

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of
Allocation and Service Rules for the 1675-1680
MHz Band
WT Docket No. 19-116

NOTICE OF PROPOSED RULEMAKING AND ORDER

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By the Commission: Chairman Pai and Commissioners Carr and Rosenworcel issuing separate statements.

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## I. INTRODUCTION

1. Today we propose rules to reallocate spectrum in the 1675-1680 MHz band for shared use between incumbent federal operations and new, non-federal flexible wireless (fixed or mobile) use operations. This proposal to make additional spectrum available for non-federal flexible wireless use is another step in the Commission's efforts to help ensure that the speed, capacity, and ubiquity of the nation's wireless networks keep pace with ever-increasing demand for wireless broadband. It is also part of a broader government effort to introduce more spectrum into the marketplace while protecting important federal missions.<sup>1</sup>

2. In this proceeding, we are pursuing the joint goals of making spectrum available for new, non-federal flexible wireless use while protecting incumbent federal operations. As discussed below, this band is used for important weather forecasting services. Specifically, the 1675-1680 MHz band is currently allocated in the United States Table of Frequency Allocations (U.S. Table) as part of the 1675-1695 MHz band on a co-primary basis to the Meteorological Aids (MetAids) (radiosondes)<sup>2</sup> and the Meteorological Satellite (MetSat) (space-to-Earth) services for both federal and non-federal use.<sup>3</sup> The National Oceanic and Atmospheric Administration (NOAA) currently uses multiple frequencies in the band for its weather tracking and monitoring capabilities. This use occurs in several fixed locations throughout the country to disseminate weather and water information. Herein we investigate whether the fixed nature of the MetAids and MetSat services will leave large geographic areas in which spectrum may feasibly be shared with new, non-federal flexible wireless uses.

3. Our proposed reallocation has the potential to spur innovation and investment in new wireless technologies, and we seek to do so without significantly affecting incumbent users. In proposing to reallocate the 1675-1680 MHz band on a co-primary basis and to develop rules that would enable the band to be shared, we encourage commenters to study and consider the tools, technical limitations, and other steps necessary to protect incumbent federal operations while making the spectrum available for new, non-federal uses.<sup>4</sup> We intend to work collaboratively, as necessary, with our counterparts at the National Telecommunications and Information Administration (NTIA) and NOAA to study how these goals can be accomplished. To that end, we will add any relevant studies published and made publicly available by federal agencies to the record in this proceeding.

## II. BACKGROUND

4. Wireless broadband represents a critical component of economic growth, job creation, public safety, and global competitiveness. Subscribers in North America consume more mobile data per

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<sup>1</sup> See, e.g., *Spectrum Horizons et al.*, ET Docket No. 18-21 et al., Notice of Proposed Rulemaking, 33 FCC Rcd 2438, 2438-43, paras. 1-5 (2019) (*Spectrum Horizons NPRM*); *Use of Spectrum Bands Above 24 GHz, et al.*, GN Docket No. 14-177, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, 2018 WL 2932188 at \*20-25, paras. 58-74 (2018); *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, GN Docket No. 17-183, Notice of Inquiry, 32 FCC Rcd 6373, 6374, paras. 2-3 (2017).

<sup>2</sup> A radiosonde is an automatic radio transmitter in the MetAids Service usually carried on an aircraft, free-floating balloon, kite or parachute, and which transmits near real-time environmental and meteorological data (e.g., atmospheric pressure, temperature, and relative humidity). The meteorological data from these radiosondes provide warnings and forecasts of weather events such as tornados and tropical cyclones. Radiosondes are launched twice a day from nearly 90 sites located throughout the United States and its possessions.

<sup>3</sup> See 47 CFR § 2.106 (Table of Frequency Allocations); *id.* Footnote US88.

<sup>4</sup> Furthermore, as discussed below, we recognize that there are some non-federal users, including state, local, and tribal governments, that receive data in this band; we seek comment below on how they might be able to continue to use the federal service, or otherwise have access to alternative means of delivering the same data.

smartphone, per month than subscribers in almost any other country.<sup>5</sup> As network capacity strains to keep pace with these requirements, the demand for spectrum is expected to continue to increase. For example, North America is projected to have the highest smartphone penetration rate in the world between now and 2025.<sup>6</sup> In response, the Commission continues to work to identify and make available additional licensed and unlicensed spectrum to meet this growing demand.

5. We also note that multiple Administrations have proposed reallocating the 1675-1680 MHz band for non-Federal use to improve spectrum management and enact sound economic policy. For instance, the budgets submitted by the President for Fiscal Years 2014 through 2019 all proposed that the Commission should reallocate the 1675-1680 MHz band for non-federal shared use.<sup>7</sup> Most recently, the Fiscal Year 2020 budget proposed, using language similar to previous years, that the Commission “either auction or use fee authority to assign spectrum frequencies between 1675-1680 megahertz for flexible use by 2020, subject to sharing arrangements with Federal weather satellites.”<sup>8</sup> The proposals call on NOAA “to establish limited protection zones for [its] remaining weather satellite downlinks and develop alternative data broadcast systems for users of its data products.”<sup>9</sup>

6. Congress has also adopted legislation to promote making our national spectrum resources available for non-federal use, including sharing of spectrum between commercial and federal users. Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (the Spectrum Act),<sup>10</sup> the Commercial Spectrum Enhancement Act of 2004 (CSEA),<sup>11</sup> and Title X of the Bipartisan Budget Act of 2015 (Spectrum Pipeline Act),<sup>12</sup> all included provisions designed to make more spectrum available for non-federal or shared use. Notably, the CSEA created the Spectrum Relocation Fund to streamline the process by which federal incumbents can recover the costs associated with relocating their spectrum-dependent systems from spectrum bands authorized to be licensed under the Commission’s competitive bidding authority.<sup>13</sup> The Spectrum Act extended the CSEA cost reimbursement mechanism for federal incumbents to include sharing as well as relocation costs<sup>14</sup> and to facilitate federal incumbents’ sharing of spectrum with commercial users by expanding the types of expenditures that can be funded or reimbursed

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<sup>5</sup> See Ericsson, Ericsson Mobility Report at 16 (Nov. 2018), <https://www.ericsson.com/assets/local/mobility-report/documents/2018/ericsson-mobility-report-november-2018.pdf> (2018 Ericsson White Paper).

<sup>6</sup> GSM Association, The Mobile Economy – 2019 at 8-9 (Feb. 2019) <https://www.gsmaintelligence.com/research/?file=b9a6e6202ee1d5f787cfebb95d3639c5&download>. One study estimated that in 2018, the average North American smartphone user consumed 8.6 gigabytes of data per month. Usage is predicted to climb to 50 gigabytes of mobile data per month by 2024. 2018 Ericsson White Paper at 12.

<sup>7</sup> See *Fiscal Year 2014 Analytical Perspectives, Budget of the U.S. Government*, Office of Management and Budget, at 228-229; *Fiscal Year 2015 Analytical Perspectives, Budget of the U.S. Government*, Office of Management and Budget, at 199; *Fiscal Year 2016 Analytical Perspectives, Budget of the U.S. Government*, Office of Management and Budget, at 215; *Fiscal Year 2017 Analytical Perspectives, Budget of the U.S. Government*, Office of Management and Budget, at 220; FCC Fiscal Year 2018 Budget in Brief at 7 (May 2017), available at [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-344998A2.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-344998A2.pdf); FCC Fiscal Year 2019 Budget in Brief at 9 (February 2018), available at [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-349156A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-349156A1.pdf); FCC Fiscal Year 2020 Budget in Brief at 10 (March 2019), available at <https://docs.fcc.gov/public/attachments/DOC-356607A2.pdf>.

<sup>8</sup> FCC Fiscal Year 2020 Budget in Brief at 10.

<sup>9</sup> *Id.*

<sup>10</sup> Spectrum Act, Pub. L. 112–96 §§ 6001-6703. “[C]omparable capability of systems... may be achieved by relocating a Federal Government station to a new frequency assignment, by relocating a Federal Government station to a different geographic location, by modifying Federal Government equipment to mitigate interference or use less spectrum, in terms of bandwidth, geography, or time, and thereby permitting spectrum sharing (including sharing among relocated Federal entities and incumbents to make spectrum available for non-Federal use) or relocation, or by utilizing an alternative technology... .” Subtitle G sec. 6701 (3)(B)(i) p.247.

<sup>11</sup> 47 U.S.C. §§ 309(j)(3), (8), (15), 923.

from the Spectrum Relocation Fund.<sup>15</sup> The Spectrum Pipeline Act also modified the CSEA to provide funds from the Spectrum Relocation Fund for research and development, engineering studies, economic analyses, or other activities that “improve the efficiency and effectiveness of the spectrum use of federal entities in order to make available frequencies ... for reallocation for non-federal use or shared federal and non-federal use, or a combination thereof, and for auction in accordance with such reallocation.”<sup>16</sup>

7. On March 23, 2018, Congress passed the Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018 (RAY BAUM’S Act), which requires NTIA and the Commission to identify a total of at least 255 megahertz of federal and non-federal spectrum for mobile and fixed wireless broadband use by December 31, 2022.<sup>17</sup> In identifying such spectrum, the Act requires NTIA and the Commission to consider, among other things, the need to preserve critical existing and planned federal government capabilities, appropriate enforcement mechanisms, and the importance of wireless broadband deployment in rural areas.<sup>18</sup>

#### A. Allocations and Uses Associated with the 1675-1680 MHz Frequencies

8. *The 1675-1680 MHz Band.* The 1675-1680 MHz band currently is allocated as part of the wider 1675-1695 MHz band, which is allocated on a co-primary basis to the MetAids and MetSat (space-to-Earth) services for both federal and non-federal use.<sup>19</sup> The MetSat allocation is subject to Footnote US88 in the U.S. Table, which identifies 14 protection zones for federal earth stations receiving in the 1675-1695 MHz band.<sup>20</sup> The 1675-1683 MHz portion of the 1675-1695 MHz band currently is used widely by NOAA for radiosondes.<sup>21</sup> These radiosondes are scheduled to be relocated to the 401-406 MHz band by February 19, 2021.<sup>22</sup> The Commission has no service rules for non-federal radiosonde operations in the MetAids Service and has not issued any licenses for such operations in the 1675-1683 MHz portion of the band.<sup>23</sup> In addition, NTIA has assigned several frequencies in different portions of the 1675-1695 MHz band to NOAA for Geostationary Operational Environmental Satellites-N Series (GOES-N) downlinks, with the 1673.4-1678.6 MHz portion of the band being used for Sensor Data

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<sup>12</sup> Bipartisan Budget Act of 2015, 129 Stat. 584, Sec. 1001 (2015). The Spectrum Pipeline Act requires NTIA to submit a report to the President and the Commission identifying 30 megahertz of spectrum below 3 GHz for reallocation from federal use to non-federal or shared use by no later than January 1, 2022. In compliance with this requirement, NTIA may not identify any spectrum between 1675 MHz and 1695 MHz.

<sup>13</sup> 47 U.S.C. §§ 309(j), 923.

<sup>14</sup> *Id.* The CSEA, as amended by the Spectrum Act, requires the Commission to notify NTIA at least 18 months before the start of an auction of eligible frequencies and for NTIA to notify the Commission of estimated relocation and sharing costs, and timelines for such relocation or sharing, at least 6 months before the start of the auction. 47 U.S.C. § 923(g)(4). The conclusion of any auction of eligible frequencies reallocated from federal use to non-federal use or from federal use to shared use, however, is contingent on the auction proceeds attributable to such spectrum reaching 110 percent of the total estimated relocation or sharing costs provided to the Commission by NTIA. Spectrum Act § 6401(b)(3), codified at 47 U.S.C. § 1451(b)(3) (proceeds to cover 110 percent of federal relocation or sharing costs) *citing* 47 U.S.C. § 309(j)(16)(B).

<sup>15</sup> *Id.* § 923(g)(3). These changes now permit federal agencies to receive funds associated with planning for Commission auctions and relocations, spectrum sharing, the use of alternative technologies, the replacement of existing federal government-owned equipment with state-of-the-art systems, and the research, engineering studies, and economic analyses conducted in connection with spectrum sharing arrangements, including coordination with auction winners. *Id.* In addition, the Spectrum Act created a new category of allowable pre-auction costs that may, in certain circumstances, be funded before the start of a Commission auction of licenses for applicable eligible frequencies. *Id.*

<sup>16</sup> Spectrum Pipeline Act § 1005(a)(2).

<sup>17</sup> RAY BAUM’S Act of 2018, Pub. L. No. 115-141, Division P, § 603(a) (2018).

<sup>18</sup> *Id.* § 603(a)(7).

