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

In the Matter of

Use of the 5.850-5.925 GHz Band	)	ET Docket No. 19-138

REPLY COMMENTS OF DYNAMIC SPECTRUM ALLIANCE

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REPLY COMMENTS

The Dynamic Spectrum Alliance ("DSA")[1] is pleased to submit these Reply Comments in support of the Federal Communications Commission's ("FCC" or "Commission") Notice of Proposed Rulemaking on the 5.9 GHz band (NPRM).[2] As the DSA stated in its initial comments, our members strongly support the Commission's proposal to reallocate at least 45 MHz of the 5.9 GHz band for unlicensed use, thereby enabling a new high-capacity 80 MHz channel and a new high-capacity 160 MHz channel for unlicensed use.

The record demonstrates that a diverse range of stakeholders likewise support reallocating at least 45 MHz in the 5.9 GHz band for unlicensed use.[3] These commenters agree the Commission should move expeditiously to repurpose this virtually unused spectrum to fuel next generation Wi-Fi networks and other unlicensed services. Creating the first and only unencumbered 160 MHz channel available for Wi-Fi 6 at standard power, both outdoors and indoors, will be a huge boost not only to home and enterprise connectivity, but also for boosting the capacity and availability of fixed wireless services in rural and other underserved areas almost immediately. A number of parties also support

[1] The Dynamic Spectrum Alliance is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of the DSA members is available on the DSA's website at www.dynamicspectrumalliance.org/members/.

[2] *See Use of the 5.850-5.925 GHz Band*, Notice of Proposed Rulemaking, ET Docket No. 19-138, FCC 19-129 (released December 17, 2019) ("NPRM"). All citations herein to comments are to submissions in ET Docket No. 19-138, filed on March 9, 2020.

[3] *See, e.g.*, Comments of Wireless Internet Service Providers Assn. at 3-4 ("Comments of WISPA"); Comments of the Wi-Fi Alliance at 2; Comments of the Free State Foundation ("Comments of Free State") at 3; Comments of NCTA – The Internet & Television Association ("Comments of NCTA") at 20; Comments of the Open Technology Institute and Public Knowledge at 6 ("OTI and PK"); Comments of Broadcom, Inc. and Facebook, Inc. ("Comments of Broadcom and Facebook") at 1; Comments of Comcast Corporation ("Comments of Comcast") at 2: Comments of the Center for Growth and Opportunity at Utah State University at 3-4 ("Center for Growth and Opportunity"); Comments of the R Street Institute ("Comments of R Street") at 3; Comments of the Dynamic Spectrum Alliance ("Comments of the DSA") at 4.

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OTI and PK's proposal that the Commission go further and achieve a bigger win-win for consumers by relocating Cellular V2X (CV2X) to a new and better band, thereby enabling both a contiguous Wi-Fi superhighway and giving CV2X innovators potentially more spectrum in a 5G-friendly band not sandwiched between heavily-trafficked Wi-Fi bands.

The DSA would like to highlight three important issues in the record:

First, the DSA emphasized in its initial comments that the Commission's proposal to reallocate 45 MHz for unlicensed immediately contiguous to the U-NII-3 band has the unique benefit of creating a new 80 MHz and 160 MHz channels for unlicensed use that are not encumbered by Dynamic Frequency Selection, by geolocation database coordination, or by indoor-only, low-power limitations.[4] The Commission's proposal to extend the heavily-utilized U-NII-3 band to create the *first and only* unencumbered, contiguous channel of 160 MHz available for use at standard power is of enormous consequence for consumers, businesses, schools, and internet access nationwide.[5]

Facebook and Broadcom explain that "[w]hen combined with the existing, adjacent spectrum available in U-NII-3, the U-NII4 band will allow next generation Wi-Fi standards, such as Wi-Fi 6, to be deployed in the band. Wi-Fi 6 is intended to be deployed over wider channels to support

[4] Comments of the DSA at 2.
[5] *See, e.g.*, Comments of OTI and PK at 3 ("Critically for U.S. consumers and businesses, reallocating the lower 45 megahertz of the 5.9 GHz band for unlicensed use would create the first and only gigabit-capable Wi-Fi channel that is not subject to the detect-and-avoid requirements that have hobbled the U-NII-2 band").

