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

In the Matter of Facilitating Shared Use in the 3.1 – 3.55 GHz Band	WT Docket No. 19-348

COMMENTS OF 5G AMERICAS

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Table of Contents

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COMMENTS OF 5G AMERICAS

5G Americas, the voice for 5G and LTE in the Americas, submits these comments in response to the Commission's Notice of Proposed Rulemaking ("*Notice*" or "*NPRM*") in the above-referenced proceeding on facilitating shared use of the 3.1 – 3.55 GHz band. Currently chaired by AT&T, 5G Americas has a broad membership of leading wireless operators and vendors of 5G core and radio access network equipment. 5G Americas facilitates and advocates for the advancement and transformation of LTE, 5G and beyond throughout the Americas.[1] 5G Americas applauds the Commission for beginning the process of implementing the 2018 MOBILE NOW Act by proposing to relocate the non-federal secondary users out of the 3.3 – 3.55 GHz band, and supports that proposal. Ultimately, spectrum made available in that range for commercial wireless services should be done on a licensed basis, with channel sizes consistent with 5G standards, in order to position the U.S. to lead in 5G. With major countries around the world making broad swaths of spectrum available for 5G in the 3.3 – 4.2 GHz range,

[1] 5G Americas Board of Governors include AT&T, Cable & Wireless Communications, Ciena, Cisco, Commscope, Crown Castle, Ericsson, Intel, Mavenir, Nokia, Kathrein, Qualcomm, Samsung, Shaw, Sprint, T-Mobile USA, WOM, and Telefónica.

licensed spectrum providing coverage and capacity with adequate bandwidth channelization will reflect that 5G is indeed a U.S. national priority.

1. INTRODUCTION

5G Americas has long supported more spectrum for licensed 5G in the 3 GHz range.[2] As the Commission has correctly noted, there is now a critical mass of countries that have auctioned or otherwise made spectrum available in the 3 GHz range.[3] More and more countries are making portions of 3.3 – 4.2 GHz available for 5G services.[4] As the Commission has recognized, the 3 GHz range offers a balance between geographic coverage and capacity for large amounts of data. The Commission's proposed relocation of secondary, non-federal users in 3.3 – 3.55 GHz is a timely step toward repurposing the band for flexible commercial use, which 5G Americas wholeheartedly supports. If the U.S. wants to lead in 5G, as has been stated by the President, his senior officials, numerous Senators and Representatives[5], and the Chairman and Commissioners, then we need more licensed mid-band spectrum in amounts comparable to that licensed by our global competitors. The Citizens Broadband Radio Service ("CBRS") spectrum is not enough.

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[2] *See, e.g.*, White Paper, 5G Americas, *Spectrum Landscape for Mobile Services* 3 (2017); *see also* Chris Pearson, President, 5G Americas, Testimony on "The Race to 5G and its Potential to Revolutionize American Competitiveness" before the House Energy and Commerce Subcommittee on Communications and Technology (Nov. 16, 2017).

[3] Those countries include: Australia: 3.6 GHz; Finland: 3410 – 3800 MHz; Germany: 2 GHz and 3.6 GHz; Italy: 700 MHz, 3.7 GHz, 26 GHz; Ireland: 3.6 GHz; Japan: 3.7 GHz, 4.5 GHz, 28 GHz; Kuwait: 3500 – 3800 MHz; Latvia: 3.5 GHz; Mexico: 600 MHz, 1900 MHz, 3.3 GHz; Oman: 3.4 – 3.7 GHz; Qatar: 3.5 – 3.8 GHz; Saudi Arabia: 3.5 – 3.8 GHz; South Korea: 3.5 GHz, 28 GHz; Spain: 3.6 – 3.8 GHz; UAE: 3.3 – 3.8 GHz; UK: 700 MHz, 3.6 – 3.8 GHz; and China: 3.5 GHz, also identified 24.75 – 27.5 GHz and 37 – 42.5 GHz.

[4] As discussed below, at the recently concluded WRC, nine countries joined country footnotes allocating 3.3 – 3.4 GHz for mobile or additionally identifying it for International Mobile Telecommunication ("IMT"), for a total of seventy-six country members of such footnotes at the end of WRC, even in advance of studies to identify the band for IMT at WRC-23.

[5] *See, e.g.*, Press Release, Energy and Commerce Republicans, Representatives Walden and Latta React to FCC's C-band Auction (Feb. 6, 2020) *available at* https://republicans-energycommerce house.gov/news/press-release/walden-and-latta-react-to-fccs-c-band-auction-plan/.

