

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of )  
 )  
Facilitating Shared Use in the 3100-3550 MHz ) WT Docket No. 19-348  
Band )  
 )

**COMMENTS OF T-MOBILE USA, INC.**

Steve B. Sharkey  
John Hunter

T-MOBILE USA, INC.  
601 Pennsylvania Avenue, N.W.  
Suite 800  
Washington, DC 20004  
(202) 654-5900

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T-Mobile USA, Inc. (“T-Mobile”)<sup>1/</sup> submits these comments in response to the *Report and Order and Further Notice of Proposed Rulemaking (“Order and FNPRM”)* in the above-referenced proceeding proposing to make the 3.45-3.55 GHz band available for flexible-use wireless services.<sup>2/</sup> T-Mobile appreciates the efforts of the Commission and the Administration, through the America’s Mid-Band Initiative Team (“AMBIT”) process, to make more mid-band spectrum available and strongly supports the Commission’s proposal to reallocate the 3.45-3.55 GHz band for commercial operations. The AMBIT process appropriately proposes to make as much spectrum as possible, in as many areas as possible, available for exclusive full-power commercial use, with continued federal incumbent operations through parameters established cooperatively between industry and government. That framework should be used to free additional spectrum throughout the 3.1-3.45 GHz band for commercial terrestrial wireless operations to support the deployment of Fifth Generation (“5G”) wireless networks.

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<sup>1/</sup> T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company. T-Mobile and Sprint are now one company operating under the name T-Mobile. The merger closed on April 1, 2020.

<sup>2/</sup> See *Facilitating Shared Use in the 3100-3550 MHz Band*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 11078 (2020) (“*Order and FNPRM*”).

## I. INTRODUCTION AND SUMMARY

T-Mobile applauds the actions the Commission has taken so far to repurpose the 3.45-3.55 GHz band for commercial operations. As the Commission observes, the *Order and FNPRM* is another step in the Commission's comprehensive strategy to Facilitate America's Superiority in 5G Technology.<sup>3/</sup> T-Mobile urges the Commission to maintain momentum and evaluate not only proposals for the 3.45-3.55 GHz band, but also to take steps to designate as much of the 3 GHz band as possible for exclusive commercial use. As T-Mobile previously explained,<sup>4/</sup> making spectrum throughout the 3.1-3.55 GHz band available for commercial wireless services would help secure U.S. leadership in the deployment of 5G wireless networks. It would also be consistent with international efforts and create a pipeline of much needed mid-band spectrum.

The Commission should maximize carriers' ability to use any spectrum in the 3 GHz band that is designated for commercial operations for 5G services to the greatest extent possible. While T-Mobile appreciates that federal operations will need to continue in the 3.45-3.55 GHz band (and potentially other portions of the 3 GHz band), the Commission and NTIA should minimize the impact of those operations by, among other things, conducting a rigorous assessment of federal needs and ensuring that potential interference scenarios are evaluated based on the reasonably-anticipated architecture of future terrestrial wireless networks as well as realistic protection criteria for federal systems, and ultimately based on actual carrier deployment. The already-initiated industry/government process of assessing the parameters of Cooperative Planning Areas ("CPAs") and Periodic Use Areas ("PUAs") should continue in

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<sup>3/</sup> FCC, *The FCC's 5G Fast Plan*, <https://www.fcc.gov/5G> (last visited Nov. 2, 2020).

<sup>4/</sup> See Comments of T-Mobile USA, Inc., WT Docket No. 19-348 (filed Feb. 21, 2020) ("T-Mobile 3.1-3.55 GHz Comments").

order to produce a clear understanding of the scope and nature of those areas well in advance of an auction of the 3.45-3.55 GHz spectrum. Moreover, the Commission should assess whether, based on existing law and regulation, further action is necessary to ensure that federal agencies have access to the 3.45-3.55 GHz band for National Emergencies.

The Commission should limit non-federal incumbent use of the 3.45-3.55 GHz band as much as possible by relocating all radiolocation and amateur use out of the band by a date certain. As secondary users, radiolocation and amateur operators should have no expectation that they may remain in the band or to receive compensation for relocating their operations. While amateur operators may need additional time to relocate, the Commission should make it clear now that all amateur users will eventually be relocated and at their own cost.

The Commission should adopt a band plan and licensing rules generally consistent with the 3.7-4.2 GHz band (“C-band”), to maximize flexible, full power-commercial use of the 3.45-3.55 GHz band. Specifically, the Commission should license the spectrum in unpaired, 10-megahertz blocks on a Partial Economic Area (“PEA”) basis, potentially including areas beyond the contiguous United States (“CONUS”). The Commission need not adopt a guard band or a time division duplexing (“TDD”) synchronization requirement, and should make clear that application of the spectrum screen is unnecessary for greenfield spectrum auctions.

## **II. THE COMMISSION SHOULD PLAN FOR COMMERCIAL OPERATIONS IN THE FULL 3 GHz BAND**

### **A. The Commission Should Reallocate as Much of the 3100-3550 MHz Band as Possible for Commercial Services**

The Commission proposes to make the 3.45-3.55 GHz band available for flexible-use wireless services and seeks comment on whether commercial operations are feasible below 3.45 GHz, particularly in the 100 megahertz between 3.35 GHz and 3.45 GHz, at the same power

levels proposed for the 3.45-3.55 GHz band.<sup>5/</sup> T-Mobile appreciates government efforts to date, including the AMBIT study process, to identify and make the 3.45-3.55 GHz band available for commercial operations and supports adding a co-primary, non-federal fixed and mobile (except aeronautical mobile) allocation to the band to allow for those operations. Doing so is an appropriate and necessary step to unlocking valuable mid-band spectrum in the 3 GHz band for next-generation 5G services.

T-Mobile also strongly supports making spectrum below 3.45 GHz, including but not limited to the 3.35-3.45 GHz band, available for commercial wireless services. But the Commission should not limit its evaluation to the 3.45-3.55 GHz band or even the 3.35-3.45 GHz band. The Commission, along with NTIA, should continue working together to identify as much as of the 3 GHz band as possible for exclusive, commercial wireless use. To the extent federal users require continued access to the 3.1-3.45 GHz band in general, or the 3.35-3.55 GHz band in particular, NTIA, the Commission, and industry should engage in the precise type of processes that has occurred already through the AMBIT study and that is now ongoing with respect to the 3.45-3.55 GHz band. Accordingly, as noted below, DoD Transition Plans for the 3.45-3.55 GHz band should avoid, to the extent feasible, relocating operations to elsewhere in the 3.1-3.45 GHz band. If vacating the 3.1-3.45 GHz band is not feasible, then operations should be consolidated in the lower part of the band so that at least the 3.35-3.45 GHz band can be made widely available for commercial wireless terrestrial operations.