Links<sup>24</sup> at four locations (Wallops Island, VA; Greenbelt, MD; Omaha, NE; and Fairbanks, AK).<sup>25</sup> The National Weather Service also uses GOES-N downlinks from 1680.5 to 1694.5 MHz at several locations (Miami, FL; Kansas City, MO; Suitland, MD; Silver Spring, MD; College Park, MD; Norman, OK; Boulder, CO; Honolulu, HI; and Anchorage, AK). NOAA also receives GOES-N series data at Asheville, NC; Stennis, MS; Madison, WI; Chesapeake, VA; and Seattle, WA. The Department of Defense receives GOES-N series downlinks at over 20 locations. The National Aeronautics and Space Administration (NASA) receives GOES-N series data at Huntsville, AL and Houston, TX.<sup>26</sup> Existing GOES satellites will continue to transmit Sensor Data Link signals in the 1673.4-1678.6 MHz band and other downlinks up to 1694.8 MHz until at least 2025.<sup>27</sup>

9. On November 19, 2016, NOAA successfully launched the first satellite of its next generation GOES-R Series, GOES-16,<sup>28</sup> using frequencies in the 1679.7-1694.7 MHz band, to provide improved detection and observation of environmental phenomena.<sup>29</sup> The first GOES-R series systems became operational in the upper portion of that band at 1679.7-1680 MHz on December 18, 2017.<sup>30</sup> On March 1, 2018, NOAA successfully launched the second satellite in the GOES-R Series, GOES-17, which became operational on February 12, 2019.<sup>31</sup> NOAA anticipates that the GOES-R satellite constellation will continue operating until at least 2036.<sup>32</sup> Services on the GOES-R series satellites in 1679.7 to 1694.7 MHz include the Data Collection System, the GOES-R Rebroadcast, and High Rate Information Transfer/Emergency Managers Weather Information Network. NOAA, the Department of Defense, NASA, the Department of Interior, the Federal Aviation Administration, the Department of Agriculture, and other non-federal entities operate earth stations that receive environmental research and operational weather data transmitted from GOES in the 1675-1695 MHz band.<sup>33</sup> These federal and non-federal entities receive and collect data via direct broadcast from the GOES constellation of satellites; for the GOES-R Series, the direct rebroadcast services are GOES-R Rebroadcast and High Rate Information Transfer/Emergency Managers Weather Information Network.<sup>34</sup>

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<sup>19</sup> See 47 CFR § 2.106. We note that Ligado Networks LLC (Ligado) and its predecessor LightSquared petitioned the Commission to initiate a rulemaking to determine whether to allocate this band for non-federal terrestrial mobile use on a shared basis with federal users. See generally *Petition of LightSquared Subsidiary LLC for Rulemaking* (filed Nov. 2, 2012) (LightSquared Petition); see *Petition for Rulemaking Filed*, RM No. 11681, Public Notice, Report No. 2967 (CGB Nov. 9, 2012). LightSquared Subsidiary LLC (LightSquared) emerged from bankruptcy in December 2015. See *Applications of LightSquared Subsidiary LLC, Debtor-in-Possession, and LightSquared Subsidiary LLC For Consent to Assign and Transfer Licenses and Other Authorization and Request for Declaratory Ruling on Foreign Ownership*, IB Docket No. 15-126, Memorandum Opinion and Order and Declaratory Ruling, 30 FCC Rcd 13988 (2015). Beginning in December 2015, filings by these entities in the RM No. 11681 docket have been submitted by “New LightSquared” until its rebranding as Ligado on February 10, 2016. See Ligado Networks press release, available at <http://ligado.com/press-release/ligado-networks-launches-with-goal-to-expand-delivery-of-next-generation-mobile-connectivity>. Prior to December 2015, additional filings on the petition were made by LightSquared. See also *Comment Sought to Update the Record on Ligado’s Request that the Commission Initiate a Rulemaking to Allocate the 1675-1680 MHz Band for Terrestrial Mobile Use Shared with Federal Use*, RM-11681, Public Notice, 31 FCC Rcd. 3813 (OET, IB, WTB, rel. Apr. 22, 2016). Although we do not address Ligado’s petition for rulemaking at this time, we incorporate the record from RM No. 11681 in this new docket.

<sup>20</sup> Both the MetSat and MetAids services are subject to US211, which indicates that “applicants for airborne or space station assignment are urged to take all practicable steps to protect radio astronomy observations in the adjacent bands from harmful interference, even though US74 applies.” US74, in turn, provides that radio astronomy locations are protected from unwanted emissions only to the extent that the offending stations operate in violation of the relevant technical rules. US289, which provides that earth exploration-satellite service applications may be used for space-to-earth transmissions subject to not causing harmful interference, also applies to the 1675-1695 MHz band, but only to the 1690-1695 MHz band.

10. *The adjacent 1670-1675 MHz band.* The 1675-1680 MHz band is adjacent to the 1670-1675 MHz band, which is allocated on a co-primary basis in the Non-Federal portion of the U.S. Table to fixed and mobile (except aeronautical mobile) services.<sup>35</sup> In 2001, the Commission reallocated the 1670-1675 MHz band from co-primary federal and non-federal MetAids and MetSat Service (space-to-Earth) allocations to co-primary Fixed and Mobile (except aeronautical mobile) services allocations for Non-Federal use, subject to the requirement that the GOES earth stations at Wallops Island, Greenbelt, and Fairbanks, which receive in the 1670-1675 MHz band on a co-primary basis, are protected through coordination by any new non-federal user with those earth stations.<sup>36</sup> The 1670-1675 MHz band is licensed on a nationwide basis.<sup>37</sup>

11. *International Allocations of the 1675-1690 MHz band.* In all three International Telecommunication Union (ITU) Regions of the International Table of Frequency Allocations (International Table), the 1675-1690 MHz band also is allocated on a co-primary basis to the MetAids and MetSat (space-to-Earth) services, and it includes co-primary allocations for both Fixed and Mobile (except aeronautical mobile) services.<sup>38</sup>

### III. DISCUSSION

12. In this NPRM, we continue the Commission's efforts to unleash more spectrum to spur the rollout of wireless networks and technologies. In furtherance of this goal, we propose to reallocate the 1675-1680 MHz band on a co-primary basis for terrestrial fixed and mobile (except aeronautical mobile) use on a shared basis with existing federal users, and we seek comment on appropriate service and technical rules for the band. We also seek comment on how to implement a sharing framework that would create opportunities for commercial operations in this band while protecting incumbent federal users. Finally, we seek comment on possible alternative methods of providing access to NOAA weather data to other non-federal users that currently receive such data via earth stations they operate in this band.

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<sup>21</sup> 47 CFR § 2.1(c). See *supra* note 2 for a description of radiosondes. See also NTIA, An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands at 2-2 (2010), [https://www.ntia.doc.gov/files/ntia/publications/fasttrackevaluation\\_11152010.pdf](https://www.ntia.doc.gov/files/ntia/publications/fasttrackevaluation_11152010.pdf) (Fast Track Report).

<sup>22</sup> See NOAA, Department of Commerce, National Oceanic and Atmospheric Administration Transition Plan for the 1695-1710 MHz Band at 11, 13 (2014), [https://www.ntia.doc.gov/files/ntia/publications/releasable\\_initial\\_doc\\_noaa\\_1695-1710\\_1\\_jul\\_14.pdf](https://www.ntia.doc.gov/files/ntia/publications/releasable_initial_doc_noaa_1695-1710_1_jul_14.pdf).

<sup>23</sup> We note that the Commission has issued a number of experimental licenses for temporary operations; only one of these currently concerns radiosonde operations, and it is due to expire in early 2020.

<sup>24</sup> Sensor Data Links transmit information about environmental conditions.

<sup>25</sup> See Fast Track Report at 3-2, A-7.

<sup>26</sup> Commerce, Justice, Science, and Related Agencies Appropriations for 2018: Hearing Before the Subcomm. on Commerce, Justice, Science, and Related Agencies, 115 Cong 27-225 (May 5, 2017) (13 Annex B – Partial List of Federal and Nonfederal Users of GOES Data), <https://www.govinfo.gov/content/pkg/CHRG-115hhrg27225/pdf/CHRG-115hhrg27225.pdf>.

<sup>27</sup> See NOAA Satellite Flyout Charts, <https://www.nesdis.noaa.gov/content/our-satelliteshttp://satelliteconferences.noaa.gov/2015/NSC20150Agenda-final.htm>.

<sup>28</sup> See <http://www.goes-r.gov>. See also NOAA, News Release, GOES-R heads to orbit, will improve weather forecasting, Nov. 19, 2016 (available at <http://www.noaa.gov/media-release/goes-r-heads-to-orbit-will-improve-weather-forecasting>) (last visited May 14, 2018).

<sup>29</sup> See 2015 NOAA Satellite Conference, Session 4.4 Frequency Matters. <http://satelliteconferences.noaa.gov/2015/NSC20150Agenda-final.htm>.

<sup>30</sup> See NOAA “GOES Operational Status” available at <http://www.ospo.noaa.gov/Operations/GOES/status.html>.

**A. Reallocation of the 1675-1680 MHz Band for Non-Federal Terrestrial Use**

13. Consistent with the allocation of the broader 1675-1690 MHz band in all three ITU Regions of the International Table,<sup>39</sup> we propose to reallocate the 1675-1680 MHz band on a co-primary basis for non-federal fixed and mobile (except aeronautical mobile) services. Similar to our allocation of certain other bands, the proposed reallocation of the 1675-1680 MHz band also would permit the band to be auctioned and used for fixed and mobile (except aeronautical mobile) services,<sup>40</sup> thereby providing flexibility for potential users to tailor the use of the band depending on the specific needs of their networks.<sup>41</sup> Making this band available for fixed and mobile (except aeronautical mobile) services could enhance the Commission's efforts to meet the demand for spectrum of varying characteristics to support next generation wireless networks. We seek comment on this proposal.

14. We emphasize that we are not proposing any changes to the federal allocations in the band. As discussed in more detail below, we propose that any new, non-federal fixed or mobile (except aeronautical mobile) operations be required to protect incumbent (current and planned) federal operations from harmful interference. Specifically, we propose that federal operations in the MetSat Service remain primary in this band.<sup>42</sup> However, we do propose to remove the unused non-federal MetAids Service allocation from the 1675-1680 MHz band, given that there are currently no non-federal radiosonde licensees in this band.<sup>43</sup> We also seek comment below on ways to ensure that non-federal users that rely on the data transmitted in the band from the GOES-N and GOES-R series satellites continue to have access to NOAA data. We seek comment on whether to include the protections for federal operations discussed below<sup>44</sup> in the Commission's rules or as a footnote to the U.S. Table.

15. We believe that our proposal to add co-primary allocations for fixed and mobile (except aeronautical mobile) services to the U.S. Table meets the requirements for the allocation of flexible use spectrum under Section 303(y) of the Communications Act of 1934, as amended.<sup>45</sup> That section allows

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<sup>31</sup> See *id.*

<sup>32</sup> See Mission Overview (available at <http://www.goes-r.gov/>) (last visited May 14, 2018).

<sup>33</sup> Fast Track Report at 3-1.

<sup>34</sup> In addition to the sites listed in the paragraph above (for the GOES-N series), additional GOES-R downlink locations include the district offices of the U.S. Army Corps of Engineers (Albuquerque, NM; Anchorage, AK; Baltimore, MD; Boston, MA; Buffalo, NY; Charleston, SC; Chicago, IL; Detroit, MI; Fairbanks, AK; Fort Greely, AK; Fort Wainwright, AK; Fort Worth, TX; Galveston, TX; Honolulu, HI; Huntington, WV; Jacksonville, FL; Juneau, AK; Kansas City, MO; Kenai, AK; Little Rock, AR; Los Angeles, CA; Louisville, KY; Memphis, TN; Mobile, AL; Nashville, TN; New Orleans, LA; New York, NY; Norfolk, VA; Omaha, NE; Philadelphia, PA; Pittsburgh, PA; Portland, OR; Rock Island, IL; Sacramento, CA; San Francisco, CA; Savannah, GA; Seattle, WA; Sitka, AK; St. Paul, MN; Tulsa, OK; Vicksburg, MS; Walla Walla, WA; Wilmington, NC).

<sup>35</sup> See 47 CFR § 2.106.

<sup>36</sup> See *Reallocation of the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands et al.*, ET Docket No. 00-221 et al., Report and Order and Memorandum Opinion and Order, 17 FCC Rcd 368, 394-397, paras. 61-66 (2001) (*Reallocation Order*) (revising U.S. Table of Frequency Allocations and adopting US362 to protect GOES earth stations); *Amendments to Parts 1, 2, 27, and 90 of the Commission's Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, WT Docket No. 02-8 et al., Report and Order, 17 FCC Rcd 9980 (2002) (authorizing a nationwide license and requiring licensee to protect GOES earth station operations in the band, per US362 and section 1.924(f) of the Commission's rules); 47 CFR § 2.106, at Footnote US362.

the Commission to allocate spectrum for flexible uses if the allocation is consistent with international agreements and if it finds that: (1) the allocation is in the public interest; (2) the allocation does not deter investment in communications services, systems, or development of technologies; and (3) such use would not result in harmful interference among users.<sup>46</sup> We seek comment on this view.

### **B. Sharing and Coordination Between Federal and Non-Federal Users**

16. As discussed, the 1675-1680 MHz band is currently used by NOAA for the MetSat and MetAids services. These services provide robust weather data to NOAA and other users, which they use for forecasting weather, and in part, managing hydrological resources across the country.<sup>47</sup> MetSat services will continue to occupy the band until at least 2036. We seek comment on an appropriate sharing mechanism that will allow both federal and non-federal users to operate successfully in the band. Specifically, we seek comment on how: (1) current federal earth stations in, and adjacent to, the band could be protected from harmful interference; (2) planned federal earth stations could be added to the band while minimizing disruptions to commercial service; and (3) non-federal earth stations that rely on the data transmitted in the band by NOAA satellites could continue to have access to this data.

17. We seek comment on the appropriate methodology, including a discussion of the likely costs and benefits of each, to protect incumbent (current and planned) federal earth stations from harmful interference. Specifically, should we establish fixed protection zones based upon the characteristics of the known federal earth stations and assumptions (or limitations) regarding the non-federal operations? Alternatively, should we establish dynamic protection zones that are enforced through effective monitoring capabilities? To what extent would federal and non-federal users need to coordinate to implement such protection zones? What technical characteristics of both federal earth stations and non-federal terrestrial operations should we consider when implementing a protection methodology? For example, to enable sharing, could NOAA seek Spectrum Relocation Fund support from the auction proceeds to install a spectrum monitoring system around each of its current and planned earth stations that

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<sup>37</sup> The 1670-1675 MHz band is licensed to OP, LLC, (OP) a subsidiary of Crown Castle International Corp. In 2007, the Commission granted OP a waiver in 30 Cellular Market Areas (CMA) to operate base stations using power spectral density (watts per megahertz) at higher power (4 kW/MHz urban, 8 kW/MHz rural). *See OP, LLC, (Crown Castle International Corp.), Licensee of WPTYQ-831, Petition for Waiver of Section 27.50 (F)(1) of the Commission's Rules*, Memorandum Opinion and Order, 22 FCC Rcd 4322 (2007). A subsidiary of Ligado is authorized to operate in the 1670-1675 MHz band through its long-term *de facto* transfer spectrum lease agreement with the licensee. *See ULS Lease ID L000007295*.