C-Band is a good start. Movement on the 3.3 – 3.55 GHz band helps to build a sufficient amount of mid-band spectrum for 5G. Having internationally-harmonized licensed mid-band spectrum in the U.S. will benefit our consumers through economies of scale in infrastructure, devices, chipsets, antennas, middleware and components, which will deliver roaming, price improvements and innovation.

2. MOBILE NOW ACT OF 2018

As the Commission explains in its *Notice,* two years ago in the MOBILE NOW Act, Congress directed the Commission and the National Telecommunications and Information Administration ("NTIA") to study the wider range of 3.1 – 3.55 GHz for commercial wireless use.[6] 5G Americas supports making the entire 3.1 – 3.55 GHz band available for licensed commercial use. Because Congress directed the Commission to identify 255 MHz of spectrum for commercial wireless use by December 2022, the Commission is wise to begin the process of preparing the band for commercial use now.[7] Of that 255 MHz, MOBILE NOW directed the Commission and NTIA to identify no less than 100 MHz for licensed, below 6 GHz, and no less than 100 MHz for unlicensed, below 8 GHz. In other words, the Commission, working in consultation with NTIA, has the discretion to identify 155 MHz (or more—MOBILE NOW does not provide a cap) of licensed spectrum under 6 GHz. 5G Americas thanks the Commission for beginning the work of repurposing the 3.1 – 3.55 GHz band, with this first step in 3.3 GHz –

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[6] *See* Consolidated Appropriations Act, 2018, Pub. L. No. 115-141, Division P, The Repack Airwaves Yielding Better Access for Users of Modern Services (RAY BAUM'S) Act, Title VI, The Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless Act or MOBILE NOW Act, § 603(a)(1) ("MOBILE NOW").

[7] As the Commission is aware, MOBILE NOW directed NTIA to issue a report on the feasibility of relocating federal users in the 3.1-3.55 GHz band by March 2020. On January 27, 2020, NTIA issued a report on just that 100 MHz, in just the top 3.45 – 3.55 GHz portion. *See* n. 8, *infra*.

3.55 GHz. 5G Americas submits that 100 MHz under 6 GHz is an insufficient amount of additional mid-band spectrum in the 3 GHz range, if the Commission and NTIA want the U.S. to lead in 5G. 5G Americas applauds the Commission's focus on 255 MHz of spectrum in this proceeding, in contrast to NTIA's initial focus on just 100 MHz at 3.45 – 3.55 GHz.

5G Americas also urges that the spectrum in the 3 GHz range that is ultimately identified for commercial wireless use be done so on an exclusively licensed basis—with commercial use in the relevant geographic area licensed exclusively to the specific FCC licensee, including the initial 100 MHz that NTIA is focusing on in 3450 – 3550 MHz. While spectrum in the 3.1 – 3.55 GHz band may have to be shared with federal users for which relocation is not feasible,[8] commercial use should be authorized under licenses issued exclusively to a single entity per geographic licensing area. This spectrum is adjacent to the CBRS spectrum, and while some proponents may therefore argue that it should be made available in a similar tiered framework, with a generally authorized access underlay, 5G Americas opposes this approach. Because early movers around the globe are focusing on the 3 GHz band for licensed 5G, the Commission should make any additional spectrum in the range available for commercial use on an exclusively licensed basis, in order to deliver the quality of service and security enhancements that 5G promises.

3. 3.3 – 4.2 GHz: A GLOBALLY-HARMONIZED BAND FOR 5G

[8] *See* Technical Report 20-546, NTIA, Technical Feasibility of Sharing Federal Spectrum with Future Commercial Operations in the 3450-3550 MHz Band 101 (2020) ("NTIA Technical Report 20-546"). For purposes of these comments, by exclusive licenses, 5G Americas means to include access that may require sharing the 3.1 – 3.55 GHz band with federal incumbents, but relative to the licensed commercial entity, relevant spectrum use, is exclusive.

