

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

In the Matter of)	
)	
Promoting Investment in the 3550-)	GN Docket No. 17-258
3700 MHz Band)	

REPLY COMMENTS OF NCTA – THE INTERNET & TELEVISION ASSOCIATION

Jill M. Lockett
Senior Vice President
Program Network Policy

William A. Check, Ph.D.
Senior Vice President & CTO
Technology

Andy Scott
Vice President Engineering

January 29, 2018

Rick Chessen
Danielle J. Piñeres
NCTA – The Internet & Television
Association
25 Massachusetts Avenue, NW – Suite 100
Washington, DC 20001-1431
(202) 222-2445

Table of Contents

I.	INTRODUCTION AND SUMMARY	1
II.	THE RECORD SUPPORTS A MIDDLE-GROUND LICENSE SIZE SUCH AS COUNTIES, AND DEMONSTRATES THAT PEA-SIZED LICENSES WOULD DEPRESS DEPLOYMENT DIVERSITY AND INVESTMENT	2
III.	MANY COMMENTERS SUPPORT A COMPROMISE APPROACH ON LICENSE TERM, SUGGESTING PERIODS BETWEEN FIVE AND SEVEN YEARS	6
IV.	THE COMMISSION SHOULD PERMIT SASs TO ASSIGN FREQUENCIES DYNAMICALLY	8
V.	UNLESS SIGNIFICANT CONCERNS REGARDING HARMFUL INTERFERENCE TO ADJACENT C-BAND OPERATIONS CAN BE RESOLVED, THE COMMISSION SHOULD NOT ADOPT CHANGES TO THE EMISSION LIMITS.....	9
VI.	CONCLUSION.....	12

I. INTRODUCTION AND SUMMARY

The Commission should adopt moderate rule changes that expand, not contract, the number of likely investors in 3.5 GHz spectrum. Extensive comments filed in response to the Commission’s Notice of Proposed Rulemaking (NPRM) make clear that adopting Partial Economic Area (PEA) licenses and 10-year terms (with an expectation of renewal and no performance requirements) would expand investment opportunities only for a small number of established wireless companies. All other potential investors—from cable operators and those deploying private LTE networks to industrial IoT providers and rural WISPs—agree that PEAs are too large and 10-year terms too long.

Instead, the Commission should adopt middle-ground approaches that balance the needs of these competing interests, enabling auction participation by all interested parties. County-sized licenses accompanied by appropriate secondary markets rules strike that right balance, as do seven-year, renewable terms accompanied by appropriate performance requirements.

The Commission should not revisit its existing rules enabling the SASs to dynamically assign channels. The Commission also should not revisit its emission limits unless technical studies demonstrate that such changes would not cause harmful interference to adjacent C-band downlinks. Adopting moderate approaches to Priority Access License (PAL) size and term while preserving important facets of the Commission’s existing rules will best accomplish the Commission’s goals to ensure that the 3.5 GHz rules “keep up with technological advancements,

create incentives for investment, encourage efficient spectrum use, support a variety of different use cases, and promote robust network deployments in both urban and rural communities.”¹

II. THE RECORD SUPPORTS A MIDDLE-GROUND LICENSE SIZE SUCH AS COUNTIES, AND DEMONSTRATES THAT PEA-SIZED LICENSES WOULD DEPRESS DEPLOYMENT DIVERSITY AND INVESTMENT

NCTA and its members continue to believe that county-sized licenses for PALs strike an appropriate balance between enabling investment by larger operators with wide-area deployment plans and smaller operators seeking to cover only discrete areas. As Comcast asserts, counties are a good fit “for the small cell deployments that are likely to be prevalent in the band, as small cell technology permits providers to target their deployments to localized areas.”² The Commission itself persuasively described the benefits of counties for small-cell bands in its Spectrum Frontiers proceeding.³ Charter also notes that smaller license sizes such as counties “will enable new entrants to more efficiently leverage their existing infrastructure in those counties that encompass their networks,” ultimately allowing them rapidly to provide competitive wireless broadband service.⁴

¹ *Promoting Investment in the 3550-3700 MHz Band; Petitions for Rulemaking Regarding the Citizens Broadband Radio Service*, Notice of Proposed Rulemaking and Order Terminating Petitions, 32 FCC Rcd 8071, 8072 ¶ 2 (2017).

² Comments of Comcast Corporation at 5-6 (Comcast Comments). Unless otherwise noted, all citations to comments herein refer to comments filed in GN Docket No. 17-258 on December 28, 2017.