<sup>38</sup> *See* 47 CFR § 2.106.

<sup>39</sup> *See id.*

<sup>40</sup> *See, e.g., Reallocation of Television Channels 60-69, the 746-806 MHz Band*, ET Docket No. 97-157, Report and Order, 12 FCC Rcd 22953 (1998); *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, GN Docket No. 01-74, Report and Order, 17 FCC Rcd 1022 (2002) (the Commission found it in the public interest to transfer TV Channels 52-69 (698-806 MHz) from broadcast use to new wireless and public safety uses, and added primary fixed and mobile allocations to the 698-806 MHz band). *See also Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015) (*3.5 GHz Order*) (the Commission added co-primary fixed and mobile allocations to the 3550-3650 MHz band to facilitate a new commercial broadband service at 3550-3700 MHz).

<sup>41</sup> In 2001, the Commission reallocated the adjacent 1670-1675 MHz band to include a co-primary non-federal fixed, as well as mobile (except aeronautical mobile) allocation. *See Reallocation Order*, 17 FCC Rcd 368.

<sup>42</sup> This is consistent with the Commission's co-primary treatment of 47 federal earth stations in the 1695-1710 MHz band in the *AWS-3 Report and Order*. *See Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, GN Docket No. 13-185, Report and Order, 29 FCC Rcd 4610, 4611-12, para. 1 (2014) (*AWS-3 Report and Order*). *See* 47 CFR § 2.106, FN US88.

would be used to trigger a cessation of non-federal operations if a certain technical threshold is exceeded?<sup>48</sup> What other sharing techniques could be used to protect federal earth stations? Are there steps that NOAA could take to shield earth stations to help block emissions from the non-federal fixed or mobile users? We also note that our record will be informed by a study that NOAA is conducting using Spectrum Relocation Fund support, as provided under the Spectrum Pipeline Act, regarding the protection methodology necessary to make this band available on a shared basis with non-federal fixed or mobile (except aeronautical mobile) users.<sup>49</sup>

18. Assuming that we make this band available for non-federal fixed and mobile (except aeronautical mobile) operations, we seek comment on how to coordinate existing and planned federal earth stations in the future. In adopting rules for the reallocation of this band, we would aim to provide the necessary flexibility to federal users to add new earth stations, if necessary, while minimizing disruption to commercial services and reducing bidder uncertainty. Regardless of the protection methodology that we might adopt, we propose that non-federal users and federal users would coordinate to facilitate effective coexistence between federal users and commercial licensees. We seek comment on these proposals.

19. A number of non-federal users operate earth stations that receive the signal from the GOES-N and GOES-R series satellites to provide them access to data necessary to carry out their weather forecasting and other activities. We believe that these users should continue to have access to this data, and we seek comment on how best to achieve this goal. We seek comment on the number and location of such non-federal earth stations, the likelihood of interference at such locations, and ways to mitigate the risk of interference or otherwise ensure that they continue to have access to the data were we to allow non-federal fixed and mobile operations. In this regard, we note that we also expect that the completed Spectrum Pipeline Act study will provide additional information on these topics. To the extent that particular users rely on non-federal earth stations for critical public safety, weather forecasting, and emergency response data and are concerned about their ability to continue to receive the data directly from the NOAA satellites if the band is made available for shared operations, we encourage them to identify their locations and specific data needs, and discuss alternative means to receive such data. We seek comment on whether the Commission should identify such non-federal users that are not currently identified, and if so, how we should maintain such information—e.g., through registration, either voluntary or mandatory, in a database. Would a database or other means of tracking non-federal users help to facilitate coordination among users in this band?

20. To ensure that data from GOES satellites is made broadly available to the public, we seek comment on alternative means of delivering such data to current users and other interested parties. For

(Continued from previous page) \_\_\_\_\_

<sup>43</sup> See *supra* paragraph 8.

<sup>44</sup> See *infra* paragraphs 16-18.

<sup>45</sup> See 47 U.S.C. § 303(y).

<sup>46</sup> *Id.*

<sup>47</sup> Non-federal users of MetSat and MetAids services include, for example, state departments of agriculture, state departments of emergency response, public libraries, and the aviation and shipping industries. See also, e.g., Letter from Renée A. Leduc Clarke et al., Users and Stakeholders of Weather and Water Information and Technology, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-116, at 2 (filed May 2, 2019) (Clarke *Ex Parte*) (noting the use of the GOES Data Collection System by the Florida Department of Transportation, and the uses of GOES-R Rebroadcast by the University of Wisconsin and AccuWeather).

<sup>48</sup> See *supra* notes 13-15 for discussion of the procedures and standards of reimbursement using Spectrum Relocation Fund support.

<sup>49</sup> See Press Release, Federal Aviation Administration, SENSAR Team Gets Green Light for Spectrum Analysis (June 2, 2017), [https://www.faa.gov/news/updates/?newsId=88187&omniRss=news\\_updatesAoc&cid=101\\_N\\_U](https://www.faa.gov/news/updates/?newsId=88187&omniRss=news_updatesAoc&cid=101_N_U).

example, could an Internet-based or private network content delivery system be used to make the GOES data available more broadly, and without the need for an earth station? Is this an adequate means of ensuring the data can be accessed reliably?<sup>50</sup> What are the likely costs of shifting to either of these alternative delivery systems? Could such a content delivery system increase the total number of users with reliable access to such data? Would such a content delivery system deliver directly to end users without last-mile connectivity? To the extent that parties believe that an alternative solution would be less reliable than an earth station, we seek specific comment on the factors that contribute to the lower reliability for an Internet-based or other terrestrial solution. We note that NOAA already makes some MetSat and other weather data services available through other means—e.g., the Internet—and these services vary in bandwidth requirements. Are there examples in this or other bands in which other content delivery solutions have replaced or supplemented earth-station-based receivers? How do such data feeds perform during major weather events? What are the advantages and disadvantages of receiving MetSat data over such a mechanism, either on a supplementary or primary basis? Is there a particular network configuration that minimizes the risk of server overloads or other interruptions to such data feeds? Are there voluntary means by which commercial licensees of the 1675-1680 MHz band might assist in a successful transition to alternative delivery systems—e.g., would commercial licensees support the development, funding, and/or operation of a content delivery system? We also seek comment on any special protections that may be appropriate to ensure continuity of service for MetSat users. To that end, we seek comment on how non-federal MetSat receivers use MetSat data and the products or services such data supports.

### C. 1675-1680 MHz Band Plan

21. As detailed below, we propose some elements of the 1675-1680 MHz band plan and seek comment on others. We also seek comment on any appropriate alternatives.

22. *Unpaired Spectrum.* We generally have licensed other bands that support mobile broadband services on a paired basis under flexible use rules, assigning specific downlink and uplink bands only when necessary to avoid harmful interference to other users in the band or in adjacent bands.<sup>51</sup> Given the limited size of this band, however, we propose to auction 1675-1680 MHz licenses on an unpaired basis for terrestrial fixed and mobile use. Further, to avoid incompatible operations among co-channel or adjacent channel licensees, we propose that 1675-1680 MHz be used solely as a downlink band. We seek comment on this approach.<sup>52</sup> Will making such an unpaired flexible use band available promote competition in the mobile wireless marketplace? If this unpaired spectrum is used in conjunction with other spectrum to provide additional downlink capacity, are there particular bands with which carrier aggregation could most easily be accommodated?<sup>53</sup> We invite comment on what approach to take, and the costs and benefits of particular approaches.

23. Alternatively, we seek comment on whether to authorize this band for a combination of uplink and downlink on a TDD or other basis (as in the adjacent unpaired 1670-1675 MHz band), or for

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<sup>50</sup> See *Clarke Ex Parte* at 2 (noting that GOES-R Rebroadcast service functional and performance specifications require an availability of 99.988% over a 30-day period).

<sup>51</sup> See, e.g., 47 CFR § 27.5(h) (AWS-1).

<sup>52</sup> See, e.g., Letter from Gerald J. Waldron, Counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB 11-109, RM-11681, at 2 (filed May 3, 2019) (*Ligado May 3 Ex Parte*) (arguing that the 1675-1680 MHz band could be used more efficiently if the Commission adopts rules more closely aligned with the adjacent 1670-1675 MHz band, which is licensed on a nationwide basis and is authorized for uplink, downlink, or TDD).

<sup>53</sup> For instance, the 1670-1675 MHz Band was made available on an unpaired basis and authorized for downlink or uplink; the AWS-3 A1 and B1 Bands (1695-1710 MHz) were made available on an unpaired basis and authorized for uplink only. See Letter from Ivan Seidenberg, Chairman, Ligado Networks LLC, to Ajit Pai, Chairman, FCC, IB Docket No. 11-109, RM-11681, at 1-2 (filed May 2, 2019) (*Ligado May 2 Ex Parte*) (noting that the rules for the adjacent 1670-1675 MHz band permit uplink, downlink, or TDD).

uplink. We seek comment on the costs and benefits of such alternate approaches, including the likely use cases each would support.

24. *Spectrum Block Size.* In determining the spectrum block sizes for the 1675-1680 MHz band, we seek to maximize efficient use of this band. We believe that creating a spectrum block of the entire five megahertz will best accommodate the fullest range of mobile wireless services.<sup>54</sup> The Commission has also found that five-megahertz blocks would provide entry opportunities for small and rural service providers.<sup>55</sup> We therefore propose to license the 1675-1680 MHz band as a five-megahertz block and seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternatives.

25. *License and Service Area Size.* Consistent with our approach in several other bands used to provide fixed and mobile services, we propose to license the 1675-1680 MHz band on a geographic area basis.<sup>56</sup> Geographic area licensing provides flexibility to licensees, promotes efficient spectrum use, and helps facilitate robust spectrum auctions.<sup>57</sup> We seek comment on this approach, including the costs and benefits of adopting a geographic area licensing scheme. Commenters should address how any alternative licensing approach would be consistent with the requirements of Section 309(j) and the statutory objectives that the Commission is required to promote in establishing methodologies for competitive bidding.<sup>58</sup>

26. In determining the appropriate geographic license size, the Commission considers several factors, including: (1) facilitating access to spectrum by both small and large providers; (2) providing for the efficient use of spectrum; (3) encouraging deployment of wireless broadband services to consumers, especially those in rural areas and tribal lands; and (4) promoting investment in and rapid deployment of new technologies and services.<sup>59</sup> In light of these considerations, we propose to license the 1675-1680 MHz band on a partial economic area (PEA) basis, which may enable a wide range of bidders to participate in the auction and select the focused geographic areas that are most suited to their planned operations using the 1675-1680 MHz spectrum. We ask commenters to discuss and quantify the economic, technical, and other public interest considerations of licensing on a PEA basis. We also ask commenters to address the costs and benefits of their recommended licensing approach, given that the band will be shared with federal users. For example, to what extent would incumbent federal operations extend across proposed license boundaries and, if they do, is this a relevant factor to consider in adopting such a licensing scheme? If commenters advocate licensing on some other geographic area licensing basis, they should discuss the economic, technical, and public interest considerations, and other relevant factors.<sup>60</sup>

27. We also seek comment on a licensing approach for the Gulf of Mexico. In AWS-1, AWS-3, AWS-4, and H Block, the Commission issued separate licenses for the Gulf of Mexico.<sup>61</sup> In the

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<sup>54</sup> *Incentive Auctions NPRM*, 27 FCC Rcd at 12403, paras. 127-28. Five-megahertz blocks can support a variety of wireless broadband technologies. *See generally id.*

<sup>55</sup> *See, e.g., Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Report and Order, 18 FCC Rcd 25162, 25178, para. 44 (2003) (*AWS-1 Service Rules R&O*).

<sup>56</sup> *See, e.g., 47 CFR § 27.6(h) and (i)* (AWS-1 and AWS-4, respectively).

<sup>57</sup> *See, e.g., Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, Order and Notice of Proposed Rulemaking, 2018 WL 3435167 at \*42, para. 138 (2018) (*Mid-Band NPRM*).

<sup>58</sup> *See 47 U.S.C. § 309(j)(3)-(4)*.

<sup>59</sup> *See, e.g., AWS-1 Service Rules R&O*, 18 FCC Rcd at 25174, para. 31; *see also 47 U.S.C. § 309(j)*.

<sup>60</sup> *See, e.g., Ligado May 2 Ex Parte* at 2 (arguing that a nationwide license would provide for closer coordination with the nationwide licensee in the adjacent 1670-1675 MHz band, and would be particularly well-suited to IoT applications for national industrial users that require service in all geographies).

<sup>61</sup> *See AWS-1 Service Rules R&O*, 18 FCC Rcd at 25174, para. 31. *See also 47 CFR § 27.6(j)* (H Block).

Upper 700 MHz band, however, the Commission included the Gulf of Mexico in larger service areas.<sup>62</sup> Commenters that support a separate service area or areas to cover the Gulf of Mexico should discuss what boundaries should be used, and whether special interference protection criteria or performance requirements are necessary due to the unique radio propagation characteristics and antenna siting challenges that exist for Gulf licensees.