*First*, while the Commission's and NTIA's efforts to identify and make additional spectrum available for terrestrial wireless services have been meaningful, the critical need for mid-band spectrum to support 5G networks remains. The U.S. has made less mid-band spectrum

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<sup>5/</sup> *Order and FNPRM ¶ 38.*

available in comparison to other countries.<sup>6/</sup> And at least some of the mid-band spectrum that is available has limited utility.<sup>7/</sup> Making available additional mid-band spectrum in the 3 GHz band should be a priority for the U.S. to stay competitive with its global counterparts in the race to 5G. As the Commission recognizes, continued technological developments make 3 GHz spectrum ideal for next-generation wireless services, including 5G.<sup>8/</sup>

*Second*, making as much of the 3 GHz band available for commercial wireless services is consistent with international efforts to globally harmonize use of the band. As the Commission recognizes, “[t]here has . . . been a broad and consistent effort by international governing bodies and global standards setting organizations to review the suitability of several frequency bands for next generation 5G wireless services, including the lower 3 GHz band.”<sup>9/</sup> For example, several countries, including France, Hong Kong, and Canada have auctioned, or noted their intent to auction, spectrum in the 3 GHz band for commercial wireless use.<sup>10/</sup> The 3rd Generation Partnership Project’s Release 16 has identified both the 3300-4200 MHz band (band n77) and the 3300-3800 MHz band (band n78) for 5G NR.<sup>11/</sup> And, as of the 2019 World

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<sup>6/</sup> See Analysys Mason, *5G Mid-Band Spectrum Global Update*, at 3-5 (Mar. 2020), <https://api.ctia.org/wp-content/uploads/2020/03/5G-mid-band-spectrum-global-update-march-2020.pdf>.

<sup>7/</sup> As T-Mobile has previously explained, the 70 megahertz of spectrum that has been made available in the 3.5 GHz band has technical limitations that impede its full utility. See T-Mobile 3.1-3.55 GHz Comments at 3.

<sup>8/</sup> *Order and FNPRM* ¶ 3.

<sup>9/</sup> *Id.* ¶ 13.

<sup>10/</sup> See Press Release, *Auction for the Award of 3.4-3.8 GHz Spectrum is Closed*, Arcep (Oct. 1, 2020), [https://en.arcep.fr/fileadmin/cru-1604308075/user\\_upload/44-20-english-version.pdf](https://en.arcep.fr/fileadmin/cru-1604308075/user_upload/44-20-english-version.pdf); Press Release, *Successful Conclusion of Auction of 5G Spectrum in 3.3 GHz Band*, Office of the Communications Authority – The Government of the Hong Kong Special Administration Region (Nov. 6, 2019), [https://www.ofca.gov.hk/en/media\\_focus/press\\_releases/index\\_id\\_2023.html](https://www.ofca.gov.hk/en/media_focus/press_releases/index_id_2023.html); *3500 MHz Band Spectrum Auction*, Government of Canada, <https://www.canada.ca/en/innovation-science-economic-development/news/2020/03/3500-mhz-band-spectrum-auction.html> (last visited Nov. 6, 2020).

<sup>11/</sup> See Ericsson, *3GPP Spectrum Bands: 3GPP Release 16*, at 1 (July 31, 2019), <https://www.ericsson.com/4a341b/assets/local/policy-makers-and-regulators/190731-3gpp-spectrumbands.pdf>; White House Office of Science and Technology Policy, *Emerging Technologies and Their Expected Impact on*

Radiocommunication Conference (“WRC-19”), 76 countries have designated, through ITU Radio Regulations Footnotes, the 3300-3400 MHz band for mobile services on a primary basis and/or identified the 3300-3400 MHz band for IMT under specified conditions.<sup>12/</sup> In addition, the 3300-3400 MHz band is being studied internationally for potential new regional mobile allocations and IMT identifications at the next World Radiocommunication Conference in 2023.<sup>13/</sup>

*Third*, indicating now that the full 3 GHz band is under consideration for commercial operations will help promote long-term spectrum planning. Identifying this spectrum as a target for commercial use will encourage federal users to begin the process of identifying spectrum outside of the 3 GHz band or other alternatives for their operations.<sup>14/</sup> And that evaluation may be funded through the Commercial Spectrum Enhancement Act (“CSEA”).<sup>15/</sup> Early identification of spectrum that may be reallocated and funded by the CSEA will also fulfill Congressional intent to facilitate the assessment and ultimate reallocation of federal spectrum.<sup>16/</sup>

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*Non-Federal Spectrum Demand*, at Appendix D (May 2019), <https://www.whitehouse.gov/wp-content/uploads/2019/05/Emerging-Technologies-and-Impact-on-NonFederal-Spectrum-Demand-Report-May-2019.pdf>.

<sup>12/</sup> See ITU-R, Provisional Final Acts, World Radiocommunication Conference 2019 (WRC-19), at 32-33 (2019), <https://www.itu.int/en/ITU-R/conferences/wrc/2019/Documents/PFA-WRC19-E.pdf>; see also *NPRM* ¶ 13 (noting that “[t]he International Telecommunication Union (ITU) has allocated portions of the 3 GHz band for fixed and mobile use in all three ITU regions”).

<sup>13/</sup> See Agenda for the 2023 World Radiocommunication Conference, [https://www.fcc.gov/sites/default/files/wrc-23\\_agenda.pdf](https://www.fcc.gov/sites/default/files/wrc-23_agenda.pdf).

<sup>14/</sup> Indeed, as noted below, federal users should avoid using the 3.1-3.45 GHz band in general and the 3.35-3.45 GHz band in particular in their Transition Plans to accommodate relocation from the 3.45-3.55 GHz band.

<sup>15/</sup> See 47 U.S.C. § 923(g)(1)-(2). The CSEA allows agencies to receive funding for spectrum-related research and development.

<sup>16/</sup> See, e.g., Consolidated Appropriations Act of 2018, Division P, Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018, Pub. L. No. 115-141, § 603(a)(6), 132 Stat. 1080 (2018) (MOBILE NOW Act).

T-Mobile recognizes that NTIA’s July 2020 Report noted that spectrum below 3.45 GHz may become even more congested if some federal operations are shifted down from above 3.45 GHz.<sup>17/</sup> But that is all the more reason why options other than the 3.1-3.55 GHz band should be considered for federal incumbent relocation.<sup>18/</sup> Indeed, as NTIA has acknowledged, “[d]ue to the unique challenges with sharing the spectrum used by the nationwide airborne systems, it would be useful to study the potential to relocate the systems to another band altogether.”<sup>19/</sup> That is why, as noted above, when federal agencies prepare their Transition Plans for the 3.45-3.55 GHz band, they should seek to avoid use of the 3.1-3.45 GHz band in general and the 3.35-3.45 GHz band in particular. As the Commission and NTIA appropriately continue to evaluate whether other segments of the 3.1-3.45 GHz band may be transitioned to terrestrial wireless operations, they should not be hamstrung by federal Transition Plans that block those options.

Moreover, a clear indication that the full 3 GHz band is under consideration for commercial operations would be consistent with the recent Request for Information released by the Department of Defense (“DoD”), which suggests that DoD itself is contemplating how the

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<sup>17/</sup> See Wilber L. Ross, *et al.*, Feasibility of Commercial Wireless Services Sharing with Federal Operations in the 3100- 3550 MHz Band at 1 (July 2020), [https://www.ntia.doc.gov/files/ntia/publications/ntia\\_3100-3550\\_mhz\\_mobile\\_now\\_report\\_to\\_congress.pdf](https://www.ntia.doc.gov/files/ntia/publications/ntia_3100-3550_mhz_mobile_now_report_to_congress.pdf) (“NTIA July 2020 Report”).