The Commission recognizes that the 3.3 – 3.55 GHz sub-band is being harmonized globally for 5G. The Commission notes that 3GPP, with which 5G Americas is a Market Representative Partner, has specified Band 77—or the range 3.3 – 4.2 GHz—as an operating band for 5G, as well as the sub-band Band 78, 3.3 – 3.8 GHz.[9] 5G Americas therefore agrees with the Commission that focusing on 3.3 – 3.55 GHz will promote international harmonization.[10] In fact, leading countries across the globe, with the exception of the U.S., have allocated significant amounts of mid-band spectrum in the 3 GHz range for 5G. Within our own Region of the Americas, the thirty-four countries of the Organization of American States' Commission on International Telecommunications ("CITEL") adopted a Recommendation over two years ago recommending the 3.3 – 3.7 GHz range for International Mobile Telecommunications ("IMT"—the international term for mobile broadband that includes 5G).[11] Over three years ago, Europe's Radio Spectrum Policy Group (RSPG), a high-level advisory group that assists the European Commission in the development of policy, issued an opinion on spectrum for next-generation wireless systems (5G). The opinion was finalized in November 2016 and identified a strategic roadmap for 5G in Europe. In particular, the roadmap identified 3.4 – 3.8 GHz as the "primary" building block for 5G spectrum in the mid-band. Other countries have begun to license spectrum

[9] *See Facilitating Shared Use in the 3.1-3.55 GHz Band*, Notice of Proposed Rulemaking, 34 FCC Rcd. 12662, § 8, n. 21 (2019) ("*Notice*").

[10] *Id.* at § 8. The below adjacent band of 3.1 – 3.3 GHz is globally allocated for radiolocation on a primary basis. The band below that, 3.1 – 2.9 GHz is likewise globally allocated for radiolocation and radionavigation on a co-primary basis. And the band below that, 2.7 – 2.9 GHz is likewise allocated globally for aeronautical radionavigation on a primary basis, and globally allocated to radiolocation on a secondary basis. *See* ITU-R Article 5, Table of Allocations and 47 C.F.R. Chapter 1, Subchapter A, Part 2.

[11] *See* Organization of American States, CITEL, RECOMMENDATION PCC.II/REC. 54 (XXIX-17): FREQUENCY ARRANGEMENTS FOR THE TERRESTRIAL COMPONENT OF IMT IN THE BANDS 3300-3400 MHZ, 3400-3600 MHZ AND 3600-3700 MHZ, OR COMBINATIONS THEREOF (2017).

at 3.3 GHz for 5G,[12] including China and our neighbor Mexico, currently the chair of CITEL's radio committee. China is also planning to make 3.6 – 4.2 GHz available for 5G.[13]

5G Americas supported the Commission's improvements in the license rules for the CBRS band, but the fact remains that 40 MHz in the aggregate for a single licensee will not position the U.S. to compete with global competitors making 100s of MHz available in the band.[14] Most countries that have made 5G spectrum available to date in the 3 GHz band have done so in large channel blocks, consistent with 3GPP specifications.[15] This is why 5G Americas is pleased the Commission is moving forward on the C-Band rulemaking, which is squarely within the global harmonized 5G range of 3.3 – 4.2 GHz. Making C-Band available for commercial wireless is very important for U.S. leadership in 5G. The fact that 3.3 – 4.2 GHz is the global 5G range also justifies the Commission's proposal now to remove the secondary, non-federal allocations in 3.3 – 3.55 GHz. Accordingly, 5G Americas supports the Commission's proposal, particularly given the low number of non-federal licensees in the band.[16]

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[12] *E.g.*, the United Arab Emirates. *See, e.g.*, Global Mobile Suppliers Association (GSA), *Spectrum for Terrestrial 5G Networks: Licensing Developments Worldwide* 45 (2019) ("GSA Report"). China and Hong Kong have made spectrum available from 3.3 – 3.6 GHz for 5G. *See, e.g.*, *5G spectrum auction picks up in 2018 — report by GSA*, Telecomlead (Dec. 28, 2018), https://www.telecomlead.com/5g/5g-spectrum-auction-picks-up-in-2018-report-by-gsa-88154. *See also, e.g.*, GSA at 17. According to the GSA Report, China's Ministry of Industry and Information Technology ("MIIT") also reserved 2525 – 2675 MHz and 4800 – 5000 MHz for 5G, as well as the millimeter wave spectrum in 26 GHz and 39 GHz. *Id.*

[13] *See, e.g.*, Monica Alleven, *China reserves spectrum for 5G, says more low-band frequencies coming: report, Fierce Wireless* (November 15, 2017, 11:25 AM), https://www.fiercewireless.com/wireless/china-reserves-spectrum-for-5g-says-more-low-band-frequencies-coming-report (China's Ministry of Industry and Information Technology (MIIT) has officially reserved 3.3 – 3.6 GHz and 4.8 – 5 GHz for 5G service, and it will likely free up 3.6 – 4.2 GHz for future 5G allocation, according to Jefferies analysts). *But see* GSA report at 17.