#### **D. Licensing and Operating Rules; Regulatory Issues**

28. We seek to afford licensees the flexibility to align licenses in the 1675-1680 MHz band with licenses in other spectrum bands governed by Part 27 of the Commission's rules, including the adjacent 1670-1675 MHz band. We therefore propose that licensees in the 1675-1680 MHz band comply with licensing and operating rules that are applicable to all Part 27 services,<sup>63</sup> including assignment of licenses by competitive bidding,<sup>64</sup> flexible use,<sup>65</sup> regulatory status,<sup>66</sup> foreign ownership reporting,<sup>67</sup> compliance with construction notification requirements,<sup>68</sup> renewal criteria,<sup>69</sup> permanent discontinuance of operations,<sup>70</sup> partitioning and disaggregation,<sup>71</sup> and spectrum leasing.<sup>72</sup> We seek comment on our approach and ask commenters to identify any aspects of our general Part 27 service rules that should be modified to accommodate the particular characteristics of the 1675-1680 MHz band. In addition, we seek comment on service-specific rules for the 1675-1680 MHz band, including eligibility, mobile spectrum holdings policies, license term, performance requirements, renewal term construction obligations, and other licensing and operating rules. We also seek comment on the potential impact of our proposals on promoting competition. In addressing these issues, commenters should discuss the costs and benefits associated with these proposals and any alternative that commenters propose.

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<sup>62</sup> See *Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, WT Docket No. 99-168, First Report and Order, 15 FCC Rcd 476, 500, para. 56, n.137 (2000).

<sup>63</sup> We note the Commission recently amended several of the rules applicable to Part 27 services. See *Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal et al.*, WT Docket No. 10-112, Second Report and Order and Further Notice of Proposed Rulemaking and Order, 32 FCC Rcd 8874 (2017) (*WRS Renewal Reform 2<sup>nd</sup> R&O and FNPRM*). The *WRS Renewal 2<sup>nd</sup> R&O and FNPRM* adopted a unified framework for construction, renewal, and service continuity rules for flexible-use geographic licenses in the Wireless Radio Services. We note that the rule the Commission adopted to address construction obligations resulting from partition and disaggregation – 47 CFR § 1.950 – is pending approval from the Office of Management and Budget.

<sup>64</sup> 47 U.S.C. § 309(j); 47 CFR §§ 1.2101-1.2114.

<sup>65</sup> 47 CFR §§ 2.106, 27.2, 27.3. Section 303(y) of the Act provides the Commission with authority to provide for flexibility of use if: “(1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and an opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users.” Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251, 268-69; 47 U.S.C. § 303(y).

<sup>66</sup> 47 CFR § 27.10.

<sup>67</sup> 47 U.S.C. § 310; 47 CFR § 27.12.

<sup>68</sup> 47 CFR § 27.14(k).

<sup>69</sup> *Id.* § 1.949.

<sup>70</sup> *Id.* § 1.953.

## 1. Eligibility

29. Consistent with established Commission practice, we propose to adopt an open eligibility standard for licenses in the 1675-1680 MHz band.<sup>73</sup> We seek comment on this approach. Specifically, we seek comment on whether adopting an open eligibility standard for the licensing of the 1675-1680 MHz band would encourage efforts to develop new technologies, products, and services, while helping to ensure efficient use of this spectrum.<sup>74</sup> We note that an open eligibility approach would not affect citizenship, character, or other generally applicable qualifications that may apply under our rules. Commenters should discuss the costs and benefits of the open eligibility proposal on competition, innovation, and investment. Finally, a person who has been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant “is ineligible to hold a license that is required by [the Spectrum Act] to be assigned by a system of competitive bidding under Section 309(j) of the Communications Act.”<sup>75</sup> In the event that we assign licenses through competitive bidding, this ineligibility provision would apply to the 1675-1680 MHz band.

## 2. Mobile Spectrum Holding Policies

30. Spectrum is an essential input for the provision of mobile wireless services, and to implement provisions of the Communications Act, the Commission has developed policies to ensure that spectrum is assigned in a manner that promotes competition, innovation, and efficient use.<sup>76</sup>

31. We seek comment generally on whether and how to address any mobile spectrum holdings issues involving 1675-1680 MHz spectrum to meet our statutory requirements and ensure competitive access to the band. Similar to the Commission’s approach in the *2017 Spectrum Frontiers Order and FNPRM*, we propose not to adopt a pre-auction, bright line limit on the ability of any entity to acquire spectrum in the 1675-1680 MHz band through competitive bidding at auction.<sup>77</sup> Since such pre-

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<sup>71</sup> *Id.* § 1.950.

<sup>72</sup> *Id.* § 1.9001 *et seq.*

<sup>73</sup> The Commission has determined in a number of services that eligibility restrictions on licenses may be imposed only when open eligibility would pose a significant likelihood of substantial harm to competition in specific markets and when an eligibility restriction would be effective in eliminating that harm. This approach relies on market forces absent a compelling showing that regulatory intervention to exclude potential participants is necessary. *See, e.g., AWS-4 Service Rules R&O*, 27 FCC Rcd at 16193, paras. 241-42; *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT 06-150 et al., Second Report and Order, 22 FCC Rcd 15289, 15381, 15383-84, paras. 253, 256 (2007) (*700 MHz Second Report and Order*); *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, WT Docket No. 02-146, Report and Order, 18 FCC Rcd 23318, 23346-47, para. 70 (2003).

<sup>74</sup> *See* 47 U.S.C. § 309(j)(3).

<sup>75</sup> *See* 47 CFR § 27.12(b) (citing 47 U.S.C. § 1404(c)).

<sup>76</sup> The Communications Act requires the Commission to examine closely the impact of spectrum aggregation on competition, innovation, and the efficient use of spectrum to ensure that spectrum is assigned in a manner that serves the public interest, convenience, and necessity. Section 309(j)(3) of the Act provides that, in designing systems of competitive bidding, the Commission must “include safeguards to protect the public interest in the use of the spectrum,” and must seek to promote various objectives, including “promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants,” and promoting the “efficient and intensive use” of spectrum. 47 U.S.C. § 309(j)(3). In addition, section 6404 of the Spectrum Act recognizes the Commission’s authority “to adopt and enforce rules of general applicability, including rules concerning spectrum aggregation that promote competition.” Spectrum Act, § 6404.

<sup>77</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services et al.*, GN Docket No. 14-177 et al., Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum

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auction limits may unnecessarily restrict the ability of entities to participate in and acquire spectrum in an auction, we are not inclined to adopt such limits absent a clear indication that they are necessary to address a specific competitive concern, and seek comment on any specific concerns of this type. We also propose that this band be included in the Commission's spectrum screen, which helps to identify those markets that may warrant further competitive analysis, when evaluating proposed secondary market transactions.<sup>78</sup> In addition, we propose to review spectrum holdings on a case-by-case basis when applications for initial licenses are filed post-auction to ensure that the public interest benefits of having a threshold on spectrum applicable to secondary market transactions are not rendered ineffective. Should the trigger for post-auction, case-by-case review be the same amount of aggregate spectrum holdings as would be used in the screen applied to secondary market transactions? We seek comment on whether and how the similarity of this spectrum to spectrum currently included in the screen should be factored into our analysis, including the suitability of 1675-1680 MHz spectrum for use in the provision of mobile telephony/broadband services. Commenters should discuss and quantify any costs and benefits associated with any proposals on the applicability of mobile spectrum holdings policies to 1675-1680 MHz spectrum.

### **3. License Term, Performance Requirements, Renewal Term Construction Obligations**

#### **a. License Term and Performance Requirements**

32. *License term.* We propose a 15-year term for licenses for the 1675-1680 MHz band.<sup>79</sup> We believe that 15 years affords licensees sufficient time to make long-term investments in deployment and seek comment on the costs and benefits of this proposal. In addition, we invite commenters to submit alternate proposals for the appropriate license term, which should similarly include a discussion on the costs and benefits.

33. *Performance requirements.* The Commission establishes performance requirements to ensure that spectrum is used intensely and efficiently.<sup>80</sup> The Commission has applied different performance and construction requirements to different spectrum bands based on considerations relevant to those bands.<sup>81</sup>

34. We continue to believe that performance requirements play a critical role in ensuring that licensed spectrum does not lie fallow. Accordingly, considering the unique characteristics of this band, we propose that a 1675-1680 MHz band licensee shall provide reliable signal coverage and offer service to at least 45 percent of the population in each of its license areas within 6 years of initial grant (first performance benchmark), and to at least 80 percent of the population in each of its license areas within 12

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Opinion and Order, 32 FCC Rcd 10988, 11009-11011, paras. 70-74 (2017) (*2017 Spectrum Frontiers Order and FNPRM*).

<sup>78</sup> Rather than potentially restricting competition at auction, we note that the spectrum screen for secondary markets review merely identifies those markets that may warrant further competitive analysis.

<sup>79</sup> The Communications Act does not specify a term limit for wireless radio services licenses. The only statutory limit on license terms is eight years for licenses in the broadcast services. *See* 47 U.S.C. § 307(c)(1); *see also* 47 CFR § 73.1020(a).

<sup>80</sup> *See* 47 U.S.C. § 309(j).

<sup>81</sup> *See, e.g., H Block R&O*, 28 FCC Rcd at 9558-59, para. 195 (requiring 40 percent population coverage within four years of initial grant and 75 percent population coverage within 10 years of initial grant). *See also AWS-3 Report and Order*, 29 FCC Rcd at 4659-60, para. 135 (requiring 40 percent population coverage within six years of initial grant and 75 percent population coverage within 12 years of initial grant); *Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, 6877-78, para. 764 (2015) (same).

years of initial grant (second performance benchmark). We believe that 12 years will provide sufficient time for any 1675-1680 MHz licensee to meet the proposed 80 percent population coverage requirement. We anticipate that after satisfying the 12-year second performance benchmark, a licensee will continue to provide reliable signal coverage and offer service at or above that level for the remaining three years in the proposed 15-year license term prior to renewal.<sup>82</sup> Establishing benchmarks before the end of the license term will allow us time to verify, to the extent needed, that the performance benchmarks have indeed been met before licensees need to renew their licenses. We seek comment on our proposed buildout requirements and any potential alternatives.

35. We also seek comment on whether our proposal provides the appropriate balance between license term and a significant buildout requirement. We note that to the extent that sharing in this band is achieved with protection zones, those zones may limit a non-federal fixed or mobile licensee's ability to serve some portion of the population. For purposes of assessing the satisfaction of the buildout requirement, how should we account for the areas where federal use limits or prohibits 1675-1680 MHz use? We also seek comment on alternative methodologies for measuring population coverage requirements in the Gulf of Mexico (e.g. using off-shore platforms as a proxy for population coverage). Commenters should discuss and quantify how any supported buildout requirements will affect investment and innovation as well as discuss and quantify other costs and benefits associated with the proposal.

36. Along with performance benchmarks, we seek to adopt a meaningful and enforceable penalty for failing to meet those benchmarks. We propose that, in the event a 1675-1680 MHz licensee fails to meet the first performance benchmark, the licensee's second performance benchmark and license term would be reduced by two years, thereby requiring it to meet the second performance benchmark two years sooner (at 10 years into the license term), and reducing its license term to 13 years. We further propose that, in the event a 1675-1680 MHz licensee fails to meet the second performance benchmark of 80 percent population coverage for a particular license area, its authorization for each such license area shall terminate automatically without further Commission action.

37. We further propose that, in the event a licensee's authority to operate terminates, the licensee's spectrum rights would become available for reassignment pursuant to the competitive bidding provisions of section 309(j). Further, consistent with the Commission's rules for other WRS licenses, including AWS-1, AWS-3, AWS-4 and H Block, we propose that any 1675-1680 MHz licensee that forfeits its license for failure to meet its performance requirements would be precluded from regaining the license.<sup>83</sup> Finally, we seek comment on whether there are other alternative buildout and enforcement mechanisms we should consider.

38. *Internet of Things Performance Requirements.* While we propose performance benchmarks based on population coverage applicable for a range of fixed and mobile services, we recognize that 1675-1680 MHz licenses have flexibility to provide services potentially less suited to a population coverage metric. In particular, licensees providing Internet of Things (IoT) type services may benefit from an alternative performance benchmark metric, and we seek comment on the appropriate metric to accommodate such service offerings. For example, a performance metric based on geographic area coverage (or presence in a license area) could allow for networks that provide a service not necessarily based on residential population coverage. We seek comment on a requirement of presence in subset units of the license area, such as census tracts, counties, or some other area. This standard could accommodate deployment of systems not designed to provide mobile or point-to-multipoint area coverage of a large portion of the population, such as sensor networks. Licensees would demonstrate compliance with this metric through a showing of the equipment and deployments that are part of a network providing actual service, either to external customers, or for internal uses. Consistent with our approach above

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<sup>82</sup> See *WRS Renewal Reform 2<sup>nd</sup> R&O and FNPRM*, 32 FCC Rcd at 8886-89, paras. 27-34 (adopting continuity of service and other renewal showing requirements for WRS licensees).

<sup>83</sup> See, e.g., 47 CFR § 27.14(a), (q)(6), (r)(4).

proposing a first and second performance benchmark, we seek comment on the appropriate metrics for IoT-type services. For example, would a requirement of presence in 35 percent of subset units at the first performance benchmark and presence in 65 percent of subset units at the second performance benchmark provide licensees with sufficient time to satisfy their obligations, while also effectively encouraging rapid deployment? We seek comment on these coverage metrics and any alternative levels of coverage that might be appropriate, including the costs and benefits of such alternatives.