<sup>18/</sup> See T-Mobile 3.1-3.55 GHz Comments at 2. As T-Mobile previously explained, because there are federal radar systems in the 3.1-3.3 GHz band, adding secondary non-federal operations to that band will only make its use for commercial wireless services more complex. *Id.* T-Mobile recognizes that relocating radar operations out of the 3.1-3.45 GHz band altogether may not be feasible because of the lack of alternative spectrum, but those operations should at least be consolidated to facilitate the reallocation of as much of the band as possible.

<sup>19/</sup> Edward Drocella *et al.*, Technical Feasibility of Sharing Federal Spectrum with Future Commercial Operations in the 3450-3550 MHz Band, NTIA Technical Report 20-546 at x (Jan. 2020), <https://www.its.bldrdoc.gov/publications/download/TR-20-546.pdf> (“NTIA January 2020 Report”).

3.1-3.55 GHz band can be made available for commercial 5G services.<sup>20/</sup> As T-Mobile explained to DoD, rather than utilize the 3.1-3.55 GHz band for a separate 5G network, the band should be reallocated for commercial use if it (or any other federal spectrum) is not fully employed on a nationwide basis.<sup>21/</sup> T-Mobile also explained that where federal operations still require spectrum use (whether on a continuous or periodic basis), those requirements can be met through mechanisms like those the Commission adopted in other contexts and is contemplating for the 3.45-3.55 GHz band.<sup>22/</sup>

Accordingly, consistent with DoD's stated needs, the Commission should make clear its intention to cooperate with NTIA to designate some or all of the 3.1-3.55 GHz band for commercial use. Making as much of the 3 GHz band available for commercial services would not only benefit consumers, but it could also result in federal users, like DoD, securing quicker access to 5G services by permitting commercial networks to deploy spectrum that, in turn, could be used by DoD.

If additional 3 GHz band spectrum is reallocated for commercial operations, it should be made available at the same power levels as the 3.45-3.55 GHz band. Not only would adopting the same power levels allow for consistency across the 3 GHz band, but permitting greater power levels would allow for full commercial operations. As T-Mobile has explained, lower transmit

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<sup>20/</sup> See *Defense Spectrum Sharing*, Notice; Request for Information, Department of Defense (Sept. 18, 2020), [https://beta.sam.gov/opp/4851a65e2b2d4d73865a0e9865b0c28a/view?keywords=dod&sort=-modifiedDate&index=&is\\_active=true&page=1](https://beta.sam.gov/opp/4851a65e2b2d4d73865a0e9865b0c28a/view?keywords=dod&sort=-modifiedDate&index=&is_active=true&page=1).

<sup>21/</sup> See Comments of T-Mobile USA, Inc., Department of Defense Request for Information on Spectrum Sharing, at 10-13 (filed Oct. 19, 2020) ("T-Mobile DoD RFI Comments").

<sup>22/</sup> See *id.* at 14-15.

power levels, such as those adopted for the 3.5 GHz band, can limit a spectrum band’s utility for 5G services.<sup>23/</sup>

**B. The Commission Should Reject Dynamic Spectrum Sharing in the 3.1-3.55 GHz Band**

Consistent with the MOBILE NOW Act, the Commission seeks comment on the assessment contained in NTIA’s July 2020 Report regarding the feasibility of permitting commercial wireless terrestrial operations in portions of the 3.1-3.55 GHz band.<sup>24/</sup> In that report, NTIA concluded that a dynamic, time-based sharing mechanism is required and that “alternative approaches to sharing would be unproductive because the incumbent federal systems operate across the entire band and in or near populated areas, making static frequency-based and geographic-based sharing approaches of minimal practical value . . . .”<sup>25/</sup> To implement this, the Report says that DoD will examine the development of “an automated, real-time, incumbent-informing spectrum sharing system . . . that NTIA would operate in conjunction with DoD to notify commercial entities when the latter would need to cease operations.”<sup>26/</sup>

This approach is ineffective for the shared use of spectrum between federal operations and commercial terrestrial wireless operations and should be rejected. T-Mobile is therefore encouraged that the AMBIT plan incorporated in the *Order and FNPRM* appears to have abandoned this approach. As T-Mobile has explained, carriers require reliable and predictable access to spectrum to deliver the high-quality service that businesses and consumers need and

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<sup>23/</sup> See, e.g., Reply Comments of T-Mobile USA, Inc., ET Docket No. 18-295, GN Docket No 17-183, at 4 (filed Mar. 18, 2019).

<sup>24/</sup> See *Order and FNPRM* ¶ 44.

<sup>25/</sup> NTIA July 2020 Report at 9.

<sup>26/</sup> *Id.* at 11.

have come to expect from wireless carriers.<sup>27/</sup> Accordingly, the Commission should not prescribe the use of a sensing or notification-based mechanism to coordinate federal and non-federal operations.<sup>28/</sup> Mandated dynamic or automated spectrum sharing approaches are antithetical to carrier network planning and spectrum management, and the development of sharing protocols is time consuming.<sup>29/</sup> Moreover, when making spectrum available through auction, a Commission announcement that spectrum *may* be available through dynamic mechanisms is meaningless and will create a diminished, if any, level of interest in the potentially auctioned spectrum.

While the Commission has used automated databases for shared access in other spectrum bands like the 3.5 GHz band, those circumstances were unique. In that case, the Commission adopted rules incorporating database-driven access to the 3.5 GHz band as a compromise to allow the band to accommodate a diverse range of services, some of which could not be relocated and some of which were grandfathered for a certain period of time.<sup>30/</sup> Here, as the AMBIT plan demonstrates, incumbent operations in the 3 GHz band can generally be relocated or protected through agreements between DoD and carriers. Automated spectrum access mechanisms should be the exception and not the rule when facilitating commercial access to a band, particularly in this case where a global ecosystem is being built around exclusive full-

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<sup>27/</sup> See T-Mobile DoD RFI Comments at 11.

<sup>28/</sup> *Order and FNPRM* ¶ 51.

<sup>29/</sup> T-Mobile DoD RFI Comments at 15.

<sup>30/</sup> See *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 (2015) (“*2015 3.5 GHz Order*”).

power commercial use and standardization efforts are well underway internationally for 3GPP band 77.<sup>31/</sup>

**C. Federal Incumbent Use of the 3450-3550 MHz Band Should be Consistent with the Results of the AMBIT Process**

The Commission proposes that non-federal systems in the 3.45-3.55 GHz band would not be entitled to protection against harmful interference from federal operations: (i) in DoD-identified CPAs, in which federal operations would continue after the assignment of flexible-use licenses (*e.g.*, at military training facilities, test sites, Navy home ports, and shipyards); (ii) in DoD-identified PUAs, in which DoD will need episodic access to all or a portion of the band in identified, limited geographic areas; and (iii) during times of National Emergency.<sup>32/</sup> The Commission seeks comment on the proposed coordination regime, including when commercial licensees would be notified of DoD’s periodic use, whether cooperative agreements between federal and non-federal users further increase the commercial utility of the spectrum in those areas, and what constitutes a National Emergency.<sup>33/</sup>

Unlike the sharing approach envisioned by NTIA’s July 2020 Report, the plan outlined in the September 2020 letter from NTIA to Commission staff will provide more certain access to

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<sup>31/</sup> Indeed, the U.S. will be an outlier with respect to the use of dynamic spectrum sharing in the 3 GHz band. For example, Canadian regulators have proposed to auction 20 unpaired blocks of 10 megahertz each within 3450-3650 MHz to provide a channel spacing size supported by both 4G Long Term Evolution (“LTE”) and 5G New Radio (“NR”) equipment. *See 3500 MHz Band Spectrum Auction*, Innovation, Science and Economic Development Canada, <https://www.canada.ca/en/innovation-science-economic-development/news/2020/03/3500-mhz-band-spectrum-auction.html> (last modified June 5, 2020); *SRSP-520 — Technical Requirements for Fixed and/or Mobile Systems, Including Flexible Use Broadband Systems, in the Band 3450-3650 MHz*, Innovation, Science and Economic Development Canada, <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11619.html> (last modified July 28, 2020).