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gigabit connectivity, lower latency, improved coverage and power efficiency."[6] NCTA likewise agrees that authorizing unlicensed use of the nearly contiguous U-NII-3, 5.9 GHz, and the 6 GHz bands "would 'optimize the efficient and effective use' of spectrum."[7] WISPA correctly observes that rural and small town areas would benefit the most, since this unencumbered 160 MHz would "permit higher-EIRP fixed wireless operations that will enable use of the 5.9 GHz band for rural broadband deployment, including both outdoor point-to-point operations and point-to-multipoint operations."[8] The DSA also generally agrees with the Center for Growth and Opportunity that facilitating this unique, unencumbered, gigabit-fast channel could generate unique benefits for the economy: "A contiguous block of unlicensed frequencies would allow for wide channels and greater throughput which would result in greater efficiency compared to many isolated bands even if they total the same bandwidth when aggregated."[9]

Some parties attempt to diminish the benefits of unlicensed use of this 45 MHz by claiming that the Commission has already authorized a sufficient amount of spectrum in other bands for unlicensed operations.[10] Contrary to suggestions that this 45 MHz is of marginal importance to America's 5G wireless ecosystem, the lower portion of the 5.9 GHz spectrum will make a uniquely valuable contribution to the unlicensed broadband ecosystem not because of its quantity, but because of its location and unencumbered capability. As WISPA, Comcast and NCTA point out, this

[6] Comments of Broadcom and Facebook at 2.
[7] *See* 5.9 GHz NPRM ¶ 63.
[8] Comments of WISPA at 6.
[9] Comments of the Center for Growth and Opportunity at 4.
[10] Comments of AT&T at 15-16; Comments of 5GAA at 37-39; Comments of Qualcomm at 17; Comments of Consumer Reports at 9; Comments of T-Mobile at 5 (the U.S. "is an outlier in making substantially more spectrum available on an unlicensed and shared basis than other countries.").

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additional 45 MHz can immediately and inexpensively extend the adjacent U-NII-3 band using existing equipment.[11]

Second, we emphasized in our initial comments that it is critical to adopt uniform technical rules across the entire U-NII-3 and U-NII-4 bands and, in particular, to ensure that IEEE 802.11 compliant devices will be able to meet the out-of-band-emissions (OOBE) limit at the upper frequency edge of the ITS segment without a dramatic reduction in power.[12] The DSA strongly agrees with the Wi-Fi Alliance, Microsoft and many other parties that the Commission seeks to keep the limits low and at a level that provides the sort of robust, standard-power use of Wi-Fi 6 that operators and consumers enjoy today on the U-NII-3 band.[13] The DSA strongly agrees with the Wi-Fi Alliance that "[i]f different power levels or other technical rules for the two bands are adopted, U-NII devices will not be able to operate across both the U-NII-3 and U-NII-4 bands, eliminating the potential use of wider channels, equipment commonality, reduced cost and complexity, superior performance and other benefits that may be realized by the Commission's proposal."[14]

The DSA concurs with Broadcom and Facebook "no special mitigation techniques or stringent OOBE limits are required" at the band edge to protect future ITS operations.[15] Broadcom

[11] Comments of NCTA at 16; Comments of WISPA at 5-6; Comments of Comcast at 8 ("Much of the Wi-Fi equipment deployed today and operating in the widely used U-NII-3 band at 5.8 GHz could bring consumers access to the 5.9 GHz spectrum with only software or firmware updates, a benefit that would not be possible in any other band.").
[12] *See* Comments of the DSA at 4.
[13] Comments of Microsoft at 4; Comments of Comcast at 10-11; Comments of Broadcom and Facebook at 2; Comments of WISPA at 6; Comments of Wi-Fi Alliance at 6-8 ("Therefore, Wi-Fi Alliance proposes the following OOBE limits for U-NII transmitters operating solely in the U-NII-4 band or operating across the U-NII-3 and U-NII-4 bands: For an indoor device, all emissions at or above 5.925 GHz shall not exceed an EIRP of −7 dBm/MHz increasing linearly to 15 dBm/MHz at 5.895 GHz. For an outdoor device, all emissions at or above 5.925 GHz shall not exceed an EIRP of −27 dBm/MHz increasing linearly to -5 dBm/MHz at 5.895 GHz.").
[14] *Ibid.*
[15] Comments of Broadcom and Facebook at 2.