39. *Compliance Procedures.* In addition to being subject to procedures applicable to all Part 27 licensees for demonstrating compliance with performance requirements, including the filing of electronic coverage maps and supporting documentation,<sup>84</sup> we propose that such electronic coverage maps must accurately depict the boundaries of each license area in the licensee's service territory. If a licensee does not provide reliable signal coverage to an entire license area, we propose that its map must accurately depict the boundaries of the area or areas within each license area that are not being served. Further, we propose that each licensee also must file supporting documentation regarding the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service, and certify the accuracy of such documentation. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology. We seek comment on our proposal.

#### **b. Renewal Term Construction Obligations**

40. In addition to, and independent of, the general renewal requirements contained in section 1.949 of our rules, which apply to all WRS licenses, we also seek comment on application of specific renewal term construction obligations to 1675-1680 MHz licenses. In the *WRS Renewal Reform FNPRM*, we reiterated the Commission's mandate under the Act to promote "the development and rapid deployment of new technologies, products, and services . . . for those residing in rural areas," and we sought comment on various renewal term construction obligations that might serve those goals.<sup>85</sup> Further, we noted that the Act requires that service rules for geographic licenses subject to auction "include performance requirements, such as appropriate deadlines and penalties for performance failures, to ensure prompt delivery of service to rural areas, to prevent stockpiling or warehousing of spectrum by licensees or permittees, and to promote investment and rapid deployment of new technologies and services."<sup>86</sup> In furtherance of these statutory mandates and to address the real and growing digital divide between rural and urban areas in the United States, the *WRS Renewal Reform FNPRM* sought comment on various renewal term construction obligations, such as incremental increases in the construction metric in each subsequent renewal term—e.g., by five or 10 percent—up to a certain threshold.<sup>87</sup> In the event that licensees fail to satisfy any additional renewal term construction obligations, the Commission sought comment on a range of penalties for failure and methods for reassigning the unused spectrum, including automatic termination, "keep-what-you-serve," and "use or share" approaches.<sup>88</sup>

41. The *WRS Renewal Reform FNPRM* proposed to apply rules adopted in that proceeding to all flexible geographic licenses.<sup>89</sup> Given our proposal to license this band on a geographic basis for

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<sup>84</sup> See *id.* §§ 1.946(d), 27.14(k).

<sup>85</sup> *WRS Renewal Reform 2<sup>nd</sup> R&O and FNPRM*, 32 FCC Rcd at 8911-18, paras. 100-23; 47 U.S.C. § 309(j)(3)(A).

<sup>86</sup> 47 U.S.C. § 309(j)(4)(B).

<sup>87</sup> *WRS Renewal Reform 2<sup>nd</sup> R&O and FNPRM*, 32 FCC Rcd at 8912-14, paras. 105-109. The "renewal term" is tied to the license and refers to the second full term a license enters after being renewed at the end of the initial term. Under this incremental increase approach, assignment of the license to a new licensee would not impact whether a license is deemed to be in its first or second full license term.

<sup>88</sup> *Id.* at 8915-17, paras. 114-117.

<sup>89</sup> *Id.* at 8915, paras. 111-12.

flexible use, any additional renewal term construction obligations proposed in the *WRS Renewal Reform FNPRM* also would apply to licenses in the 1675-1680 MHz band. We seek comment on whether there are unique characteristics of the 1675-1680 MHz band that might require a different approach than the various proposals raised by the *WRS Renewal Reform FNPRM*. For example, while the vast majority of existing wireless radio services have 10-year license terms, here we propose 15-year license terms for the 1675-1680 MHz band. Do any of our proposals for this band, such as longer license terms, necessitate a more tailored approach than the rules of general applicability proposed in the *WRS Renewal Reform FNPRM*? For instance, should we require buildout to 85 percent of the population by the end of second license term? Commenters advocating rules specific to the 1675-1680 MHz band should address the costs and benefits of their proposed rules, and discuss how a given proposal will encourage investment and deployment in areas that might not otherwise benefit from significant wireless coverage.

#### 4. Competitive Bidding Procedures

42. As discussed above, if we adopt a geographic area licensing scheme that allows submission of mutually exclusive applications for the proposed non-federal use of the 1675-1680 MHz band, we will use a competitive bidding process as required by the Communications Act.<sup>90</sup> As the Commission has done in previous auctions, we propose to conduct any auction for 1675-1680 MHz licenses in conformity with the general competitive bidding rules set forth in Part 1, subpart Q, of the Commission's rules.<sup>91</sup> Under this proposal, such rules would be subject to any modifications that the Commission may adopt for its Part 1 general competitive bidding rules in the future.<sup>92</sup> We seek comment on general application of the Part 1 competitive bidding rules to any auction of 1675-1680 MHz band licenses. We also seek comment on whether any of our Part 1 rules or other competitive bidding policies would be inappropriate or should be modified for an auction of licenses in this band.<sup>93</sup> We seek comment on the costs and benefits of these proposals.

43. We seek comment on whether to make bidding credits for designated entities available for this band. We also seek comment on how to define a small business if we decide to offer small business bidding credits. In recent years, for other flexible use licenses we have adopted bidding credits for the two larger designated entity business sizes provided in the Commission's Part 1 standardized schedule of bidding credits.<sup>94</sup> For the 1675-1680 MHz band, we seek comment on defining a small

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<sup>90</sup> See 47 U.S.C. § 309(j)(1).

<sup>91</sup> See 47 CFR §§ 1.2101-1.2114.

<sup>92</sup> In its most recent amendments to the Part 1 competitive bidding rules, the Commission, among other things, updated the standardized schedule of small business size standards, instituted a rural service provider bidding credit, and adopted a process by which we may establish a reasonable monetary limit or cap on the total amount of bidding credits that an eligible small business or rural service provider may be awarded in a particular auction. *Updating Part 1 Competitive Bidding Rules*, WT Docket No. 14-170 et al, Report and Order, 30 FCC Rcd 7493, 7530-31, para. 88, 7539-48, paras. 109-30 (2015) (*Updating Part 1 R&O*).

<sup>93</sup> See, e.g., *Ligado May 3 Ex Parte* at 2 (proposing the Commission consider assigning the spectrum for a fee under its Section 316 fee authority or consider holding an auction with a substantial reserve price).

<sup>94</sup> See *Incentive Auctions Report and Order*, 29 FCC Rcd at 6761-63, paras. 473-75; *Updating Part 1 R&O*, 30 FCC Rcd at 7524-25, para. 74, 7528, para. 83 (adopting revised small business size standards for auctions of licenses in the 600 MHz Band); *Spectrum Frontiers Report and Order*, 31 FCC Rcd at 8099-8100, paras. 249-50 (adopting small business size standards for auctions of licenses in the Upper Microwave Flexible Use Service); 47 CFR § 1.2110(f)(2)(i)(A) (businesses with average gross revenues for the preceding 3 years not exceeding \$4 million may be eligible for a bidding credit of 35 percent), (B) (bidding credit of 25 percent for businesses with average gross revenues for the preceding 3 years not exceeding \$20 million), (C) (bidding credit of 15 percent for businesses with average gross revenues for the preceding 3 years not exceeding \$55 million). While the Commission is not required to adopt bidding credits for a particular service, the Part 1 rules provide that the Commission may do so by adopting small business or rural service provider bidding credits in the service-specific rules for a band. 47 CFR § 1.2110(f)(1). However, any caps with respect to available bidding credits are adopted on an auction-by-auction

(continued...)

business as an entity with average gross revenues for the preceding five years not exceeding \$55 million, and a very small business as an entity with average gross revenues for the preceding five years not exceeding \$20 million.<sup>95</sup> A qualifying “small businesses” would be eligible for a bidding credit of 15 percent and qualifying “very small businesses” would be eligible for a bidding credit of 25 percent. We also seek comment on whether to offer rural service providers a designated entity bidding credit for licenses in this band.<sup>96</sup> Commenters addressing designated entity bidding credits should consider which characteristics of licenses in the band may affect whether designated entities will apply for them.<sup>97</sup>

## E. Technical Rules

44. We propose to allow fixed and base station (downlink) operations in the 1675-1680 MHz band and to apply technical standards similar to those in other AWS bands. We also consider the technical rules governing the adjacent 1670-1675 MHz band and seek comment on how the two bands can best coexist either separately, or in combination. We seek to establish technical rules that will help optimize the potential uses of spectrum, while minimizing the impact on other users in the band or adjacent bands, consistent with the public interest.

### 1. Power Limits

45. We propose to allow fixed and base stations to operate up to 2000 watts peak equivalent isotropically radiated power (EIRP), consistent with the limits established for similar services governed by Part 27 of the Commission’s rules. Comparing the various power limits for services governed under Part 27 of the Commission’s rules using the same convention (total power in EIRP over a 5 megahertz bandwidth),<sup>98</sup> the typical range of power limits is 1640 watts to 16,400 watts.<sup>99</sup> The power limit for fixed and base stations in the adjacent 1670-1675 MHz band is 2000 watts.<sup>100</sup> We propose to extend this power

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basis. *Id.* § 1.2110(f)(2)(ii) (cap on designated entity bidding discount), (4)(ii) (cap on rural service provider discount).

<sup>95</sup> The standardized schedule of bidding credits provided in Section 1.2110(f)(2)(i) defines small businesses based on average gross revenues for the preceding three years. In December 2018, Congress revised the standard set out in the Small Business Act for categorizing a business concern as a “small business concern,” by changing the annual average gross receipts benchmark from a three-year period to a five-year period. Thus, as a general matter, a Federal agency cannot propose to categorize a business concern as a “small business concern” for Small Business Act purposes unless the size of the concern is based on its annual average gross receipts “over a period of not less than 5 years.” 15 U.S.C. § 632(a)(2)(C)(ii)(II), *as amended by* Small Business Runway Extension Act of 2018, Pub. L. 115-324 (Dec. 17, 2018). We therefore propose to adopt the Small Business Act’s revised five-year average gross receipts benchmark for purposes of determining which entities qualify for small business bidding credits. But because the SBA has not yet revised its regulations to update the definition of “small business concern,” for purposes of compliance with the Regulatory Flexibility Act, the Commission will continue to use the SBA’s current definitions of “small business,” which is based on a three-year benchmark. *See infra* Appendix C.

<sup>96</sup> 47 CFR § 1.2110(f)(4)(i) (bidding credit of 15 percent for applicants meeting the requirements for being designated as a rural service provider). To be eligible to receive a rural service provider bidding credit, an applicant must meet the requirements set forth in Part 1. An applicant eligible for both small business bidding credits and rural service provider bidding credits may only receive one of the two credits. *Id.* § 1.2110(f)(2)(i), (4)(i).

<sup>97</sup> To the extent that we adopt an auction approach for a transition of the 1675-1680 MHz band, we anticipate that we will resolve the issues of whether to offer bidding credits, to what extent such credits will be available, and the standards for eligibility for the credits, in an auction procedures Public Notice.

<sup>98</sup> The power limits for other AWS operations are expressed in a few different conventions (ERP vs EIRP, total power vs power spectral density).

<sup>99</sup> In limited cases, an ERP of 82 kilowatts is allowed for certain 700 MHz operations.

<sup>100</sup> *See supra* note 37 (describing Commission waiver for the single nationwide licensee in the 1670-1675 MHz band to operate in 30 markets at higher power levels and on a spectral density basis).

limit to the 1675-1680 MHz band to balance the need to provide for a robust service with the ability to coexist with the incumbent services in the adjacent band. We also note that the power limit for most AWS services is specified based on an RMS-equivalent or average power measurement. The adjacent 1670-1675 MHz band is one of the few bands in which the power limit is specified as a peak power measurement. We see no reason to apply a different standard to the 1675-1680 MHz band, particularly any other standards that would effectively increase the transmitted power. We seek comment on this proposal.

46. The power levels surveyed for AWS services were intended to facilitate conventional mobile broadband as it is currently deployed. We seek comment on how the power levels should be set for other potential services. For instance, this band could be used for deployments that support IoT and 5G, which potentially operate at lower power. Are there other power levels that would benefit the deployment of IoT or other services? We seek comment on this question, along with technical support for any proposed alternatives. What specific impact, if any, on incumbent operations would this power limit create? Finally, although our initial proposal is for downlink operations, to the extent that commenters support allowing a mobile uplink, or TDD operations in this band, we seek comment on the power limits that should apply.<sup>101</sup>

## 2. Out-of-Band Emissions Limit

47. We propose an out-of-band emissions (OOBE) limit for fixed and base stations of  $43 + 10 \log_{10}(P)$  dB, where P is the transmit power in watts. This OOBE level has been used to protect adjacent operations from harmful interference in several AWS services, and it is the same level as the existing adjacent 1670-1675 MHz band.<sup>102</sup> An extension of the same emission limit would appear to enhance the compatibility of both bands. Does this band present any significant challenges to adopting such an OOBE power limit?<sup>103</sup> For example, what, if any, impact could operations at such a limit have on receivers of Emergency Managers Weather Information Network or other GOES rebroadcast services operating in 1680-1695 MHz band?<sup>104</sup> Is there relevant data from AWS services, particularly services operating in the 1695-1710 MHz band, concerning effects on satellite downlinks in adjacent bands?

48. To fully define an emissions limit, the Commission's rules generally specify details on how to measure the power of the emissions, such as the measurement bandwidth. For the AWS-3 band, the measurement bandwidth used to determine compliance with this limit for base stations is one megahertz or greater, with some modification in the one megahertz bands immediately outside and adjacent to the frequency block where a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. We believe that it is reasonable to apply this same standard to transmissions in the 1675-1680 MHz band. We seek comment on these proposals.