[14] *See, e.g.*, GSA Report at 43.

[15] *E.g.*, White Paper, 5G Americas, *5G Spectrum Vision* 12-13 (2019). China's MIIT provided China Unicom 100 MHz at 3.5 – 3.6 GHz, China Telecom 100 MHz at 3.4 – 3.5 GHz; and China Mobile more than 100 MHz at 4.8 – 4.9 GHz, as well as refarming its 2.525 – 2.675 GHz spectrum for 5G. China Telecom and China Unicom will also be able to share the 100 MHz at 3.3 – 3.4 GHz for indoor coverage. *See* Wikipedia, List of 5G NR networks (last visited February 21, 2020), https://en.wikipedia.org/wiki/List_of_5G_NR_networks.

[16] *Notice* at § 5.

4. NTIA'S REPORTS ON THE FEASIBILITY OF COMMERCIAL SERVICE IN 3 GHZ

In October 2018, President Trump issued a Presidential Memorandum that directed the Secretary of Commerce, working through the NTIA, the Commission, the Office of Management and Budget and the Office of Science and Technology Policy to submit an annual status report on spectrum repurposing initiatives in order to further the national policy of efficient and effective use of spectrum.[17] In August 2019, NTIA released its initial annual status report on spectrum repurposing and its *Review of Current Frequency Assignments and Quantification of Spectrum Usage*. In that Review, NTIA announced that the 3.1 – 3.55 GHz band could be reviewed in a relatively short period of time, and that it would therefore conduct an initial assessment. On January 27, 2020, NTIA issued its report on the *Technical Feasibility of Sharing Federal Spectrum with Future Commercial Operations in the 3450-3550 MHz Band*, without addressing in full the 3.1 – 3.3 GHz portion, let alone the 3.3 – 3.45 GHz portion.[18] In light of Congress's mandate in MOBILE NOW[19], NTIA's narrow focus on just the 100 MHz at the top of the band is disappointing, and appears at odds with other government analysis underway.[20]

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[17] *See* Memorandum from the President of the United States on "Developing a Sustainable Spectrum Strategy for America's Future" to the Heads of Executive Departments and Agencies (Oct. 25, 2018), https://www.whitehouse.gov/presidential-actions/presidential-memorandum-developing-sustainable-spectrum-strategy-americas-future/.

[18] *See* NTIA Technical Report 20-546.

[19] Congress's choice of the acronym "NOW" presumably meant to convey urgency to the Administration in repurposing mid-band spectrum.

[20] The Department of Defense has initiated a 5G dynamic spectrum sharing project to study sharing the 3.1 – 3.45 GHz band, with the ultimate goal to implement remote radio heads covering the entire 3100 – 3800 MHz and Software Defined Radio (SDR) base stations (4G/5G) compatible with a 4G core that will be upgraded to a 5G core.

5G Americas will not comment in-depth on NTIA's recently released report on the 3.45 – 3.55 GHz band until the Commission officially requests comments.[21] 5G Americas appreciates that many mission-critical federal systems are in the 3.1 – 3.55 GHz band. But in light of developments around the world at 3.3 – 4.2 GHz for 5G, as well as the Defense Innovation Board's recommendation last year[22] that for the U.S. to lead in 5G, more mid-band spectrum must be made available, it behooves NTIA to expeditiously study the lower ranges of the band.[23] 5G Americas commends the Commission for its action on 3.3 – 3.55 GHz, and asks that it continue to work closely with NTIA to progress the feasibility studies, as Congress directed, below 3.45 GHz to 3.3 GHz, and then down to 3.1 GHz.

5. WRC-19 DEVELOPMENTS ON 3 GHZ

While 3GPP has identified Band 77 (3.3 – 4.2 GHz) for 5G, and many major markets in Europe, the Middle East and Asia have made broad portions of that range available for 5G, many countries outside the largest economies require International Telecommunication Union ("ITU") identification of spectrum for particular services or applications before they will adopt such uses in their national regulations. The recently concluded World Radiocommunication Conference ("WRC"), organized by the ITU, witnessed great interest in the 3.3 – 3.4 GHz band for commercial mobile service, with a number of countries joining the sub-regional mobile allocation and IMT identification in the band. The WRC also agreed to study various ranges of

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[21] Under MOBILE NOW, the Commission is to seek public comment on NTIA's report on the feasibility of sharing the 3.1 – 3.55 GHz band with commercial wireless services. MOBILE NOW § 605(d).