<sup>32/</sup> *See Order and FNPRM ¶¶ 45-46.*

<sup>33/</sup> *See id.* ¶¶ 46-53.

the 3.45-3.55 GHz band.<sup>34/</sup> T-Mobile is encouraged that NTIA’s September 2020 Letter has characterized the intent of the AMBIT plan as “an initiative to make the 100 megahertz of spectrum between 3450 MHz and 3550 MHz available for full-power commercial use to the maximum extent possible . . .” and that DoD has “agreed to minimize operations in the 3450-3550 MHz band to the extent possible.”<sup>35/</sup> It particularly applauds DoD’s efforts to make *some* spectrum available in locations where not all of the 3.45-3.55 GHz band may be designated for commercial terrestrial wireless use.<sup>36/</sup>

The plan outlined in NTIA’s September 2020 Letter is the right approach because it contains the following components, in addition to DoD’s commitment to maximize spectrum availability, that will be critical to the successful sharing of the 3.45-3.55 GHz band. *First*, it recognizes that DoD should consider relocating some operations to other spectrum. For example, NTIA’s September 2020 Letter notes that due to the unique propagation of electromagnetic spectrum over water, known as ducting, the Navy plans to develop shipborne radar capabilities to reduce operational use of the 3450-3550 MHz band and operate in another band.<sup>37/</sup> Similarly, NTIA’s September 2020 Letter reports that the U.S. Air Force plans to replace its Station Keeping Equipment system, which enhances flight safety and facilitates the formation flight of cargo, “with one developed to operate in another band in order to improve 5G spectrum availability . . . .”<sup>38/</sup>

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<sup>34/</sup> Letter from Charles Cooper, Associate Administrator, NTIA, to Ronald T. Repasi, Acting Chief, Office of Engineering and Technology, FCC, and Donald K. Stockdale, Jr., Chief, Wireless Telecommunications Bureau, FCC, WT Docket No. 19-348 (filed Sept. 8, 2020) (“NTIA September 2020 Letter”).

<sup>35/</sup> *See id.* at 1.

<sup>36/</sup> *See id.* at 3, Enclosure 4.

<sup>37/</sup> *See id.* at 2-3.

<sup>38/</sup> *Id.* at 3, Enclosure 4.

*Second*, NTIA’s September 2020 Letter specifies a limited number of areas where full commercial wireless terrestrial use may not be permitted. It and the *Order and FNPRM* note that the precise geographic areas and parameters that will define protection will be based on continued consultations between NTIA, DoD, and industry representatives.<sup>39/</sup> Unlike a process that leaves unspecified how and when spectrum access is possible – dissuading carrier acquisition of spectrum – certainty about where and how spectrum can be accessed will facilitate the 3.45-3.55 GHz band being part of the Nation’s 5G solution. The Commission’s recent action on the 5.9 GHz band likewise suggests that coordination zones are “the most straightforward approach for enabling compatibility with federal operations” and can be reduced and “tailored to the operating parameters of each station.”<sup>40/</sup> T-Mobile looks forward to continued cooperation with NTIA and the Commission to maximize use of the 3.45-3.55 GHz band for commercial terrestrial wireless use while ensuring access where and when it is required by DoD.

*Finally*, NTIA’s September 2020 Letter recognizes that whatever agreement government and industry reach regarding how spectrum may continue to be used in CPAs and PUAs, individual licensees should be able to negotiate more flexible arrangements with DoD. This approach will assure federal users that their operations will be protected and allow each party to tailor its use of the band and maximize spectrum efficiency. Allowing federal and non-federal users to coordinate and negotiate their use of the spectrum will further ensure that CPAs and

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<sup>39/</sup> See *Order and FNPRM* ¶ 46. In order not to disturb investment-backed expectations, DoD should have no ability to *add* locations over time; participants in an auction for the 3.45-3.55 GHz band should know that they are bidding on spectrum and geography that will remain stable. To the contrary, as noted below, DoD should attempt to *reduce* the size and scope of geography and spectrum where 5G operations will not be permitted.

<sup>40/</sup> *Use of the 5.850-5.925 GHz Band*, First Report and Order, Further Notice of Proposed Rulemaking, and Order of Proposed Modification, ET Docket No. 19-138, FCC 20-164, ¶¶ 111-12 (rel. Nov. 20, 2020) (internal citations omitted).

PUAs are not static. T-Mobile's and others' experience with AWS-1 is that federal use requirements change over time, permitting additional use of spectrum for commercial operations where it was not previously thought feasible. For example, in Yuma, AZ (which DoD has identified as a CPA and PUA) and Cherry Point, NC (which DoD has identified as a CPA), DoD and carriers were able to enter into agreements to allow AWS-1 networks to operate within the protection zones around air stations without interfering with DoD communications systems.<sup>41/</sup>

#### **D. CPA and PUA Parameters Should Maximize 5G Use**

Negotiations with industry as part of the process to establish the parameters for CPAs and PUAs, which T-Mobile strongly supports, should be informed by several guiding principles. In particular, as NTIA and DoD have already committed, and as noted above, the spectrum should be made available for commercial terrestrial wireless use to the maximum extent possible. T-Mobile is encouraged that the Commission has stated that it “will work with the DoD to minimize the size of Cooperative Planning Areas where possible.”<sup>42/</sup> As occurred with the AWS-3 and 3550-3700 MHz bands,<sup>43/</sup> the Commission should work with NTIA and DoD to adopt rules that can permit the reduction of the size of CPAs and PUAs over time. And, as discussed further below, NTIA and DoD should work to conduct analyses that will better identify DoD's spectrum needs in Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico so that the 3.45-3.55 GHz band can be made available there as well.

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<sup>41/</sup> See, e.g., Letter from Stacey G. Black, Assistant Vice President – Federal Regulatory, AT&T, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 00-258 (filed July 18, 2017).

<sup>42/</sup> *Order and FNPRM* ¶ 46.

<sup>43/</sup> See *The Federal Communications Commission and the National Telecommunications and Information Administration: Coordination Procedures in the 1695-1710 MHz and 1755-1780 MHz Bands*, Public Notice, 29 FCC Rcd 8527 (2014); *2015 3.5 GHz Order* ¶¶ 258-68; Letter from Paige R. Atkins, Associate Administrator, Office of Spectrum Management, NTIA, to Julius P. Knapp, Chief, Office of Engineering and Technology, FCC, GN Docket No. 12-354 (filed March 24, 2015).

In addition, industry, DoD, and Commission discussions must be informed by a realistic assessment of the likely operating parameters of 5G systems in the 3.45-3.55 GHz band. NTIA has shared some of those assumptions in its September 2020 Letter. But those generic assumptions, even if accurate, cannot substitute for information regarding actual carrier deployment. That is why T-Mobile urges that the Commission's rules encourage DoD and the licensees of the 3.45-3.55 GHz band to accommodate federal operations based on the cell configurations and other parameters that are ultimately employed.