49. Recognizing the potential use of this band with the adjacent 1670-1675 MHz band, we propose to allow a licensee in this service to enter into a private agreement with the licensee of the 1670-1675 MHz band to allow the  $43 + 10 \log_{10}(P)$  dB OOBE limit of either licensee to be exceeded within the other party's band. We propose that a licensee that is a party to such an agreement must maintain a copy

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<sup>101</sup> The power limit for mobile stations in the adjacent 1670-1675 MHz band is 4 Watts EIRP peak power but, as discussed above, we are not proposing to allow mobile (uplink) operations in the 1675-1680 MHz band.

<sup>102</sup> See 47 CFR § 27.53.

<sup>103</sup> See, e.g., Clarke *Ex Parte* at 2 (citing concerns about the potential for both in-band and out-of-band interference to non-federal receive-only earth stations).

<sup>104</sup> See Letter from David Grimes, Assistant Deputy Minister, Meteorological Service of Canada, Environment and Climate Change Canada, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-116 (filed May 1, 2019) (noting that Direct Readout Ground System sites that receive GOES data at 1680.2 MHz could be subject to adjacent band interference from fixed or mobile services operating in the 1675-1680 MHz band).

of the agreement and disclose it, upon request, to prospective assignees, transferees, or spectrum lessees, and to the Commission.<sup>105</sup> Similar to our approach to emissions limits in AWS-4, to the extent that a licensee establishes unified operations in the 1670-1675 MHz and 1675-1680 MHz blocks, we propose that such a licensee may choose not to observe the OOB limit, strictly between its adjacent block licenses in a geographic area, so long as it complies with other Commission rules and is not adversely affecting the operations of other parties by virtue of exceeding the limit.<sup>106</sup> Compliance with this emission limit would be based on the measurement procedures described in paragraph (a)(5) of section 27.53 of the Commission's rules.<sup>107</sup>

### 3. Co-Channel Interference between Licensees Operating in Adjacent Geographic Areas

50. We propose to limit a licensee's predicted or measured field strength to 47 dB $\mu$ V/m (or less) at any location along the border of its license area. This limit was used in AWS-1 and other AWS services to prevent harmful interference between licensees in adjacent service areas. We also propose to allow licensees in adjacent areas to reach agreement on alternate field strength limits. We seek comment on this approach.

### 4. Antenna Height Limits

51. We do not propose to limit the height of antennas for either fixed or base stations. No AWS services operating above 1 GHz have antenna height limits<sup>108</sup> with the exception of a limit of 10 meters for fixed stations in the AWS-1 band.<sup>109</sup> Notably, there are no antenna height limits in the adjacent 1670-1675 MHz band.<sup>110</sup> We seek comment on this proposal.

### 5. Canadian and Mexican Coordination

52. Section 27.57(c) of our rules provides that AWS operations are subject to international agreements with Mexico and Canada.<sup>111</sup> We propose to use this approach for the 1675-1680 MHz band. Until any adjustments are made to agreements between the United States, Mexico and/or Canada, operations must not cause harmful interference across the border, consistent with the terms of the agreements currently in force.<sup>112</sup> We note our proposed rules, and any rules that may ultimately become effective pursuant to the above-captioned proceeding, may need to be modified to comply with any future agreements with Canada and Mexico. We seek comment on this proposal.

### 6. Other Technical Issues

53. Part 27 contains several additional technical rules applicable to all Part 27 services, including Section 27.51 (Equipment authorization), Section 27.52 (RF safety),<sup>113</sup> Section 27.54

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<sup>105</sup> See, e.g., 47 CFR § 27.53(a)(10), (h)(4), (m)(7).

<sup>106</sup> *Id.* § 27.53(h)(4)(i).

<sup>107</sup> *Id.* § 27.53(a)(5).

<sup>108</sup> See, e.g., *AWS-3 Report and Order*, 29 FCC Rcd at 4641, paras. 77-78 (declining to adopt specific antenna height limitations of AWS-3 band); *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16161-62, para. 154 (same).

<sup>109</sup> 47 CFR § 27.50(d)(4).

<sup>110</sup> We note, however, that our rules require notification to the Federal Aviation Administration for the construction or alteration of structures more than 60.96 meters (200 feet) in height above ground level at the site. *Id.* § 17.7.

<sup>111</sup> *Id.* § 27.57(c).

<sup>112</sup> See <https://www.fcc.gov/general/international-agreements>.

<sup>113</sup> The Commission has an open proceeding in which it is broadly examining its RF exposure rules and policies, which could potentially influence how such devices are authorized in the future. See *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies; Proposed Changes in the*

(Frequency stability), and Section 27.56 (Antennas structures; air navigation safety).<sup>114</sup> We propose that all of these Part 27 technical rules should apply to all 1675-1680 MHz band licenses and licensees, including licensees who acquire their licenses through partitioning or disaggregation. We seek comment on this approach, including the costs and benefits of this approach.

#### IV. ORDER

54. By this Order, the Commission corrects paragraphs (j)(1) and (k) of Section 27.53 of the Commission's rules<sup>115</sup> to update each paragraphs' incorrect cross-reference to the Section's paragraph (a)(4). The Commission had inadvertently failed to update those cross-references in 2010 when it renumbered paragraph (a)(4) as (a)(5). Section 27.53 addresses the emission limits for various Part 27 services, and, according to the current language of paragraphs (j)(1) and (k), compliance with the emission limits for the bands identified in those paragraphs "is based on the procedures described in paragraph (a)(4) of this [S]ection."<sup>116</sup> Paragraph (a)(4), however, does not contain any such procedures; rather, it sets forth wattage amounts by which the power of certain emissions must be attenuated. The next subparagraph in paragraph (a)—i.e., paragraph (a)(5)—is entitled "Measurement procedure" and contains the compliance procedures that paragraphs (j) and (k) had referenced before the Commission added paragraph (a)(4) in 2010.<sup>117</sup> At that time, when the Commission renumbered the old paragraph (a)(4) as (a)(5) to accommodate the new paragraph (a)(4), it neglected to update the paragraphs (j)(1) and (k) cross-reference to the provision that had been renumbered as paragraph (a)(5). And since that time, paragraphs (j)(1) and (k) have continued to refer incorrectly to paragraph (a)(4) as containing the measurement procedures for compliance, rather than paragraph (a)(5). We therefore correct this error by amending paragraphs (j)(1) and (k) to change the cross-reference to paragraph (a)(5).

55. We find it appropriate to forego a notice-and-comment period prior to this Order taking effect, given the administrative nature and limited impact of this rule correction. The Administrative Procedure Act (APA) provides that notice procedures are not required where "the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefor in the rules issued) that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest."<sup>118</sup> Here, we find, for good cause, that using such procedure to correct an outdated cross-reference in paragraphs (j)(1) and (k) of Section 27.53—an inadvertent error that arose out of the failure to make a ministerial adjustment to the cross-reference when the subparagraphs of that Section's paragraph (a) were renumbered—is unnecessary and contrary to the public interest because it would needlessly prolong an obvious inaccuracy in the rules, delay the return of the rules' language to its clearly intended meaning, and fail to yield any of the public interest benefits that notice and comment procedures are designed to produce. The APA also requires publication of a substantive rule at least 30 days before its effective date "except as otherwise provided by the agency for good cause found and published with the rule."<sup>119</sup> For

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*Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, ET Docket Nos. 13-84, 03-137, First Report and Order and Further Notice of Proposed Rule Making and Notice of Inquiry, 28 FCC Rcd 3498 (2013) (RF Inquiry). Consistent with our recent proposals in the *Spectrum Horizons NPRM*, we propose that the Commission make no changes to its present rules limiting human exposure to RF energy until it considers the broader issues brought forth in its *RF Inquiry*. See *Spectrum Horizons NPRM*. Thus, comments regarding RF exposure in the above 95 GHz bands should be filed in the *RF Inquiry* proceeding.

<sup>114</sup> 47 CFR §§ 27.51, 27.52, 27.54, 27.56.

<sup>115</sup> 47 CFR § 27.53(j)(1), (k).

<sup>116</sup> *Id.*

<sup>117</sup> *Amendment of Part 27 to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band*, 25 FCC Rcd 11710, 11845 (2010), Appendix B.

<sup>118</sup> 5 U.S.C. § 553(b)(B).

<sup>119</sup> *Id.* § 553(d)(3).

the same reasons that we forego notice-and-comment procedures, we find good cause to make this correction to Sections 27.53(j)(1) and (k) effective immediately upon publication in the *Federal Register*.

## V. PROCEDURAL MATTERS

56. *Ex Parte Presentations.* The proceedings shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.<sup>120</sup> Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission’s *ex parte* rules.

57. *Comment Period and Filing Procedures.* Pursuant to sections 1.415 and 1.419 of the Commission’s rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission’s Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one active docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

58. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission’s Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission’s Secretary must be delivered to FCC Headquarters at 445 12<sup>th</sup> St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12<sup>th</sup> Street, SW, Washington DC 20554.

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<sup>120</sup> 47 CFR §§ 1.1200 *et seq.*

59. **People with Disabilities:** To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to [fcc504@fcc.gov](mailto:fcc504@fcc.gov) or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

60. *Availability of Documents.* Comments, reply comments, and *ex parte* submissions will be available for public inspection during regular business hours in the FCC Reference Center, Federal Communications Commission, 445 12<sup>th</sup> Street, S.W., Room CY-A257, Washington, D.C.. These documents will also be available via ECFS. Documents will be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

61. *Initial Regulatory Flexibility Analysis.* As required by the Regulatory Flexibility Act,<sup>121</sup> the Commission has prepared an Initial Regulatory Flexibility Analysis (“IRFA”) of the possible significant economic impact on small entities of the policies and rules addressed in this *NPRM*. The IRFA is set forth in Appendix C. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines for comments on the *NPRM*, and should have a separate and distinct heading designating them as responses to the IRFA.

62. *Paperwork Reduction Act Analysis.* This document contains proposed new or modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

63. *Further Information.* For additional information on this proceeding, contact Paul Powell of the Mobility Division, Wireless Telecommunications Bureau, at [paul.powell@fcc.gov](mailto:paul.powell@fcc.gov) or (202) 418-1613, or Anna Gentry of the Mobility Division, Wireless Telecommunications Bureau, at [anna.gentry@fcc.gov](mailto:anna.gentry@fcc.gov) or (202) 418-7769.

## VI. ORDERING CLAUSES

64. Accordingly, IT IS ORDERED that, pursuant to sections 1, 2, 4(i), 10, 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332, and 333 of the Communications Act of 1934, as amended, and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, 47 U.S.C. §§ 151, 152, 154(i), 160, 201, 301, 302a, 303, 307, 308, 309, 310, 316, 319, 324, 332, 333, 1403, 1404, and 1451, this Notice of Proposed Rulemaking and Order is hereby ADOPTED.

65. IT IS FURTHER ORDERED that Part 27 of the Commission’s rules, 47 CFR Part 27, IS AMENDED as specified in Appendix B, effective immediately upon publication in the *Federal Register*.

66. IT IS FURTHER ORDERED that the Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Notice, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

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<sup>121</sup> 5 U.S.C. § 603.



**APPENDIX A**  
**Proposed Rules**

The Federal Communications Commission proposes to amend 47 CFR parts 1, 2, and 27 as follows:

**PART 1 – Practice and Procedure**

1. The authority citation for Part 1 continues to read as follows:

AUTHORITY: [INSERT CURRENT AUTHORITY CITATION].

2. Amend section 1.907 by revising the definition of “Covered Geographic Licenses” to read as follows:

*Covered Geographic Licenses.* Covered geographic licenses consist of the following services: 1.4 GHz Service (part 27, subpart I); 1.6 GHz Service (part 27, subpart J); 24 GHz Service and Digital Electronic Message Services (part 101, subpart G); 218-219 MHz Service (part 95, subpart F); 220-222 MHz Service, excluding public safety licenses (part 90, subpart T); 600 MHz Service (part 27, subpart N); 700 MHz Commercial Services (part 27, subpart F and H); 700 MHz Guard Band Service (part 27, subpart G); 800 MHz Specialized Mobile Radio Service (part 90, subpart S); 900 MHz Specialized Mobile Radio Service (part 90, subpart S); 1675-1680 MHz Service (part 27, subpart O); Advanced Wireless Services (part 27, subparts K and L); Air-Ground Radiotelephone Service (Commercial Aviation) (part 22, subpart G); Broadband Personal Communications Service (part 24, subpart E); Broadband Radio Service (part 27, subpart M); Cellular Radiotelephone Service (part 22, subpart H); Citizens Broadband Radio Service (part 96, subpart C); Dedicated Short Range Communications Service, excluding public safety licenses (part 90, subpart M); H Block Service (part 27, subpart K); Local Multipoint Distribution Service (part 101, subpart L); Multichannel Video Distribution and Data Service (part 101, subpart P); Multilateration Location and Monitoring Service (part 90, subpart M); Multiple Address Systems (EAs) (part 101, subpart O); Narrowband Personal Communications Service (part 24, subpart D); Paging and Radiotelephone Service (part 22, subpart E; part 90, subpart P); VHF Public Coast Stations, including Automated Maritime Telecommunications Systems (part 80, subpart J); Upper Microwave Flexible Use Service (part 30); and Wireless Communications Service (part 27, subpart D).

3. Amend section 1.9005 by revising paragraph (n) to read as follows:

**§ 1.9005 Includ ed services.**

\* \* \* \* \*

(n) The Wireless Communications Service in the 1670-1675 MHz band and 1675-1680 MHz band (part 27 of this chapter);

**PART 2 – Frequency Allocations And Radio Treaty Matters; General Rules And Regulations**

4. The authority citation for Part 2 continues to read as follows:

[INSERT CURRENT AUTHORITY CITATION].