[22] *See* Defense Innovation Board, *The 5G Ecosystem: Risks and Opportunities for DOD* at 21 (2019).

[23] 5G Americas is pleased that NTIA has blogged that the report on 3.45 – 3.55 GHz is just its initial report, and that it plans to complete its report on the entire band later this year. *See* Charles Cooper, *NTIA Report Finds Viable Options for Spectrum Sharing in 3450-3550 MHz Band*, NTIA (Jan. 27, 2020), https://www.ntia.gov/blog/2020/ntia-report-finds-viable-options-spectrum-sharing-3450-3550-mhz-band. 5G Americas encourages expedition on the rest of the band.

mid-band spectrum, including 3.3 – 3.4 GHz, for IMT identification at the next WRC in 2023 ("WRC-23"). For our Region of the Americas, within Band 77, the ITU agreed to study 3.3 – 3.4 GHz and 3.6 – 3.8 GHz for possible identification of the bands for 5G (or for IMT, the ITU acronym for mobile broadband including 5G) at WRC-23. The ITU will also study the possible identification of IMT in 3.3 – 3.4 GHz in Region 1 (Europe, the Middle East and Africa) at WRC-23.

In addition to agreeing to these global or regional studies for possible identification for IMT at WRC-23 in the mid-band, WRC-19, as noted above, also agreed to add a number of countries to the existing footnotes identifying IMT in the 3 GHz range in the ITU's Table of Allocations.[24] The ITU's Table of Allocations provides regional or global allocations, in order to promote harmonized use of spectrum. The Table also has footnotes through which countries sign on to additional service allocations or application identifications for listed bands. At WRC-19, nine countries added themselves to existing footnotes allocating the 3.3 – 3.4 GHz band for mobile on a primary basis and/or additionally identifying it for IMT.[25] At the WRC's conclusion, seventy-six countries, drawn from each of the three ITU Regions, were signatories to these 3.3 – 3.4 GHz footnotes,[26] in advance of the outcome of the studies over the next four years, clearly indicating growing global interest in the 3.3 – 3.4 GHz band for commercial wireless service. Moreover, WRC-19 selected the band for studies and additional consideration for regional mobile allocations and identification for IMT in the Americas, Europe, Africa and

[24] The ITU Radio Regulations ("RR") identify the bands 3300 – 3400 MHz (5.429D), 3400 – 3600 MHz (5.432B – 5.433A), and 3600 – 3700 MHz (5.434) for use by administrations wishing to implement the terrestrial component of IMT.

[25] Article 5 of the RR at 5.429C allocates the 3.3 – 3.4 GHz band to mobile on a primary basis under specific conditions in Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay.

[26] *See* Provisional Final Acts, Modifications to Footnotes 5.429 – 5.429F (2020).

the Middle East under WRC-23 Agenda Item 1.2. These decisions by the Conference certainly support the Commission proposal now to relocate non-federal secondary users out of the 3.3 – 3.55 GHz band to begin to prepare the band for commercial wireless.[27]

Today, the next band up, 3.4 – 3.5 GHz, is already allocated in Regions 1 and 2 for mobile (except aeronautical) on a primary basis and identified for IMT.[28] In Region 3, that band is allocated to mobile on a secondary basis.[29] Up the spectrum chart, the band 3.5 – 3.6 GHz is also allocated today to mobile (except aeronautical) globally on a primary basis. Regions 1 and 2 have already identified the combined 3.4 – 3.6 GHz band for IMT.[30] With respect to Region 3, at WRC-19, more Asian countries joined the Region 3 additional co-primary mobile footnotes for the band, with thirteen countries plus the French communities in Region 3 identifying the 3.4 – 3.5 GHz band for IMT and fourteen countries plus the French territories identifying the 3.5 – 3.6 GHz band for IMT.[31]

The trends for these band segments confirms the Commission's belief that clearing the 3.3 – 3.55 GHz band of non-federal secondary allocations will promote international harmonization

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[27] The Conference also agreed to an additional study item (WRC-23 Agenda Item 1.3) to consider possible allocation of the frequency band 3.6 – 3.8 GHz to the mobile service, except aeronautical mobile, on a primary basis within Region 1. Europe has already identified in its national regulation 3.4 – 3.8 GHz as the primary band for 5G. However, within the ITU's Table of Allocations, the 3.6 – 3.8 GHz band is not yet allocated for Mobile services in Region 1 where Europe is located. WRC-23 Agenda Item 1.3 also has the potential of expanding a mobile allocation beyond just Europe, to the countries in the Middle East and Africa, which also are located within ITU-R Region 1.