Further, the spectrum use framework must contain an appropriate process to ensure that non-federal users are provided with ample notice prior to when DoD needs access to spectrum. As noted above, whatever rules are established for notification of PUA use, carriers should be permitted to negotiate directly with DoD to determine the type of notice they will receive when DoD requires spectrum use and when they will receive that notice. To the extent there is no agreement between the parties for a particular PUA, the Commission must ensure there is a baseline requirement that DoD provides carriers as much advanced notice as possible of when they need access in a PUA. Carriers need certainty with respect to not only spectrum and geography, but also time. This is especially true if that PUA is located in an urban area, where it may be more difficult to re-direct traffic. Further, without the certainty of continuous access to spectrum, or a process that ensures reasonable notice of where and when spectrum may not be available, carriers may be deterred from participating in an auction for spectrum encumbered by PUAs.

T-Mobile recognizes that DoD preemption of 5G operations during national emergencies will necessarily be required to transcend particular carrier arrangements in order to permit uniform access to the 3.45-3.55 GHz band for mission-critical operations. However, T-Mobile

questions whether new rules governing DoD access to spectrum during a National Emergency are required at all. Section 606(c) of the Communications Act provides that the President may, in the case of a national emergency “suspend or amend, for such time as he may see fit, the rules and regulations applicable to any or all stations or devices capable of emitting electromagnetic radiations within the jurisdiction of the United States as prescribed by the Commission.”<sup>44/</sup> The Director of the Office of Science and Technology Policy has authority to exercise those powers.<sup>45/</sup>

If DoD seeks authority that is narrower than it is already provided, then the rules should address only those DoD needs that would trigger spectrum use requirements. There are some national emergencies, like the current COVID-19 pandemic, that do not necessarily produce an increased DoD spectrum need. In contrast, some national emergencies produce an enhanced need for access to spectrum for *commercial* providers. For example, as the Commission is aware, commercial wireless service providers use additional spectrum capacity to provide or restore service during hurricanes and other natural disasters.<sup>46/</sup> T-Mobile and others have also

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<sup>44/</sup> 47 U.S.C. § 606(c).

<sup>45/</sup> See 47 C.F.R. Part 214.

<sup>46/</sup> See, e.g., Monica Allevan, *Verizon, AT&T, T-Mobile, Sprint Work at Restoring Service in Puerto Rico*, Fierce Wireless (Oct. 13, 2017), <https://www.fiercewireless.com/wireless/verizon-at-t-t-mobile-sprint-work-at-restoring-service-puerto-rico> (“The FCC has been busy approving Special Temporary Authority (STA) applications to carriers to help re-establish communications in Puerto Rico, where much of the island remains without phone service or electricity.”); Communications Status Report for Areas Impacted by Hurricane Zeta October 30, 2020, FCC (Oct. 30, 2020), <https://docs.fcc.gov/public/attachments/DOC-367882A1.pdf> (noting that “wireless providers frequently use temporary facilities such as cells-on-wheels (also known as COWs), increased power at operational sites, roaming agreements, or take other actions to maintain service to affected consumers during emergencies or other events that result in cell site outages”).

received permission to use additional spectrum help keep Americans connected during the pandemic.<sup>47/</sup>

Accordingly, a declaration of a National Emergency that uniquely requires federal access to the 3.45-3.55 GHz band should not necessarily result in *less* spectrum for commercial carriers when they need it the most. Instead, the definition of National Emergency used in this context must: (i) produce a spectrum need related to the enhanced requirement of the federal users requesting access, and (ii) take into consideration the potential impact on the needs of consumers and businesses from the potential loss of carrier access to non-federal spectrum capacity. Commercial operators should also be provided with as much advance notice as possible when a National Emergency unique to the 3.45-3.55 GHz band is triggered and afforded sufficient time to terminate or adjust their operations after notification.

**E. Non-Federal Incumbents Should be Relocated by a Date Certain and Do Not Require Relocation Funds**

The Commission states that authorizations for non-federal radiolocation operations will sunset on a date consistent with the first possible grant of flexible-use authorizations to new users in that portion of the band and that it will relocate non-federal radiolocation operators to the 2.9-3.0 GHz band.<sup>48/</sup> The Commission seeks comment on whether to extend its *Emerging Technologies* framework to reimburse incumbent radiolocation operators for their relocation

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<sup>47/</sup> See, e.g., News Release, *FCC Provides T-Mobile Temporary Access to Additional Spectrum to Help Keep Americans Connected During Coronavirus Pandemic*, FCC (Mar. 15, 2020), <https://docs.fcc.gov/public/attachments/DOC-363051A1.pdf>; News Release, *FCC Provides U.S. Cellular Temporary Access to Additional Spectrum to Help Keep Americans Connected During Coronavirus Pandemic*, FCC (Mar. 17, 2020), <https://docs.fcc.gov/public/attachments/DOC-363114A1.pdf>; News Release, *FCC Grants Verizon Temporary Spectrum Access to Keep Americans Connected During COVID-19 Pandemic*, FCC (Mar. 18, 2020), <https://docs.fcc.gov/public/attachments/DOC-363145A1.pdf>; News Release, *FCC Grants AT&T and Verizon Further Temporary Spectrum Access to Keep Americans Connected During Coronavirus Pandemic*, FCC (Mar. 20, 2020), <https://docs.fcc.gov/public/attachments/DOC-363211A1.pdf>.

<sup>48/</sup> See *Order and FNPRM* ¶¶ 59-60.

costs.<sup>49/</sup> The Commission also states that it will sunset amateur use of the 3.3-3.55 GHz band and seeks comment on whether to bifurcate the sunset of amateur operations into two separate phases.<sup>50/</sup> Under this approach, amateur use of the upper portion of the band above 3.4 GHz would sunset on a date consistent with the first possible grant of flexible-use authorizations to new users, while amateur use of the lower portion of the band would continue until a future date to be set later in this proceeding.

T-Mobile supports sunset of secondary, non-federal radiolocation *and* amateur authorizations in the 3.45-3.55 GHz band on a date consistent with the first possible grant of flexible-use authorizations to new users in that band – *e.g.*, within 90 days of the close of the auction as suggested by the Commission.<sup>51/</sup> As T-Mobile previously explained,<sup>52/</sup> both radiolocation and amateur operations in the 3.45-3.55 GHz band are secondary services. Therefore, current users of the spectrum have no expectation of continued use of the band.

Additionally, sunset of all incumbent operators on a date consistent with grant of new 3.45-3.55 GHz licenses, as the Commission proposes, would provide licensees ample time to relocate. To illustrate, if the Commission proceeds with auctioning the spectrum in December 2021, as it has suggested it will,<sup>53/</sup> then the auction would not likely close until the first quarter of 2022, with licenses being issued in the second quarter of 2022. And if the Commission sets the relocation deadline at 90 days from that time, then incumbents would have almost two years

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<sup>49/</sup> See *id.* ¶¶ 61-66.

<sup>50/</sup> See *id.* ¶¶ 67-71.

<sup>51/</sup> See *id.* ¶¶ 27, 33, 60.

<sup>52/</sup> See T-Mobile 3.1-3.55 GHz Band Comments at 2.

