free up sufficient sub-1-GHz unlicensed spectrum to create a viable, stable ecosystem for unlicensed wireless broadband in the 600 MHz and repacked television bands. Six additional years of uncertainty over available unlicensed spectrum resources will hamper investment in and deployment of unlicensed broadband equipment and networks. The FCC therefore should not exempt full-power broadcasters from the vacant channel showing at the expense of unlicensed broadband merely to protect broadcasters that may, in the future, make a business decision unrelated to the incentive auction to upgrade to the latest technological standard.

4. If the FCC makes an exception to the vacant channel showing to preserve a noncommercial educational channel in every community, it should define “community” as a designated market area.

Finally, the Commission inquires in the NPRM whether, “[i]f we decide to require the vacant channel demonstration for full power allotment proceedings generally, it may be appropriate to make an exception for rulemaking proceedings to allot a reserved noncommercial educational channel to a community that has lost all noncommercial educational full power television service as a result of the auction.”⁸⁵ Although this exception could limit the availability of vacant channels in some areas, Google supports this proposal. Noncommercial educational channels continue to play an important role in some communities and, consistent with Section 307(b) of the Communications Act—which requires the Commission to make a

⁸⁵ Vacant Channel NPRM at 6724-25 ¶ 31.

“fair, efficient, and equitable” distribution of television service when considering applications for licenses⁸⁶—the Commission should retain flexibility to preserve a noncommercial educational channel in every community where such stations have been entirely eliminated as a result of the auction.

The Commission, however, should define “community” in this context to mean a designated market area (“DMA”). This approach strikes the right balance of ensuring the continued availability of noncommercial educational channels while still providing certainty for unlicensed technology developers. If the Commission were to define the term “community” in a more granular way—to include just parts of a DMA or metropolitan area—then the exemption could swallow the rule requiring a vacant channel demonstration and ultimately undermine certainty for those who would invest in the development of unlicensed broadband in the television and 600 MHz bands.

C. The Commission Should Ensure the Availability of a Second Vacant Channel in Markets Where It Places a Television Station in the Duplex Gap.

In the Bidding Procedures PN, the Commission proposes to reserve a second vacant channel for shared WSD and wireless microphone use in a small number of markets where the Commission must place a television station in the duplex gap in order to carry out its clearing target objectives, if that placement otherwise would leave only Channel 37 and one vacant channel available for WSDs.⁸⁷ Google supports this proposal, which is essential to achieving the FCC’s goal of expanding unlicensed access but will not have any practical impact on broadcasters except in a very small number of markets.

⁸⁶ 47 U.S.C. § 307(b).

⁸⁷ Bidding Procedures PN at *15 ¶ 32.

As noted in Part II.B above, record evidence demonstrates that manufacturers and network operators require at least three vacant channels in every market for WSD operations under suitable technical rules to support a 600 MHz unlicensed ecosystem. Assuming that sufficient spectrum is cleared for auction to make Channel 37, the first vacant channel, and the duplex gap (but no other channels) available for unlicensed operations, all three of these channels will be necessary to ensuring the availability of enough spectrum to support investment. If the final band plan generally identifies only these three channels for unlicensed use and the Commission places a broadcaster in the duplex gap in certain markets, this will displace WSDs and make unavailable one of the three key channels. The Commission therefore correctly proposes to preserve a second vacant television channel in this exceptional and very limited scenario in order to ensure the continued availability of sufficient spectrum for WSD use.

Under the Commission's second vacant channel proposal, broadcasters wishing to make changes to their facilities in geographic areas where the duplex gap is subject to impairment would need to demonstrate that two vacant channels would remain available for WSD use if the Commission granted the broadcaster's application. Logistically, this would not prove any more burdensome than making a showing that a single vacant channel remains available, as only one white space database query would be required to resolve both inquiries. This proposal will therefore accomplish the Commission's goals without imposing any greater burden on broadcasters than that already required to show the existence of one vacant channel. Moreover, there will be no practical impact on the vast majority of broadcasters—this proposal would affect only those broadcasters in the specific (and limited number of) markets where the Commission place a broadcaster in the duplex gap.

D. The Commission’s Harmonization of Its Rules Regarding Channels 14-20 Should Preserve Vacant Channel Availability.

The Commission has inquired whether it should harmonize the rules proposed in its NPRM with the technical rules that it recently adopted in its Part 15 television white space proceeding.⁸⁸ In order to support unlicensed investment, the Commission should harmonize its rules in a manner that will not undermine its goal of preserving the necessary number of vacant channels.