³ *Id.* at 8-11 (citing *Use of Spectrum Bands Above 24 GHz For Mobile Radio Service et al.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016) (*2016 Spectrum Frontiers Order*)).

⁴ Comments of Charter Communications, Inc. at 3 (Charter Comments).

Other commenters agree that a licensing approach that includes counties would strike the right balance to foster investment by a wide variety of network operators. Several stakeholders agree that, if the Commission intends to provide for larger license sizes, it should include counties in the mix.⁵ These commenters note that “counties nest cleanly into CMAs as well as political subdivisions,”⁶ and that counties would enable rural providers “to obtain spectrum in just the rural areas they intend to serve.”⁷ The Blooston Rural Carriers state that “county-based licensing would make it easier for small businesses and new market entrants to provide wide-area PAL service without the risk of losing access to PAL spectrum in one or more strategic census blocks,” while “significantly reduc[ing] the administrative complexity of dealing with dozens, if not hundreds or thousands of census-block licenses that may be needed to provide PAL service over a larger area.”⁸ Commenters also broadly agree that license sizes smaller than PEAs will best meet the Commission’s statutory duty to ensure “an equitable distribution of licenses and services among geographic areas” and “economic opportunity for a wide variety of applicants.”⁹

⁵ Comments of Blooston Rural Carriers at 3-4 (supporting county-based licensing for five PALs and census-tract licensing for two PALs) (Blooston Comments); Comments of Motorola Solutions, Inc. at 5 (supporting county-based licensing for four PALs and census-tract licensing for three PALs) (MSI Comments); Comments of NTCA-The Rural Broadband Association at 7 (supporting county-based licensing for five PALs and census-tract licensing for two PALs) (NTCA Comments); Comments of the Rural Wireless Association at 4-5 (describing one possible hybrid approach between census tract- and county-sized PALs) (RWA Comments).

⁶ RWA Comments at 4; *see also* NTCA Comments at 8; Blooston Comments at 4.

⁷ NTCA Comments at 8; *see also* Blooston Comments at 4.

⁸ Blooston Comments at 4.

⁹ 47 U.S.C. § 309(j)(4)(C)(i-ii); *see also* Comments of Dynamic Spectrum Alliance at 14-15 (DSA Comments); Comments of the General Electric Company at 33-34 (GE Comments);

In contrast, the record reflects widespread opposition to the adoption of PEA-sized license areas. Many commenters note that such large licenses would increase barriers to entry—excluding new entrants that the Commission hopes to attract—and would be a poor fit for the targeted networks that new and innovative operators intend to deploy.¹⁰ Voices from every category of likely network operators, other than the nationwide wireless carriers, urge the Commission not to adopt PEAs. NCTA’s members, who are exploring 3.5 GHz network deployments for fixed and mobile use cases, argue that PEAs could “increase barriers to entry, promote market inefficiencies, and skew the 3.5 GHz Band framework too far in the direction of wide-area network business and technical models.”¹¹ General Electric, an industrial IoT network operator, notes that it “and its customers would be highly unlikely to win PEA licenses at auction, since it would not be economically rational for them to outbid established wireless carriers for PEA licenses covering territory extending far beyond their geographically targeted

Comments of Google LLC at 3, 14 (Google Comments); NTCA Comments at 4-5; Comments of the Open Technology Institute at New America and Public Knowledge at 20 (OTI & PK Comments); Comments of Rajant Corporation at 6 (Rajant Comments).

¹⁰ *See, e.g.*, Joint Comments of the Telecommunications Subcommittee of the American Petroleum Institute and the Regulatory and Technology Committee of the Energy Telecommunications and Electrical Association at 2-3 (API & ETEA Comments); Comments of the City of New York at 2-3 (NYC Comments); Comcast Comments at 11-12; DSA Comments at 13-16; Comments of the Enterprise Wireless Association at 4 (EWA Comments); GE Comments at 21-23; Google Comments at 5-14; Comments of Microsoft Corporation at 4-6 (Microsoft Comments); OTI & PK Comments at 22-29; Comments of the Wireless Internet Service Providers Association at 25-34 (WISPA Comments); Comments of Next Century Cities at 6-9; Comments of Ruckus Networks at 10-13 (Ruckus Comments); Comments of Union Pacific at 8-10 (Union Pacific Comments); Comments of the Utilities Technology Council at 4-6 (UTC Comments).