<sup>53/</sup> See *Order and FNPRM* ¶¶ 2, 109 n.201.

from now to relocate. Because, as the Commission acknowledges,<sup>54/</sup> there are only a limited number of non-federal radiolocation licensees operating in the 3.45-3.55 GHz band, it is likely that those operations can be relocated soon after the close of the auction.

T-Mobile recognizes that there is greater use of the spectrum for amateur operations. To the extent amateur operators need additional time to relocate, the Commission may wish to consider a bifurcated approach that allows continued amateur access below 3.45 GHz. However, the Commission should make clear that amateur use of the lower portion of the band is likely only temporary and creates no rights to continued use of the band. It should make clear to amateur operators that they will likely be required to relocate from the lower portion of the band under conditions similar to those governing relocation from the upper portion of the band.

There is no reason to make any secondary users whole through the *Emerging Technologies* framework. Because the incumbent non-federal services in the 3.45-3.55 GHz band are secondary, the incumbents providing those secondary services should relocate at their own cost. Indeed, the Commission has determined that “[b]ecause secondary operations, by definition, cannot cause harmful interference to primary operations nor claim protection from harmful interference from primary operations at frequencies already assigned or assigned at a later date, new entrants are not required to relocate secondary operations.”<sup>55/</sup> And in instances where secondary users were compensated for relocation, such as secondary TV band users in the

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<sup>54/</sup> See *id.* ¶¶ 15, 60.

<sup>55/</sup> *Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, Eighth Report and Order, Fifth Notice of Proposed Rule Making and Order, 20 FCC Rcd 15866, ¶ 17 (2005).

Broadcast Incentive Auction, the Commission required reimbursement only at Congress' direction.<sup>56/</sup>

Extending the *Emerging Technologies* framework, or otherwise requiring compensation, to secondary users also would not serve the public interest. *First*, it would suggest that secondary users hold the same rights as primary users of spectrum. That, in turn, could create a slippery slope where all users of spectrum – from primary spectrum license holders to even unlicensed spectrum users – assert that they are owed compensation for relocating their spectrum use. That will impede further responsible Commission spectrum management in evaluating potential future reallocation of spectrum. Indeed, because other spectrum bands that may be considered for future mobile wireless use are already encumbered by a variety of users, making them all subject to the *Emerging Technologies Framework* would slow or make impossible spectrum reallocation.

*Second*, extending the *Emerging Technologies Framework* to the 3.45-3.55 GHz band would unnecessarily complicate clearing of the 3.45-3.55 GHz band. As evidenced by the Commission's decision in the C-band proceeding, accommodating and compensating primary spectrum holders for relocating their operations is complicated and time-consuming enough without the added complexity of compensating secondary users.<sup>57/</sup> And even in that case, the

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<sup>56/</sup> See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, ¶ 352 (2014) (declining to reimburse or otherwise provide funds to secondary TV band users in the 600 MHz band because of their secondary status); Consolidated Appropriations Act 2018, Pub. L. No. 115-141, div. E, tit. V, § 511 (requiring compensation to secondary TV band users).

<sup>57/</sup> See *Expanding Flexible Use in the 3.7-4.2 GHz Band*, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343 (2020) (“*C-band Order*”).

Commission was required to draw a line and limit the class of incumbents that are eligible for relocation payments.<sup>58/</sup>

### **III. THE COMMISSION SHOULD ADOPT A BAND PLAN, LICENSING RULES, AND TECHNICAL REQUIREMENTS THAT FOSTER COMMERCIAL 5G OPERATIONS**

#### **A. Band Plan**

The Commission proposes to license the 3.45-3.55 GHz band in unpaired, 20-megahertz blocks to align the band with the C-band and does not propose to adopt guard bands to protect adjacent 3.5 GHz or federal radiolocation operations.<sup>59/</sup> It also asks whether it should anticipate TDD operations and, if so, whether it should require licensees using TDD to synchronize or coordinate with Citizens Broadband Radio Services (“CBRS”) users in the 3.5 GHz band if one party requests synchronization.<sup>60/</sup>

While T-Mobile generally supports the Commission’s efforts to align the 3.45-3.55 GHz band with the C-band, the Commission should license the spectrum using 10-megahertz blocks instead of 20-megahertz blocks. Unlike the C-band, which will offer 280 megahertz of spectrum, the 3.45-3.55 GHz band will offer only 100 megahertz of spectrum. A smaller block size will facilitate greater competition and provide multiple carriers the flexibility they need to obtain different size bandwidths to integrate the spectrum into their networks. That approach is also consistent with the Commission’s approach for the 3.5 GHz band, where only 70 megahertz of spectrum was made available in a market in 10-megahertz unpaired blocks.<sup>61/</sup> As the

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<sup>58/</sup> See *id.* ¶ 112; see also *id.* ¶ 121 (adding that “there is a significant public interest in providing a stable, comprehensive list of incumbent earth stations” that satisfy the FCC’s criteria).

<sup>59/</sup> See *Order and FNPRM* ¶¶ 54-58.

<sup>60/</sup> See *id.* ¶ 55.

<sup>61/</sup> See *2015 3.5 GHz Order* ¶¶ 63-67, 91-93.

Commission recognized, “[t]en megahertz channels provide a flexible, scalable, and practically deployable bandwidth for high data rate technologies, permitting multiple Priority Access Licensees to operate in the same geographic area.”<sup>62/</sup> Moreover, a 10-megahertz block size will make the channel size throughout the 3.45-3.7 GHz band consistent.

T-Mobile agrees that there is no need to adopt a guard band or a TDD synchronization requirement to protect adjacent-band operations. As T-Mobile previously explained, carriers have a demonstrated history of cooperating to ensure that all licensees can maximize the use of their assigned spectrum.<sup>63/</sup> And, as TDD has become increasingly prevalent in deployments of digital broadband networks and is expected to be used in all 5G bands above 3 GHz,<sup>64/</sup> there is no reason to suspect that licensees in the 3.45-3.55 GHz band will not engage in TDD synchronization upon request. Indeed, the Commission declined to adopt a TDD synchronization requirement for the C-band, noting that “synchronization of two different carriers can be implemented using traditional 3GPP methods based on an absolute timing reference.”<sup>65/</sup>

Moreover, Technical Working Group 4 (“TWG-4”), established in response to the Commission’s *C-band Order*, which focused on evaluating coexistence between terrestrial C-

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<sup>62/</sup> *Id.* ¶ 91 (agreeing with T-Mobile that “10 megahertz blocks ‘strike the appropriate balance between permitting multiple entities access to licensed 3.5 GHz Band spectrum and ensuring that the blocks are large enough to support customer traffic’”) (internal citation omitted).

<sup>63/</sup> See Opposition of T-Mobile USA, Inc., GN Docket No. 18-122, at 8-11 (filed June 25, 2020).

<sup>64/</sup> See, e.g., *C-band Order* ¶ 75 (recognizing that TDD has become increasingly prevalent in deployments of digital broadband networks); GSMA, *5G Spectrum, GSMA Public Policy Position*, at 4 (Mar. 2020) (“GSMA Policy Position”), <https://www.gsma.com/spectrum/wp-content/uploads/2020/03/5G-Spectrum-Positions.pdf> (“All 5G bands above 3 GHz – including the vital 3.5 GHz range and mmWave bands – will adopt TDD.”).