5. Section 2.106, the Table of Frequency Allocations, is amended by revising pages 35, 36, 37, and 38 to read as follows:

**§ 2.106 Table of Frequency Allocations.**

\* \* \* \* \*

Table of Frequency Allocations			1626.5-2025 MHz (UHF)		Page 35
International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
1626.5-1660 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376			1626.5-1660 MOBILE-SATELLITE (Earth-to-space) US308 US309 US315 US380 5.341 5.351 5.375		Satellite Communications (25) Maritime (80) Aviation (87)
1660-1660.5 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A			1660-1660.5 MOBILE-SATELLITE (Earth-to-space) US308 US309 US380 RADIO ASTRONOMY 5.341 5.351 US342		Satellite Communications (25) Aviation (87)
1660.5-1668 RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A			1660.5-1668.4 RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341 US246		
1668-1668.4 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A					
1668.4-1670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E			1668.4-1670 METEOROLOGICAL AIDS (radiosonde) RADIO ASTRONOMY US74  5.341 US99 US342		
1670-1675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A			1670-1675  5.341 US211 US362	1670-1675 FIXED MOBILE except aeronautical mobile  5.341 US211 US362	Wireless Communications (27)
1675-1690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile			1675-1680 METEOROLOGICAL AIDS (radiosonde) METEOROLOGICAL-SATELLITE (space-to-Earth) US88	1675-1680 FIXED METEOROLOGICAL-SATEL- LITE (space-to-Earth) US88 MOBILE except aeronautical mobile	

5.341			1680-1695 METEOROLOGICAL AIDS (radiosonde) METEOROLOGICAL-SATELLITE (space-to-Earth) US88	
1690-1700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	1690-1700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381	5.341 US211 US289		
1700-1710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341		1700-1710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384	1695-1710 METEOROLOGICAL-SATELLITE (space-to-Earth) US88	1695-1710 FIXED MOBILE except aeronautical mobile
1710-1930 FIXED MOBILE 5.384A 5.388A 5.388B			5.341	5.341 US88
5.149 5.341 5.385 5.386 5.387 5.388			1710-1761	1710-1780 FIXED MOBILE
1930-1970 FIXED MOBILE 5.388A 5.388B 5.388		1930-1970 FIXED MOBILE 5.388A 5.388B Mobile-satellite (Earth-to- space) 5.388	5.341 US91 US378 US385	
1970-1980 FIXED MOBILE 5.388A 5.388B 5.388			1761-1780 SPACE OPERATION (Earth-to-space) G42 US91	5.341 US91 US378 US385
1980-2010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A			1780-1850 FIXED MOBILE SPACE OPERATION (Earth-to-space) G42	1780-1850
			1850-2025	1850-2000 FIXED MOBILE
				RF Devices (15) Personal Communications (24) Wireless Communications (27) Fixed Microwave (101)

5.388 5.389A 5.389B 5.389F					
2010-2025 FIXED MOBILE 5.388A 5.388B	2010-2025 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)	2010-2025 FIXED MOBILE 5.388A 5.388B		2000-2020 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)	Satellite Communications (25) Wireless Communications (27)
5.388	5.388 5.389C 5.389E	5.388		2020-2025 FIXED MOBILE	Page 36

Table of Frequency Allocations 2025-2483.5 MHz (UHF) Page 37

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
2025-2110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space)			2025-2110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space) FIXED MOBILE 5.391  5.392 US90 US92 US222 US346 US347	2025-2110 FIXED NG118 MOBILE 5.391   5.392 US90 US92 US222 US346 US347	TV Auxiliary Broadcasting (74F) Cable TV Relay (78) Local TV Transmission (101)  Page 36
5.392					
2110-2120 FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space)			2110-2120	2110-2120 FIXED MOBILE	Public Mobile (22) Wireless Communications (27) Fixed Microwave (101)
5.388			US252	US252	
2120-2170 FIXED MOBILE 5.388A 5.388B	2120-2160 FIXED MOBILE 5.388A 5.388B Mobile-satellite (space-to-Earth)	2120-2170 FIXED MOBILE 5.388A 5.388B	2120-2200	2120-2180 FIXED MOBILE	
5.388					
2160-2170 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)					
5.388 5.389C 5.389E					
2170-2200 FIXED MOBILE				NG41 2180-2200 FIXED	Satellite Communications



		US327	5.396 US327	
		2360-2390 MOBILE US276 RADIOLOCATION G2 G120 Fixed US101	2360-2390 MOBILE US276  US101	Aviation (87) Personal Radio (95)
		2390-2395 MOBILE US276  US101	2390-2395 AMATEUR MOBILE US276  US101	Aviation (87) Personal Radio (95) Amateur Radio (97)
		2395-2400  US101 G122	2395-2400 AMATEUR US101	Personal Radio (95) Amateur Radio (97)
		2400-2417  5.150 G122	2400-2417 AMATEUR 5.150 5.282	ISM Equipment (18) Amateur Radio (97)
		2417-2450 Radiolocation G2 5.150	2417-2450 Amateur 5.150 5.282	
2450-2483.5 FIXED MOBILE Radiolocation 5.150	2450-2483.5 FIXED MOBILE RADIOLOCATION 5.150	2450-2483.5  5.150 US41	2450-2483.5 FIXED MOBILE Radiolocation 5.150 US41	ISM Equipment (18) TV Auxiliary Broadcasting (74F) Private Land Mobile (90) Fixed Microwave (101)

**PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES**

6. The authority citation for Part 27 continues to read as follows:

Authority: [INSERT CURRENT AUTHORITY CITATION].

7. Section 27.1 is amended by adding paragraph (b)(15) to read as follows:

**§ 27.1 Basis and purpose.**

\* \* \* \* \*

(b) \* \* \*

(15) 1675-1680 MHz.

8. Section 27.5(m) is added to read as follows:

**§ 27.5 Frequencies.**

\* \* \* \* \*

(m) *1675-1680 MHz band.*

The unpaired 1675-1680 MHz band is available for assignment on a PEA basis.

9. Section 27.6 is amended by adding paragraph (m) to read as follows:

**§ 27.6 Service areas.**

\*\*\*\*\*

(m) 1675-1680 MHz band. The service area for the 1675-1680 MHz band is based on PEAs as defined in paragraph (l) of this section.

10. Section 27.13 is amended by adding paragraph (m) to read as follows:

**§ 27.13 License period.**

\*\*\*\*\*

(m) 1675-1680 MHz band. Authorizations for the 1675-1680 MHz band will have a term not to exceed 15 years from the date of issuance or renewal.

11. Section 27.14 is amended by revising the first sentence of paragraphs (a) and (k), and adding paragraph (u) to read as follows:

**§ 27.14 Construction requirements.**

(a) AWS and WCS licensees, with the exception of WCS licensees holding authorizations for the 600 MHz band, Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block E in the 722-728 MHz band, Block C, C1 or C2 in the 746-757 MHz and 776-787 MHz bands, 1675-1680 MHz band, Block A in the 2305-2310 MHz and 2350-2355 MHz bands, Block B in the 2310-2315 MHz and 2355-2360 MHz bands, Block C in the 2315-2320 MHz band, and Block D in the 2345-2350 MHz band, and with the exception of licensees holding AWS authorizations in the 1915-1920 MHz and 1995-2000 MHz bands, the 2000-2020 MHz and 2180-2200 MHz bands, or 1695-1710 MHz, 1755-1780 MHz and 2155-2180 MHz bands, must, as a performance requirement, make a showing of “substantial service” in their license area within the prescribed license term set forth in §27.13. \*\*\*

\*\*\*\*\*

(k) Licensees holding WCS or AWS authorizations in the spectrum blocks enumerated in paragraphs (g), (h), (i), (q), (r), (s), (t), and (u) of this section, including any licensee that obtained its license pursuant to the procedures set forth in paragraph (j) of this section, shall demonstrate compliance with performance requirements by filing a construction notification with the Commission, within 15 days of the expiration of the applicable benchmark, in accordance with the provisions set forth in §1.946(d) of this chapter. \*\*\*

\* \* \* \* \*

(u) The following provisions apply to any licensee holding an authorization in the 1675-1680 MHz band:

(1) A licensee shall provide reliable signal coverage and offer service within six (6) years from the date of the initial license to at least forty-five (45) percent of the population in each of its license areas (“First Buildout Requirement”).

(2) A licensee shall provide reliable signal coverage and offer service within twelve (12) years from the date of the initial license to at least eighty (80) percent of the population in each of its license areas (“Final Buildout Requirement”).

(3) If a licensee fails to establish that it meets the First Buildout Requirement for a particular license area, the licensee’s Final Buildout Requirement deadline and license term will be reduced by two years.

(4) If a licensee fails to establish that it meets the Final Buildout Requirement for a particular license area, its authorization for each license area in which it fails to meet the Final Buildout Requirement shall terminate automatically without Commission action, and the licensee will be ineligible to regain it if the Commission makes the license available at a later date.

(5) To demonstrate compliance with these performance requirements, licensees shall use the most recently available decennial U.S. Census Data at the time of measurement and shall base their measurements of population served on areas no larger than the Census Tract level. The population within a specific Census Tract (or other acceptable identifier) will be deemed served by the licensee only if it provides reliable signal coverage to and offers service within the specific Census Tract (or other acceptable identifier). To the extent the Census Tract (or other acceptable identifier) extends beyond the boundaries of a license area, a licensee with authorizations for such areas may include only the population within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license. For the Gulf of Mexico license area, the licensee shall demonstrate compliance with these performance requirements, using off-shore platforms, including production, manifold, compression, pumping and valving platforms as a proxy for population in the Gulf of Mexico.

(6) An applicant for renewal of a license covered by this paragraph (u) must make a renewal showing, independent of its performance requirements, consistent with section 1.949 as a condition of each renewal.

12. Section 27.50(j) is amended to read as follows:

**§ 27.50 Power limits and duty cycle.**

\* \* \* \* \*

(j) In the 1675-1680 MHz band, fixed and base stations are limited to 2000 watts EIRP peak power.

\* \* \* \* \*

13. Amend Section 27.53 by revising paragraph (k) to read as follows:

**§ 27.53 Emission limits.**

\* \* \* \* \*

(k)(1) For operations in the 1670-1675 MHz and 1675-1680 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. Compliance with these provisions is based on the procedures described in paragraph (a)(5) of this section.

(2) For operations in the 1670-1675 MHz and 1675-1680 MHz bands, to the extent a licensee establishes unified operations across the AWS blocks, that licensee may choose not to observe the emission limit specified in paragraph (k)(1) of this section, strictly between its adjacent block licenses in a geographic area, so long as it complies with other Commission rules and is not adversely affecting the operations of other parties by virtue of exceeding the emission limit.

(3) *Private Agreements.* Licensees in the 1670-1675 MHz and 1675-1680 MHz bands may enter into a private agreement with all affected licensees operating in either band to allow the out-of-band emission limit described in this paragraph to be exceeded only between the 1670-1675 MHz and 1675-1680 MHz blocks. A licensee who is a party to a private agreement described in this section (3) must maintain a copy of the agreement in its station files and disclose it, upon request, to prospective AWS assignees, transferees, or spectrum lessees and to the Commission.

\* \* \* \* \*

14. Section 27.55(a) is amended to read as follows:

**§ 27.55 Power strength limits.**

(a) *Field strength limits.* For the following bands, the predicted or measured median field strength at any location on the geographical border of a licensee's service area shall not exceed the value specified unless the adjacent affected service area licensee(s) agree(s) to a different field strength. This value applies to both the initially offered service areas and to partitioned service areas.

(1) 1675-1680, 1995-2000, 2110-2155, 2155-2180, 2180-2200, 2305-2320, and 2345-2360 MHz bands: 47 dB $\mu$ V/m.

\* \* \* \* \*

15. Section 27.57(c) is amended to read as follows:

**§ 27.57 International coordination.**

\* \* \* \* \*

(c) Operation in the 1675-1680 MHz, 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands is subject to international agreements with Mexico and Canada.

16. Add new subpart O to read as follows:

**Subpart O—1675-1680 MHz Band**

**Sec.**

27.1400        1675-1680 MHz band subject to competitive bidding.  
 27.1401        Designated entities in the 1675-1680 MHz band.  
 27.1410        Protection of Federal government meteorological-satellite operations.

**§ 27.1400 1675-1680 MHz band subject to competitive bidding.**

Mutually exclusive initial applications for 1675–1680 MHz band licenses are subject to competitive bidding. The general competitive bidding procedures set forth in 47 CFR part 1, subpart Q of this chapter will apply unless otherwise provided in this subpart.

**§ 27.1401 Designated entities in the 1675-1680 MHz band.**

(a) *Eligibility for small business provisions.*

(1) Definitions.

(i) Small business. A small business is an entity that, together with its affiliates, its controlling interests, and the affiliates of its controlling interests, has average gross revenues not exceeding \$55 million for the preceding five (5) years.

(ii) Very small business. A very small business is an entity that, together with its affiliates, its controlling interests, and the affiliates of its controlling interests, has average gross revenues not exceeding \$20 million for the preceding five (5) years.

(2) Bidding credits. A winning bidder that qualifies as a small business, as defined in this section, or a consortium of small businesses may use the bidding credit of 15 percent, as specified in § 1.2110(f)(2)(i)(C) of this chapter. A winning bidder that qualifies as a very small business, as defined in this section, or a consortium of very small businesses may use the bidding credit of 25 percent, as specified in § 1.2110(f)(2)(i)(B) of this chapter.

(b) *Eligibility for rural service provider bidding credit.* A rural service provider, as defined in § 1.2110(f)(4)(i) of this chapter, that has not claimed a small business bidding credit may use the bidding credit of 15 percent specified in § 1.2110(f)(4) of this chapter.