¹¹ Comcast Comments at 11; *see also* Charter Comments at 3-4.

deployments.”¹² WISPA, representing companies that wish to deploy fixed wireless networks including in rural areas, echoes this concern, arguing that large license sizes would “strand investment by small broadband providers and equipment manufacturers . . . , curtail future investment, and dramatically limit diversity of uses.”¹³ Rajant, a private wireless broadband network operator serving large public venues, states that PEA-sized licenses will not be cost effective, and Rajant therefore would either need to look to unlicensed bands, “or forego this innovative application.”¹⁴ Google, a SAS provider, agrees that “[i]mposing only (or primarily) PEA-sized PAL areas would . . . exclude many bidders or drive up their costs unnecessarily, decreasing investment, stifling innovation, and leading to inefficient underutilization of spectrum.”¹⁵

Although the Commission should not view secondary markets as a panacea for correcting too-large license sizes, the record also reflects widespread support for flexible secondary markets rules. For example, many commenters support partitioning and disaggregation, particularly if the Commission adopts license sizes larger than census tracts.¹⁶ Some also urge the Commission

¹² GE Comments at iii.

¹³ WISPA Comments at 25.

¹⁴ Rajant Comments at 4-5.

¹⁵ Google Comments at 5.

¹⁶ *See, e.g.*, Comments of AT&T Services, Inc. at 7-8 (AT&T Comments); NYC Comments at 4; Comments of CTIA at 9-10 (CTIA Comments); Comments of Federated Wireless, Inc. at 5 (Federated Wireless Comments); Comments of Mobile Future at 9-10 (Mobile Future Comments); Comments of Nokia at 4-5 (Nokia Comments); Ruckus Comments at 14; Comments of T-Mobile USA, Inc. at 12 (T-Mobile Comments); Comments of United States Cellular Corporation at 7 (U.S. Cellular Comments); Comments of Verizon at 14-15 (Verizon Comments).

to adopt an even more streamlined approach to light-touch leasing, including through rapid and accurate exchange of information among companies and the Commission facilitated by SASs.¹⁷

The Commission should adopt its proposal to authorize partitioning and disaggregation and should consider other ideas that could promote additional flexibility in secondary market transactions.

III. MANY COMMENTERS SUPPORT A COMPROMISE APPROACH ON LICENSE TERM, SUGGESTING PERIODS BETWEEN FIVE AND SEVEN YEARS

The record suggests that a license term between five and seven years should be sufficient to obtain return on investment, while maintaining low barriers to entry.¹⁸ A seven-year term will both support investment by providing additional certainty to prospective network operators, and strike an appropriate balance between the commenters that seek 10-year terms and those that wish to preserve the existing three-year terms. Moreover, many commenters support the adoption of an expectation of renewal to provide investors with confidence that interference-protected spectrum will remain available for their use in areas where they have deployed networks.¹⁹ As Comcast notes, “[a]n option to renew would significantly improve the business

¹⁷ Federated Wireless Comments at 6-7; *see also* Ruckus Comments at 16-18; Verizon Comments at 15-16.

¹⁸ *See* API & ETEA Comments at 3-4 (suggesting five-year terms); Blooston Comments at 10-11 (suggesting five-year terms); Comcast Comments at 16-22 (suggesting seven-year terms); EWA Comments at 5-6 (suggesting five-year terms); Microsoft Comments at 3-4 (suggesting six-year terms); MSI Comments at 6 (suggesting five-year terms); NTCA Comments at 9-10 (suggesting five-year terms for any county-sized licenses); Ruckus Comments at 3-4, 6-8 (suggesting five-to-seven-year terms).

¹⁹ API & ETEA Comments at 3-4; AT&T Comments at 3; Blooston Comments at 10-11; Comcast Comments at 20; Charter Comments at 4; CTIA Comments at 6-7; Mobile Future Comments at 5-6; Nokia Comments at 2-3; Comments of the Telecommunications Industry

case for initial investment in PALs by removing the uncertainty created by the need to participate in regular auctions to retain priority access.”²⁰

If the Commission does adopt a longer license term with an expectation of renewal, the record also supports adopting performance requirements to promote efficient use of spectrum and discourage warehousing.²¹ Verizon suggests that the Commission need not adopt build-out obligations because opportunistic GAA use “prevents warehousing without the need for performance requirements.”²² Opportunistic GAA users increase overall spectrum utilization, but cannot prevent a licensee from excluding other prospective users with a need for interference protected spectrum. GAA use also does not serve to provide “a clear and expeditious accounting of spectrum use by licensees to ensure that service is indeed being provided to the public,” which is the Commission’s “overriding” purpose in establishing performance requirements.²³ Appropriately tailored performance requirements can ensure that licensees do not warehouse interference protection rights while failing to provide robust service.