<sup>65/</sup> *C-band Order* ¶ 397; see also *id.* ¶ 396 (“[W]e deny requests that we require coordination between Citizens Broadband Radio Service and 3.7 GHz Service operations, but we encourage parties to explore synchronization of TDD operations to minimize interference between these adjacent services.”).

band and CBRS operations, found that mitigation techniques such as geographic and spectral separation could be used in lieu of a default set of TDD synchronization parameters.<sup>66/</sup> T-Mobile shares the view expressed by some entities in TWG-4 that affected licensees can address cross-band interference solutions such as TDD synchronization through the normal course of business operations.<sup>67/</sup>

## **B. Licensing and Operating Rules**

T-Mobile generally supports the adoption of licensing and operational rules for the 3.45-3.55 GHz band that are consistent with the rules adopted for the C-band, including the proposed rules regarding an open eligibility standard, a 15-year license term, the general Part 27 renewal requirements, and interim and final performance benchmarks for fixed, mobile, and Internet of Things services in the band.<sup>68/</sup> Adopting the proposed rules for the 3.45-3.55 GHz band will ensure that the rules for the band are consistent with and harmonized across the 3 GHz band as well as other spectrum bands that are suitable for commercial wireless services. T-Mobile, however, urges the Commission to reconsider its proposed rules relating to mobile spectrum holdings, geographic areas to include in an auction for the spectrum, and the penalties for failing to meet performance requirements.

*Mobile Spectrum Holdings.* The Commission seeks comment on whether and how to address any mobile spectrum holdings issues involving the 3.45-3.55 GHz band.<sup>69/</sup> Specifically, the Commission proposes *not* to adopt a pre-auction, bright-line limit and seeks comment on

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<sup>66/</sup> See Letter from PJ Jayawardene, Senior Director, Head of 5G R&D, Charter Communications, and Peter Tenerelli, Distinguished Member of the Technical Staff, Verizon, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, Attachment at 84 (filed Oct. 12, 2020).

<sup>67/</sup> *Id.* at Attachment at 99.

<sup>68/</sup> See *Order and FNPRM* ¶¶ 93-94, 98-106.

<sup>69/</sup> *Id.* ¶ 94.

whether this band should be included in the spectrum screen.<sup>70/</sup> In addition, it seeks comment on reviewing holdings on a case-by-case basis when long-form applications for initial licenses are filed and whether and how this spectrum should be factored into its analysis.<sup>71/</sup>

T-Mobile urges the Commission to examine whether applying a spectrum screen to greenfield spectrum, such as the 3.45-3.55 GHz band, awarded through competitive bidding makes any sense at all. As T-Mobile has explained, the fact that a bidder might exceed some numerical benchmark based on amounts of spectrum in a given market does not give rise to any cognizable competitive concern if the spectrum will be deployed to deliver publicly beneficial services and not warehoused to withhold an input from others.<sup>72/</sup> Acquiring spectrum without customers does not alter the competitive landscape and does not cause any changes in the Herfindahl-Hirschman Index used to measure market concentration.

Nevertheless, if a spectrum screen is used,<sup>73/</sup> the Commission should articulate before the auction any limits on the amount of spectrum that a bidder can win, rather than use a post-auction case-by-case review. One way of doing this is for the Commission to make clear that an entity winning a limited amount of spectrum in a market, such as not more than one-third, would not raise competitive concerns, regardless of the entity's other spectrum holdings. Such upfront guidance on permissible spectrum acquisitions provides more certainty – a key component of

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<sup>70/</sup> *Id.* ¶ 94.

<sup>71/</sup> *Id.* ¶ 95.

<sup>72/</sup> See Letter from Steve B. Sharkey, Vice President, Government Affairs, Technology and Engineering Policy, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-348, *et al.*, at 2-3 (filed Sept. 17, 2020).

<sup>73/</sup> As T-Mobile has noted before, the current spectrum screen analysis is outdated because it ignores vast amounts of spectrum used today to provide mobile wireless service. See *id.* at 3-4. It thus sets up a distorted review by omitting spectrum used and touted by competitors other than T-Mobile. If the Commission plans to continue to use a spectrum screen, it must be reviewed and updated.

auction participation – than post-auction case-by-case review and avoids unnecessary delays in putting the spectrum to use.

Under a case-by-case review, auction participants are unable to reliably predict the outcome of the Commission’s analysis. Post-auction case-by-case review is generally also time consuming, delaying the use of spectrum and service to consumers and businesses. That is particularly true because there is no clear guidance or precedent for what happens if the Commission determines that a company cannot be licensed for all the spectrum it wins at auction. As others have recognized, if the Commission utilizes post-auction case-by-case review, it will be required to decide how it will determine whether auction results that trip the spectrum screen pose a competitive harm as well as what remedies will be adopted if competitive harm is found.<sup>74/</sup> Because the Commission has not proposed how to address these issues – and for the other reasons explained above – it should reject the use of a post-auction case-by-case review for the 3.45-3.55 GHz band.

*Geographic License Areas.* The Commission proposes to license the 3.45-3.55 GHz band on a PEA basis, but seeks comment on whether it should adopt smaller license areas, such as counties.<sup>75/</sup> T-Mobile supports licensing the 3.45-3.55 GHz band on a PEA basis. PEA-based license areas are consistent with the Commission’s other recent decisions to reallocate spectrum, including the C-band.<sup>76/</sup> The Commission should not adopt smaller geographic areas such as counties or, as discussed more fully above, employ a licensed-by-rule or opportunistic approach for any portion of the band. Smaller license areas require more interference protection

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<sup>74/</sup> See Comments of AT&T Services, Inc., ULS File Nos. 0009021213 and 0009021220, at 10-11 (filed Sept. 18, 2020).

<sup>75/</sup> *Order and FNPRM* ¶ 96.

<sup>76/</sup> See, e.g., *C-band Order* ¶ 77.

requirements that restrict licensees' ability to use assigned spectrum. Further, as T-Mobile has explained, adding licenses defined over different geographic areas such as counties to existing networks that are designed based on PEAs will add unnecessary complexity and costs to network design, buildout, and management.<sup>77/</sup>

The Commission proposes to exclude Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico from licensing at this time, but asks whether it should consider, pending the results of future DoD analysis, to include additional areas at a later date.<sup>78/</sup>

T-Mobile recognizes that the AMBIT study focused on CONUS, but the Commission should establish rules and make the spectrum available everywhere. T-Mobile appreciates that there may be national defense imperatives that require continued DoD access to the 3.45-3.55 GHz band in parts of Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico. But instead of a blanket ban on licensing spectrum in these areas, the Commission and DoD should instead assess how the spectrum can be made available for carrier operations while retaining sufficient flexibility to meet DoD operational requirements. In particular, NTIA and DoD should now identify locations, as it already has with respect to the CONUS, where DoD may wish to protect use of the 3.45-3.55 GHz band through CPAs and PUAs and, through the process already initiated by the federal government and envisioned by NTIA's September 2020 Letter,<sup>79/</sup> establish the conditions for use in the vicinity of those locations.

That process should be accelerated so that spectrum can be made available in Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico. Doing so will allow

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<sup>77/</sup> See Letter from Steve B. Sharkey, Vice President, Government Affairs, Technology and Engineering Policy, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-120, at 6 (filed Sept. 17, 2020).

<sup>78/</sup> *Order and FNPRM* ¶ 97.