[28] *See* RR 5.430A and 5.431B

[29] *See* RR Article 5 for 3400-3500 MHz.

[30] *See* RR 5.430A and 5.431B.

[31] Twelve countries plus the French communities in Region 3 identified 200 MHz of spectrum at 3.4 – 3.6 GHz for IMT at the most recent WRC. *See* WRC-19 Provisional Final Acts, RR 5.432 – 5.433A. In addition, at WRC-19, the existing Region 2 footnote identifying IMT in 3.6-3.7 GHz also gained more adherents. Not including the original proponent and signatory—the United States—the number of countries joining the footnote at WRC-19 doubled. See WRC-19 Provisional Final Acts, 5.434.

for commercial wireless service.[32] That many countries in each of the three Regions are identifying multiple 100 MHz of spectrum for IMT in the 3 GHz range also justifies making what spectrum is ultimately repurposed for commercial use at 3.1 – 3.55 GHz available on an exclusively licensed basis.

6. RELOCATION PROPOSALS

5G Americas agrees with the Commission that its relocation of non-federal, high-power weather radar currently operating in 3.5 – 3.55 GHz should minimize the potential for harmful interference from these non-federal radars to Citizens Broadband Radio Service operations, which are located in the globally harmonized range for 5G of 3.3 – 4.2 GHz.[33] However, 5G Americas disagrees that the non-federal radars should be moved into the lower 3.1 GHz band. Such a relocation would make the task of ultimately repurposing the 3.1-3.3 GHz band for commercial wireless service more difficult, and complicate the sharing environment with any federal systems for which relocation is not feasible.

With respect to the secondary amateur use in the 3.3 – 3.55 GHz band, 5G Americas recognizes that amateur radio operators serve an important public purpose. We advise that the Commission find another band in which amateur operations could be co-primary.

7. CONCLUSION

5G Americas thanks the Commission for moving on the 3.3 – 3.55 GHz band, and for its recognition that the band, as well as the entire range up to 4.2 GHz, is being harmonized globally

[32] The ITU will also study over the next several years whether it should also identify the 3.6 – 3.8 GHz band for IMT in Region 2 at WRC-23. *See* WRC-23 Agenda Item 1.2 and WRC-19 Resolution 245.

[33] *Notice* at § 11.

for 5G. Indeed, the recently concluded WRC saw numerous countries sign up for 3.3 – 3.5 GHz for IMT, and other 3 GHz ranges, as well as agree to study the band for region-wide IMT harmonization at the next WRC. As the Commission is aware, proceeds for the auction of internationally-harmonized spectrum have historically netted more than spectrum lacking a global ecosystem.[34] Accordingly, 5G Americas not only supports the Commission's proposal to relocate non-federal secondary allocations out of the band to prepare it for commercial wireless use, but advises that the Commission, when it does make the 3.3 – 3.55 GHz spectrum available for commercial use, does so under exclusive commercial licenses. Any potential sharing with federal users for which relocation is not feasible should not be done with a generally authorized access tier, as with CBRS. Moreover, 5G Americas encourages the Commission to continue to review the rest of the band that Congress directed it to study, and take action in the near term on the rest of the band, 3.1 – 3.3 GHz. The approaches above will best position the U.S. to lead in 5G into the future.

[34] *E.g.*, NTIA, AWS-3 Transition (last visited Feb. 20, 2020), https://www.ntia.doc.gov/category/aws-3-transition (Auction proceeds for the internationally-harmonized AWS-3 band were approximately $45 Billion, compared to the approximately $20 Billion in proceeds for the not yet internationally-harmonized spectrum at 600 MHz); *see also, e.g.*, FCC, Broadcast Incentive Auction and Post-Auction Transition (last visited Feb. 21, 2020), https://www.fcc.gov/about-fcc/fcc-initiatives/incentive-auctions. WRC-23 has an agenda item to identify 600 MHz for IMT in Region 1 and additional countries joined the 600 MHz identification at WRC-19, so a global ecosystem will develop in the band).