Any performance requirements adopted by the Commission should be sufficiently flexible to accommodate the diverse deployments contemplated for the band. As the Commission noted in its Spectrum Frontiers proceeding, a unified performance metric for all

Association at 2; T-Mobile Comments at 4; Union Pacific Comments at 7; U.S. Cellular Comments at 9; Verizon Comments at 4-5.

²⁰ Comcast Comments at 20.

²¹ Charter Comments at 4-5; Comcast Comments at 20; DSA Comments at 11; NYC Comments at 3; NTCA Comments at 9; OTI & PK Comments at 34; Ruckus Comments at 4, 18; T-Mobile Comments at 6-8.

²² Verizon Comments at 7.

²³ *2016 Spectrum Frontiers Order* ¶ 191 (citation omitted).

services in a band that supports a variety of use cases may not “provide the flexibility necessary to support innovative uses of the spectrum, as it would favor one deployment approach over another.”²⁴ The Commission should evaluate the options proposed by commenters and select a requirement or set of requirements that enables operators of a variety of network types to demonstrate compliance.

IV. THE COMMISSION SHOULD PERMIT SASs TO ASSIGN FREQUENCIES DYNAMICALLY

Many commenters favor retaining the current rules authorizing SASs to assign PAL frequencies dynamically rather than permitting licensees to bid on particular blocks of spectrum. The Commission itself has noted that dynamic assignment enables dynamic response to incumbent operations while preserving continuity of service for PAL operators and end users.²⁵ Under the existing rules, if an incumbent user begins operations on an occupied PAL channel, a SAS can relocate those PAL operations to another available channel rather than discontinue them altogether. As several commenters note, static bidding on particular spectrum blocks would undermine this flexibility.²⁶ Others point out that the current rules reduce the risk of “strategic and anti-competitive bidding aimed at denying other operators contiguous channels,” while still providing some certainty for network operators that contiguous channels—in spectrum or geography—will be made available when feasible.²⁷ The Commission has appropriately

²⁴ *Id.* ¶ 203.

²⁵ *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 3985-86 ¶ 81 (2015) (*2015 Order*).

²⁶ See Comcast Comments at 25-26; Microsoft Comments at 8-9; OTI & PK Comments at 35; UTC Comments at 8.

²⁷ See Microsoft Comments at 9; OTI & PK Comments at 34-35; WISPA Comments at 51.

balanced the need for dynamic, flexible assignment in a changing landscape of incumbent users with the stability and predictability that operators seek. It should not now revisit that balance.

If the Commission does authorize bidding on particular PAL frequencies, it should explicitly reject T-Mobile's proposal to grant licensees who have bid on specific channels priority access to GAA spectrum where their assigned channel becomes unavailable due to incumbent operations. Priority access licensees who insist upon static access to a particular channel in a band populated by incumbents with superior rights must accept the consequences when such statically assigned channels become unavailable due to incumbent use. Static channel assignment should not be permitted to alter the careful balance the Commission previously struck between PAL and GAA spectrum. Changes to that balance could reduce economies of scale and overall interest and investment in the band.²⁸

V. UNLESS SIGNIFICANT CONCERNS REGARDING HARMFUL INTERFERENCE TO ADJACENT C-BAND OPERATIONS CAN BE RESOLVED, THE COMMISSION SHOULD NOT ADOPT CHANGES TO THE EMISSION LIMITS

The record reflects concerns from a variety of commenters that any of the proposed changes to the CBSD emission limits would increase the noise from CBRS operations into adjacent C-band spectrum. Adjacent licensees are not protected by a guard band, exclusion zone, or other mitigation mechanism; unless appropriate technical studies demonstrate that the

²⁸ See Comments of Open Technology Institute at the New America Foundation, Institute for Local Self-Reliance, Public Knowledge, and Common Cause, GN Docket No. 12-354, at 16 (filed Aug. 15, 2014); NCTA – The Internet & Television Association Comments on Petitions for Rulemaking, GN Docket No. 12-354, RM-11788, RM-11789, at 13-14 (filed July 24, 2017); Comments of Google Inc. and Alphabet Access In Response to Petitions for Rulemaking, GN Docket No. 12-354, RM-11788, and RM-11789, at 13 (filed July 24, 2017).

emission changes would not cause harmful interference to adjacent operations, the Commission should not adopt such changes.