<sup>79/</sup> See NTIA September 2020 Letter.

providers to incorporate those areas in the spectrum planning that is part of auction strategy. In contrast, excluding those areas from licensing is not in the public interest. Indeed, the Commission recently excluded Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico from C-band licensing.<sup>80/</sup> If the Commission continues to exclude them from upcoming spectrum auctions, the spectrum landscape for those states will become inconsistent with the rest of CONUS.

The Commission has unfortunately made *no* mid-band spectrum available in the Gulf of Mexico in particular, declining to auction spectrum in the 3.5 GHz band and C-band there.<sup>81/</sup> But the Commission has often noted the importance of mid-band spectrum.<sup>82/</sup> And recognizing the communications needs in the Gulf of Mexico, T-Mobile announced last year that it was the first major wireless provider to initiate LTE service there, to connect offshore workers, vessels, and critical infrastructure.<sup>83/</sup> Wireless communications requirements in the Gulf of Mexico have been well-documented for decades, and those needs are expected to expand dramatically as oil and natural gas exploration and production increasingly rely on massive machine internet of things applications.

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<sup>80/</sup> *C-band Order* ¶ 133.

<sup>81/</sup> *See Auction of Priority Access Licenses for the 3550-3650 Band; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 105; Bidding in Auction 105 Scheduled to Begin June 25, 2020*, Public Notice, 35 FCC Rcd 2140, ¶ 7 n.14 (2020); *C-band Order* ¶ 80.

<sup>82/</sup> *See, e.g., C-band Order* ¶ 3 (“One important part of advancing U.S. leadership in next generation 5G networks is making additional mid-band spectrum available for 5G services. Mid-band spectrum is essential for 5G buildout due to its desirable coverage, capacity, and propagation characteristics.”); *Order and FNPRM* ¶ 42 (noting that a key element of U.S. leadership in next-generation 5G networks is mid-band spectrum”).

<sup>83/</sup> *See* Press Release, *T-Mobile Lights Up LTE in the Gulf of Mexico – Another Un-Carrier First*, T-Mobile (July 24, 2019), <https://www.t-mobile.com/news/press/lte-in-gulf-of-mexico>.

If NTIA and DoD are unable to complete the process of assessing the areas in Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico in time for an auction of the 3.45-3.55 GHz band in the rest of the United States, the Commission should, as it suggests, delegate to the Wireless Telecommunications Bureau and Office and Engineering and Technology the authority to add other CPAs and PUAs in those areas and then conduct an auction. There should be no need to conduct a further rulemaking to license those locations, and the Commission should establish a firm process and timeline for licensing the spectrum in Alaska, Hawaii, the U.S. Territories and Possessions, and the Gulf of Mexico.

*Penalty for Failure to Meet Performance Requirements.* The Commission seeks comment on whether licensees should be subject to enforceable penalties for failing to meet performance benchmarks.<sup>84/</sup> If a licensee fails to meet the first benchmark, the Commission proposes that both the second benchmark and the license term be reduced by two years.<sup>85/</sup> And if the licensee fails to meet the second benchmark, the Commission proposes that the authorization for each license where it fails to meet the performance requirement automatically terminates.<sup>86/</sup> The Commission also proposes to make the terminated spectrum rights available for reassignment.<sup>87/</sup> T-Mobile agrees that licensees should be subject to enforceable penalties for failing to meet performance benchmarks and with the proposed penalties. The Commission must ensure that the 3.45-3.55 GHz spectrum is actually being used and must revoke licenses when it is not. However, it is overly punitive for the Commission to cancel an entire license if a provider is serving customers in part of the license area, but not in others. Accordingly, licensees should

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<sup>84/</sup> *Order and FNPRM* ¶ 104.

<sup>85/</sup> *Id.*

<sup>86/</sup> *Id.*

<sup>87/</sup> *Id.* ¶ 105.

not lose rights to an entire license when they are unable to meet the performance requirements. Instead, they should be able to retain areas where service is being provided. Un-retained areas can then, consistent with Commission practice, be subject to re-licensing to other providers that believe they can provide service in those areas.<sup>88/</sup>

### **C. Technical Rules**

T-Mobile generally agrees with the Commission's proposed technical rules regarding power limits for base stations, power limits for mobile stations, mobile out-of-band emissions ("OOBE") limits, coexistence with federal and non-federal adjacent-band operators, field strength and market boundaries, antenna height limits, coordination with operations across the U.S. border in Canada and Mexico, and the general technical rules applicable to all Part 27 services.<sup>89/</sup> The proposed rules would help ensure that operations in the 3.45-3.55 GHz band are consistent with industry standards for mobile devices and adequate for robust 5G deployments in the band.

However, the Commission should re-evaluate the proposed OOBE limits for the 3.45-3.55 GHz band. In order to protect incumbent services in adjacent bands and promote coexistence with operations in adjacent spectrum, the Commission proposes to adopt an OOBE limit of -13 dBm/MHz at the authorized channel edge, as measured at the antenna terminals, which is the same OOBE limit that it adopted for the C-band.<sup>90/</sup> The Commission also proposes

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<sup>88/</sup> See *Wireless Telecommunications Bureau Announces Process for Relicensing 700 MHz Spectrum in Unserved Areas*, Public Notice, 34 FCC Rcd 350 (2019).

<sup>89/</sup> *Order and FNPRM* ¶¶ 73-76.

<sup>90/</sup> *Id.* ¶¶ 77-79.

additional requirements beyond the upper and lower band edges to protect federal and CBRS operations.<sup>91/</sup>

The Commission should adopt the longstanding OOB limit of -13 dBm/MHz, which will accommodate the wider bandwidths needed for 5G. More stringent emission limits will diminish the utility of the band and threaten coverage. The Commission, however, should not adopt additional requirements beyond the upper and lower band edges. The Commission suggests that stricter limits may be warranted to protect users in the adjacent CBRS band.<sup>92/</sup> However, the Commission declined to adopt stricter limits for the C-band, which is also adjacent to the CBRS band.<sup>93/</sup> There is no reason to adopt a different approach here. To the contrary, as T-Mobile notes above, technical rules should mirror to the extent feasible those adopted for the C-band.

Finally, while military radar systems will continue to operate in pre-defined geographic areas, those operations do not warrant strict OOB limits on a blanket basis nationwide and on all operations at 3.45-3.55 GHz. Instead, as T-Mobile suggests above, DoD may enter into agreements with individual licensees serving markets where those radar systems are located to ensure their protection.

#### **IV. CONCLUSION**

T-Mobile appreciates the Commission's efforts to make spectrum in the 3.45-3.55 GHz band available for commercial wireless services. The Commission should also evaluate other portions of the 3 GHz band and adopt rules that ensure the spectrum can support robust 5G

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<sup>91/</sup> *Id.* ¶ 78.

<sup>92/</sup> *Id.* ¶¶ 78-79.

<sup>93/</sup> *C-band Order* ¶¶ 343-45.

commercial wireless services to meet ever-increasing consumer needs. Doing so will ensure that the U.S. remains a leader in 5G and promote the future development of next-generation wireless technologies.

Respectfully submitted,

/s/ Steve B. Sharkey

Steve B. Sharkey

John Hunter

T-MOBILE USA, INC.

601 Pennsylvania Avenue, N.W.

Suite 800

Washington, DC 20004

(202) 654-5900

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