The Commission tentatively concluded in the NPRM that, “[s]hould the Commission adopt the proposals in the *Part 15 NPRM* to expand available frequencies for white space device operation[,] . . . the preservation of the last remaining channel [should] apply to Channels 14 and above where white space devices . . . may operate.”⁸⁹ In the Part 15 proceeding, the FCC decided to expand the channels where personal/portable WSDs may operate to Channels 14-20 in addition to Channels 21 and above.⁹⁰ Including Channels 14-20 as part of the spectrum that broadcasters may look to in making their vacant channel showings, however, creates a real risk of frustrating the FCC’s goal of ensuring that there will be enough television white spaces to support investment. Portions of that spectrum range will be subject to auction (and no longer available for unlicensed operations) beginning in 2021. Including such channels in a broadcaster’s vacant channel showing could therefore overstate the number of vacant channels that actually will be available for unlicensed consumers. Accordingly, the Commission should take appropriate steps to ensure that channels identified as vacant either will remain vacant or will be replaced with new vacant channels after the auction.

⁸⁸ Vacant Channel NPRM at 6725 ¶ 34, 6727 ¶ 38.

⁸⁹ *Id.* at 6725 ¶ 34.

⁹⁰ Part 15 Order at *30 ¶ 87.

The Spectrum Act directs the Commission to reallocate spectrum in Channels 14-20 that is “currently used by public safety eligibles as identified in section 90.303” and then begin auctioning that spectrum by 2021.⁹¹ The Commission is considering various options for these channels, including relocating non-public safety and public safety users to free more spectrum for auction.⁹² If the Commission decides to auction spectrum beyond the frequencies that are currently used by public safety eligibles, then some channels that currently appear vacant will no longer be usable by WSDs after the auction of these frequencies. As a result, these channels may only be vacant temporarily, disappearing after the auction. If the FCC permits broadcasters to rely on Channels 14-20 in their vacant channel showings, and these channels thus are repurposed, the three channels needed for a successful unlicensed ecosystem may not exist.

The Commission could address this problem in more than one way. It could, for instance, designate Channels 14-20 as ineligible for vacant channel showings. Under this approach, no matter what happens in the upcoming auction of public safety spectrum, a sufficient number of vacant channels will remain available for WSD use. Alternatively, the Commission could decide in this proceeding that if a broadcaster relies on a vacant channel between Channels 14-20 to make its vacant channel showing, then the Commission will either (1) preserve the channel in this frequency range as vacant, thereby committing to organize the post-auction band plan so that it includes one channel available for WSDs, or (2) identify an alternative vacant channel for WSD use in the 600 MHz band before auctioning spectrum in Channels 14-20. However the Commission decides to approach the issue, it should ensure that its vacant channel

⁹¹ See Spectrum Act § 6103.

⁹² *Wireless Telecommunications Bureau and Public Safety and Homeland Security Bureau Seek Comment on Options for 470-512 MHz (T-Band) Spectrum*, Public Notice, DA 13-187, 28 FCC Rcd. 1130, 1132-33 (2013).

policy with respect to Channels 14-20 preserves the necessary number of vacant channels for WSD use, even after the future auction of public safety spectrum.

V. THE CRITERIA FOR DETERMINING VACANT CHANNEL AVAILABILITY FOR WSDS AT A GIVEN LOCATION SHOULD ACCOUNT FOR SIGNIFICANT LICENSED WIRELESS MICROPHONE RESERVATIONS AND LAND MOBILE EXCLUSION ZONES.

A. The FCC Should Classify a Channel as “Occupied” If It Is Generally Unavailable for WSD Use for at Least 50 Percent of the Day Because of Part 74 Reservations.

The NPRM tentatively concludes that, “[b]ecause wireless microphones and temporary BAS operations operate only for limited periods of time at any given location,” it would be “appropriate to exclude those stations registered in the white spaces database from the vacant channel analysis.”⁹³ Under this approach, however, a channel may be viewed as “vacant” for purposes of a vacant channel demonstration when, in fact, it is occupied the majority of the time by a registered licensed wireless microphone user.⁹⁴ If consumers are precluded by essentially continuous database reservations from using what have been identified as the last available vacant channels, then the vacant channel rule will fail to achieve its goal. Google therefore urges the Commission to classify a channel as occupied for the purpose of a vacant channel showing if that channel has been unavailable for WSD use for at least 50 percent of the day for 25 out of the last 30 days because of Part 74 reservations. The television white spaces databases store information regarding microphone reservations for 30 days, so broadcasters could easily obtain this information from database operators.⁹⁵

⁹³ Vacant Channel NPRM at 6727 ¶ 39.