Comments from users who rely on C-band spectrum consistently warn that proposals to relax the CBSD emission limits would result in additional noise from CBRS operations into adjacent C-band spectrum. For example, the Content Companies note that adopting Qualcomm’s proposed emission limits “could lead to . . . 12 dB of *additional* interference power between 3710 and 3720 MHz. . . . adversely impact[ing] the reception of C-band downlinks.”²⁹ According to their analysis, the more graduated emissions proposal outlined by the Commission would similarly “lead to 5 dB of *additional* interference power between 3710–3720 MHz . . . caus[ing] an unacceptable level of interference in the C-band.”³⁰ The National Association of Broadcasters corroborates this analysis.³¹ Comcast further notes that “[t]he proposed changes on OOB E originating from 20-megahertz or wider channels with edges at the 3700 MHz boundary could lead to harmful interference to C-band operations in the 3700-4200 MHz band,” which in turn “would create new engineering challenges, imposing significant new costs on incumbents in the band.”³² Not only C-band operators, but also incumbent grandfathered wireless stakeholders have expressed concern about harmful interference to their systems as a result of the proposed changes. The Utilities Technology Council, for instance, “urges the Commission to require PALs to comply with more stringent emission limits near the 3650-3700 MHz band so that those

²⁹ Comments of the Content Companies at 7.

³⁰ *Id.* at 8.

³¹ Comments of the National Association of Broadcasters at 4.

³² Comcast Comments at 29.

incumbent grandfathered wireless systems in that part of the 3.5 GHz band are protected from interference.”³³

Proponents of emission limit changes claim, without detailed analysis, that the noise increase in adjacent bands would not cause harmful interference to C-band systems.³⁴ However, because the Commission did not adopt a guard band, exclusion zone, or other mitigation mechanism to protect adjacent licensees, it must demand much more rigorous technical analysis demonstrating that the proposed emission limits would not cause harmful interference to adjacent C-band incumbents before adopting any changes.

Finally, it would be premature for the Commission to consider relaxing the -40 dBm/MHz limit designed to protect adjacent operations, as Qualcomm suggests.³⁵ Although the Commission has sought comment in its mid-band spectrum Notice of Inquiry on opportunities for expanded terrestrial wireless use of the 3.7-4.2 GHz band, extensive comments in that proceeding highlight the importance of existing C-band operations and the technical challenges to enabling mobile use.³⁶ The -40 dBm/MHz limit will remain a necessary tool to ensure that adjacent 3.5 GHz operations do not cause harmful interference to C-band downlinks.

³³ UTC Comments at 2.

³⁴ *See, e.g.*, Comments of Qualcomm Incorporated at 5-6 (providing a table purporting to show “that channels at the band edge are dominated by the -40 dBm/MHz limit” and that therefore “revision of the emissions limits as proposed in the NPRM would not impact these adjacent band operations”) (Qualcomm Comments); Nokia Comments at 6-10.

³⁵ Qualcomm Comments at 8-9.

³⁶ *See, e.g.*, Comments at NCTA – The Internet & Television Association, GN Docket No. 17-183, at 2-5 (filed Oct. 2, 2017); Reply Comments of NCTA – The Internet & Television Association, GN Docket No. 17-183, at 3-11 (filed Nov. 15, 2017).

VI. CONCLUSION

The Commission should adopt county-sized licenses and seven-year terms as a reasonable middle-ground approach that would balance the needs of new entrants and established, nationwide carriers while encouraging maximum investment from all parties. It should preserve its current rules enabling a SAS to assign frequencies dynamically. Finally, the Commission should not adopt changes to the emission limits unless technical studies demonstrate that such changes will not cause harmful interference to adjacent C-band operations.

Respectfully submitted,

/s/ Rick Chessen

Jill M. Lockett
Senior Vice President
Program Network Policy

William A. Check, Ph.D.
Senior Vice President & CTO
Technology

Andy Scott
Vice President Engineering

January 29, 2018

Rick Chessen
Danielle J. Piñeres
NCTA – The Internet & Television Association
25 Massachusetts Avenue, NW – Suite 100
Washington, DC 20001-1431
(202) 222-2445