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and Facebook point to a study by CableLabs which found that RLAN operation up to the ITS band edge in UNII-4 would result in only a "0.002% probability that Wi-Fi operations would cause adjacent channel DSRC packet error rates (PER) to reach 10%."[16]

Finally, there is strong support in the record for moving V2X safety operations to the lightly used 4.9 GHz band, if feasible, or to some other low- or mid-band spectrum.[17] The DSA continues to believe that within the 4.9 GHz band, Cellular V2X in particular would have a clear path to reach a total 50 MHz of spectrum, allowing it to evolve toward 5G. This is entirely feasible considering that CV2X, although the likely standard of the future, remains in development and testing. The underutilized 4.9 GHz band could initially accommodate a 20 MHz channel for CV2X basic safety messaging – both among vehicles and roadside infrastructure. Over time the 4.9 GHz band could provide the additional spectrum needed to expand safety functions integrated with mobile 5G networks. If the Commission were to keep any DSRC in the 5.9 GHz, it should be a single 10 MHz channel for basic safety messages for V2V applications.

There are also technical reasons to separate the two services that both optimize the public interest in robust unlicensed services and the ability of CV2X safety communications to evolve in a quieter spectral environment. Soon the two primary bands for 5G-quality Wi-Fi 6 connectivity will

[16] *Id.* at 4-5; Letter from Paul Margie, Counsel for NCTA—The Internet & Television Association, to Marlene H. Dortch, FCC, Secretary, ET. Docket 13-49 (June 28, 2017). *See* also Comments of WISPA at 6 ("WISPA recommends that the Commission adopt the existing U-NII-3 slope that has governed out-of-band emissions into the 5.850-5.925 GHz band, but should truncate the slope at 5.895 GHz, now that it will be the upper edge of the U-NII-4 band.").
[17] *See, e.g.*, Comments of NCTA at 19-20; Comments of OTI and PK at 22-27; Comments of Center for Growth and Opportunity at 3-4 ("Other bands would provide the same, if not better, connectivity for ITS services"); Comments of R Street at 10-11; Comments of the DSA at 6.

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be immediately adjacent to the 5.9 GHz band (one above and one below). The DSA agrees with NCTA that opening the entire 5.9 GHz band would eliminate "the need for OOBE limits to protect an island of ITS spectrum in an area zoned for unlicensed use. U-NII-3, U-NII-4, and U-NII-5 could all operate at efficient power levels that maximize throughput for consumers. Access points and client devices would be more effective and less expensive, as there would be less need for expensive filters and other techniques to comply with OOBE limits to protect ITS operations."[18] Relocation of V2X operations would also completely address the concerns expressed by automakers about potential interference as hundreds of millions of Wi-Fi and other unlicensed devices make productive use of the 80 and 160 MHz channels newly available both above and below the ITS band.

Finally, the Commission should reject arguments by 5GAA and some other V2X proponents that there is more than enough unlicensed spectrum available in other bands because of the agency's recent decision to open the 6 GHz band for unlicensed access.[19] As noted above, in deciding whether and how much ITS spectrum to reallocate for unlicensed use, the most important factor is not the overall quantity but rather the band's location and technical characteristics in relation to the U-NII-3 and U-NII-5 bands. Reallocating all 75 MHz creates a contiguous band for Wi-Fi 6 – and future unlicensed innovation – with more robust technical characteristics. Contiguous access to unlicensed spectrum from U-NII-3 up to and across the entire 6 GHz band is a far more potent and versatile

[18] Comments of NCTA at 16.
[19] Comments of 5GAA at 39 ("In sum, whether considered on its own or in tandem with the other unlicensed spectrum discussed above, there very well may be more than sufficient spectrum available for new Wi-Fi and unlicensed uses without infringing upon the 5.9 GHz band.").

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approach to meeting the evolution of demand by both consumers and enterprises for very high-bandwidth, low-latency and better-quality wireless connectivity able to connect anything and everything at an affordable cost.

Respectfully submitted,

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