⁹⁴ Part 15 Order at *21 ¶ 59.

⁹⁵ *See, e.g.*, Google Spectrum Database.

In 2014, the Commission expanded eligibility for Part 74 low-power auxiliary station licenses that allow wireless microphone users to register in the television band databases for protection from WSDs on certain channels.⁹⁶ Professional sound companies and owners and operators of large venues that routinely use 50 or more wireless microphones are now eligible to obtain Part 74 licenses and register for protection from WSDs. During the period for which a Part 74 user has registered for protection, WSDs may not operate on the reserved channel.⁹⁷

In some metropolitan areas, particularly where many Part 74 licensees are concentrated in one geographic location (for instance in the Broadway theater district in New York City), the Part 74 channel reservations can be so frequent and/or sustained that they render channels practically unusable by WSDs. For example, database entry “120221SPBR0000072” reserves channels *every day, 23 hours a day, for an entire year* (from February 4, 2015 to February 4, 2016). Similarly, database entry “130718SPBR0000001” reserves channels *every day, 23.5 hours a day, for an entire year* (from April 24, 2015 to April 25, 2016). Where sustained Part 74 reservations such as these render a channel unavailable for WSD use as a practical matter, the method for identifying vacant channels for purposes of a broadcast licensee’s vacant channel demonstration should account for such operations. This method more accurately reflects the actual operating environment for WSDs and provides easily administrable criteria that will not impose a heavy burden on broadcasters or database operators to determine which channels are available for WSD use at a given location.

⁹⁶ *Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band*, Second Report and Order, FCC 14-62, 29 FCC Rcd. 6103, 6103-04 ¶ 1 (2014).

⁹⁷ 47 C.F.R. § 15.712(f).

B. The FCC Should Classify a Channel as “Occupied” If That Channel Is Unavailable for WSD Use Because of a Land Mobile Exclusion Zone.

The Commission likewise should make clear that where a land mobile exclusion zone would prevent WSD operations in Channels 14-20, broadcasters may not consider these channels vacant for purposes of the vacant channel showing. Currently, unlicensed operations in Channels 14-20 must protect land mobile base stations as directed by the database and must also protect land mobile operators in particular metropolitan areas out to 134 km from the city center.⁹⁸ The requirement to account for land mobile exclusion zones when making a vacant channel showing should apply to LPTV, TV translator, and BAS licensees, as well as full-power and Class A stations that apply to modify facilities after the 39-month transition period.

Unlicensed devices and wireless microphones will both be permitted to operate on vacant television channels after the incentive auction, as will public safety and other Private Land Mobile Radio Service users.⁹⁹ Consequently, even during the transition, LPTV, TV translator, and BAS licensees subject to the vacant channel showing can obtain from the database information about land mobile exclusion zones for base stations, just as other broadcasters will be able to do after the transition. Broadcasters can also easily obtain information on static land mobile exclusion zones for particular metropolitan areas as set forth in Section 90.303 of the Commission’s rules.¹⁰⁰ Adopting this approach will impose only a small additional burden on broadcasters, but will ensure that channels are not deemed vacant when they are, in fact, occupied by land mobile exclusion zones.

⁹⁸ 47 C.F.R. §§ 15.711(a), 15.712(d).

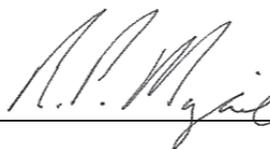
⁹⁹ See Incentive Auction Order at 6842-43 ¶¶ 677, 6845 ¶¶ 683.

¹⁰⁰ 47 C.F.R. § 90.303.

VI. CONCLUSION.

Google commends the Commission for recognizing the value of preserving sufficient vacant channels in every market for use by unlicensed WSDs. To ensure that there will be enough spectrum in every market to support unlicensed innovation and investment, Google recommends that the Commission (1) require LPTV, TV translator, and BAS licensees to make a vacant channel demonstration before modifying their facilities both during and after the transition period; (2) require Class A and full-power broadcasters to make a vacant channel demonstration when filing applications for modification and allotment after the transition period; (3) preserve a second vacant channel for WSD use in the few markets where the duplex gap is needed to have three available channels, yet is subject to impairment; (4) ensure that in harmonizing its rules regarding Channels 14-20, it continues to preserve vacant channel availability; and (5) require broadcasters subject to the vacant channel demonstration to account for situations where intensive wireless microphone reservations or land mobile exclusion zones render a channel occupied when making their vacant channel showings.

Respectfully submitted,



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