**§ 27.1410 Protection of Federal Government Meteorological-Satellite operations.**

(a) 14 Protection Zones. Within 14 Protection Zones, prior to operating a base station in the 1675-1680 MHz band, licensees must successfully coordinate such base station operations with Federal Government entities operating meteorological satellite Earth-station receivers in the 1675-1710 MHz band.

(b) Additional Protection Zones. Federal earth stations in the 1675-1680 MHz band may be added subject to approval by NTIA and in compliance with a coordination process that will be announced jointly by the FCC and NTIA via Public Notice.

(c) Interference. If protected Federal earth stations receive harmful interference from 1675-1680 MHz band operations in the 1675-1680 MHz band, a 1675-1680 MHz band licensee must, upon notification, modify its operations and/or technical parameters as necessary to eliminate the interference.

(d) Point of contact. 1675-1680 MHz band licensees must provide and maintain a point of contact at all times so that immediate contact can be made should interference against protected Federal sites occur.

(e) Coordination procedures. Federal use of the radio spectrum is generally governed by the National Telecommunications and Information Administration (NTIA) while non-Federal use is governed by the Commission. As such, any guidance or details concerning Federal/non-Federal coordination must be issued jointly by NTIA and the Commission. The Commission may jointly issue with NTIA one or more public notices with guidance or details concerning the coordination procedures for the 1675-1680 MHz band.

**APPENDIX B**  
**Final Rules**

The Federal Communications Commission amends 47 CFR part 27 as follows:

**PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES**

1. The authority citation for Part 27 continues to read as follows:

Authority: [INSERT CURRENT AUTHORITY CITATION].

2. Section 27.53 is amended by revising paragraphs (j)(1) and (k) to read as follows:

**§ 27.53 Emission limits.**

\* \* \* \* \*

(j)(1) For operations in the unpaired 1390–1392 MHz band and the paired 1392–1395 MHz and 1432–1435 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. Compliance with these provisions is based on the procedures described in paragraph (a)(5) of this section.

\* \* \* \* \*

(k) For operations in the 1670-1675 MHz, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. Compliance with these provisions is based on the procedures described in paragraph (a)(5) of this section.

## APPENDIX C

## Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),<sup>1</sup> the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the *Notice of Proposed Rulemaking (Notice)*. Written comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Notice*. The Commission will send a copy of the *Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).<sup>2</sup> In addition, the *Notice* and IRFA (or summaries thereof) will be published in the Federal Register.<sup>3</sup>

**A. Need for, and Objectives of, the Proposed Rules**

2. Today's *Notice* proposes rules to reallocate spectrum in the 1675-1680 MHz band for shared use between incumbent federal operations and new, non-federal flexible wireless (fixed or mobile) use operations. The proposal to make additional spectrum available for non-federal flexible wireless use is another step in the Commission's efforts to help ensure that the speed, capacity, and ubiquity of the nation's wireless networks keep pace with ever-increasing demand for wireless broadband. It is also part of a broader government effort to introduce more spectrum into the marketplace while protecting important federal missions.<sup>4</sup>

3. In this proceeding, the Commission is pursuing the joint goals of making spectrum available for new wireless uses while effectively accommodating incumbent operations in the band. The 1675-1680 MHz band is currently used for important weather forecasting services. Specifically, the band is currently allocated in the United States Table of Frequency Allocations (U.S. Table) as part of the 1675-1695 MHz band on a co-primary basis to the Meteorological Aids (MetAids) (radiosondes<sup>5</sup>) and the Meteorological Satellite (MetSat) (space-to-Earth) services for both federal and non-federal use.<sup>6</sup> The National Oceanic and Atmospheric Administration (NOAA) currently uses multiple frequencies in the band for its weather tracking and monitoring capabilities. This use occurs in several fixed locations throughout the country, leaving large geographic areas in which it appears the spectrum may feasibly be shared with new, non-federal flexible wireless uses.

4. The proposed reallocation in today's *Notice* has the potential to spur innovation and investment in new wireless technologies, and we seek to do so without significantly affecting incumbent users. In proposing to reallocate the 1675-1680 MHz band on a co-primary basis and to develop rules that would enable the band to be shared, the *Notice* encourages commenters to study and consider the

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<sup>1</sup> See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> *See id.* § 603(a).

<sup>3</sup> *See id.*

<sup>4</sup> *See, e.g., Use of Spectrum Bands Above 24 GHz For Mobile Radio Services Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands*, GN Docket No. 14-177 et al., Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8056-57, para. 103 (2016) (*Spectrum Frontiers R&O and FNPRM*).

<sup>5</sup> A radiosonde is an automatic radio transmitter in the MetAids Service usually carried on an aircraft, free-floating balloon, kite or parachute, and which transmits near real-time environmental and meteorological data (e.g., atmospheric pressure, temperature, and relative humidity). The meteorological data from these radiosondes provide warnings and forecasts of weather events such as tornados and tropical cyclones. Radiosondes are launched twice a day from nearly 90 sites located throughout the United States and its possessions.

<sup>6</sup> *See* 47 CFR § 2.106 (Table of Frequency Allocations); *id.* Footnote US88.

tools, technical limitations, and other steps necessary to protect incumbent federal operations while making the spectrum available for new, non-federal uses.<sup>7</sup> The Commission intends to work collaboratively with our counterparts at the National Telecommunications and Information Administration (NTIA) and NOAA to study whether and how these goals can be accomplished. To that end, we will add any relevant studies published and made publicly available by federal agencies to the record in this proceeding.

**B. Legal Basis**

5. The proposed action is taken pursuant to sections 1, 2, 4(i), 10, 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332, and 333 of the Communications Act of 1934, as amended, and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, 47 U.S.C. §§ 151, 152, 154(i), 160, 201, 301, 302a, 303, 307, 308, 309, 310, 316, 319, 324, 332, 333, 1403, 1404, and 1451.

**C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply**

6. The RFA directs agencies to provide a description of, and where feasible, an estimate of, the number of small entities that may be affected by the rules, if adopted.<sup>8</sup> The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”<sup>9</sup> In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.<sup>10</sup> A small business concern is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.<sup>11</sup>

7. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions.* Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three broad groups of small entities that could be directly affected herein.<sup>12</sup> First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the SBA’s Office of Advocacy, in general a small business is

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<sup>7</sup> Furthermore, as discussed below, we recognize that there are some non-federal users that receive data in this band; we seek comment below on how they might be able to continue to use the federal service, or otherwise have access to alternative means of delivering the same data.

<sup>8</sup> 5 U.S.C. § 603(b)(3).

<sup>9</sup> *Id.* § 601(6).

<sup>10</sup> *Id.* § 601(3) (incorporating by reference the definition of “small business concern” in 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.” Although the Small Business Runway Extension Act of 2018, Pub. L. 115-324 (Dec. 17, 2018), revised the standard set out in the Small Business Act for categorizing a “small business concern” to be based on annual average gross receipts of the previous five (rather than previous three) years, the Small Business Administration has not yet revised the definition of “small business concern” in its regulations to reflect this change. Thus for purposes of compliance with the Regulatory Flexibility Act the Commission will continue to use the definitions provided by the Small Business Administration to determine which entities qualify as a “small business,” even though we propose to adopt a five year average gross revenue standard for purposes of qualifying for small business bidding credits.

<sup>11</sup> 15 U.S.C. § 632.

<sup>12</sup> *See id.* § 601(3)-(6).

an independent business having fewer than 500 employees.<sup>13</sup> These types of small businesses represent 99.9 percent of all businesses in the United States, which translates to 28.8 million businesses.<sup>14</sup>

8. Next, the type of small entity described as a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”<sup>15</sup> Nationwide, as of August 2016, there were approximately 356,494 small organizations based on registration and tax data filed by nonprofits with the Internal Revenue Service (IRS).<sup>16</sup>

9. Finally, the small entity described as a “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”<sup>17</sup> U.S. Census Bureau data from the 2012 Census of Governments<sup>18</sup> indicate that there were 90,056 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.<sup>19</sup> Of this number there were 37, 132 General purpose governments (county<sup>20</sup>, municipal and town or township<sup>21</sup>) with populations of less than 50,000 and 12,184 Special purpose governments (independent school districts<sup>22</sup> and special districts<sup>23</sup>) with populations of less than 50,000. The 2012 U.S. Census Bureau data for most types of governments in the local government category show that the majority of these governments have populations of less than 50,000.<sup>24</sup> Based on this data we estimate that at least 49,316 local government jurisdictions fall in the category of “small governmental jurisdictions.”<sup>25</sup>

10. *Wireless Telecommunications Carriers (except Satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services.<sup>26</sup> The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.<sup>27</sup> For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.<sup>28</sup> Of this total, 955 firms had employment of 999 or fewer

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<sup>13</sup> See SBA, Office of Advocacy, “Frequently Asked Questions, Question 1—What is a small business?,” [https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016\\_WEB.pdf](https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf) (June 2016).

<sup>14</sup> See SBA, Office of Advocacy, “Frequently Asked Questions, Question 2—How many small businesses are there in the U.S.?” [https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016\\_WEB.pdf](https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf) (June 2016).

<sup>15</sup> 5 U.S.C. § 601(4).

<sup>16</sup> Data from the Urban Institute, National Center for Charitable Statistics (NCCS) reporting on nonprofit organizations registered with the IRS was used to estimate the number of small organizations. Reports generated using the NCCS online database indicated that as of August 2016 there were 356,494 registered nonprofits with total revenues of less than \$100,000. Of this number 326,897 entities filed tax returns with 65,113 registered nonprofits reporting total revenues of \$50,000 or less on the IRS Form 990-N for Small Exempt Organizations and 261,784 nonprofits reporting total revenues of \$100,000 or less on some other version of the IRS Form 990 within 24 months of the August 2016 data release date. See <http://nccs.urban.org/sites/all/nccs-archive/html/tablewiz/tw.php> where the report showing this data can be generated by selecting the following data fields: Report: “The Number and Finances of All Registered 501(c) Nonprofits”; Show: “Registered Nonprofits”; By: “Total Revenue Level (years 1995, Aug to 2016, Aug)”; and For: “2016, Aug” then selecting “Show Results”.

<sup>17</sup> 5 U.S.C. § 601(5).

<sup>18</sup> See 13 U.S.C. § 161. The Census of Government is conducted every five (5) years compiling data for years ending with “2” and “7”. See also Program Description Census of Government <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=program&id=program.en.CO G#>.

<sup>19</sup> See U.S. Census Bureau, 2012 Census of Governments, Local Governments by Type and State: 2012 - United States-States. <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG02.US01>. Local governmental

(continued...)

employees and 12 had employment of 1000 employees or more.<sup>29</sup> Thus under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

11. *Satellite Telecommunications.* This category comprises firms “primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.”<sup>30</sup> Satellite telecommunications service providers include satellite and earth station operators. The category has a small business size standard of \$32.5 million or less in average annual receipts, under SBA rules.<sup>31</sup> For this category, U.S. Census Bureau data for 2012 show that there were a total of 333 firms that operated for the entire year.<sup>32</sup> Of this total, 299 firms had annual receipts of less than \$25 million.<sup>33</sup> Consequently, we estimate that the majority of satellite

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jurisdictions are classified in two categories - General purpose governments (county, municipal and town or township) and Special purpose governments (special districts and independent school districts).

<sup>20</sup> See U.S. Census Bureau, 2012 Census of Governments, County Governments by Population-Size Group and State: 2012 - United States-States. <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG06.US01>. There were 2,114 county governments with populations less than 50,000.

<sup>21</sup> See U.S. Census Bureau, 2012 Census of Governments, Subcounty General-Purpose Governments by Population-Size Group and State: 2012 - United States – States. <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG07.US01>. There were 18,811 municipal and 16,207 town and township governments with populations less than 50,000.

telecommunications providers are small entities.

**D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities**

12. The potential rule changes proposed in this *Notice*, if adopted, could impose new reporting, recordkeeping, or other compliance requirements on some small entities. To evaluate any new or modified reporting, recordkeeping, or other compliance requirements that may result from the actions proposed in the *Notice*, the Commission has sought input from the parties on various matters. The projected reporting, recordkeeping, and other compliance requirements proposed in the *Notice* will apply to all entities in the same manner. The Commission believes that applying the same rules equally to all entities in this context promotes fairness but has specifically sought input regarding the impact, costs, and benefits of various proposals in the *Notice*, which should help us assess how to accommodate the needs and resources of small entities. We note as a general matter that some of the proposed changes are currently required, or build on current requirements applicable in other bands for existing wireless providers. Thus, to the extent that small entities are already subject to similar requirements as licensees in

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<sup>22</sup> See U.S. Census Bureau, 2012 Census of Governments, Elementary and Secondary School Systems by Enrollment-Size Group and State: 2012 - United States-States.

<https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG11.US01>. There were 12,184 independent school districts with enrollment populations less than 50,000.

<sup>23</sup> See U.S. Census Bureau, 2012 Census of Governments, Special District Governments by Function and State: 2012 - United States-States. <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG09.US01>. [The U.S. Census Bureau data did not provide a population breakout for special district governments.](#)

<sup>24</sup> See U.S. Census Bureau, 2012 Census of Governments, County Governments by Population-Size Group and State: 2012 - United States-States - <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG06.US01>; Subcounty General-Purpose Governments by Population-Size Group and State: 2012 - United States-States - <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG07.US01>; and Elementary and Secondary School Systems by Enrollment-Size Group and State: 2012 - United States-States. <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG11.US01>. [While U.S. Census Bureau data did not provide a population breakout for special district governments, if the population of less than 50,000 for this category of local government is consistent with the other types of local governments the majority of the 38,266 special district governments have populations of less than 50,000.](#)

<sup>25</sup> *Id.*

<sup>26</sup> U.S. Census Bureau, 2012 NAICS Definitions, “517210 Wireless Telecommunications Carriers (Except Satellite),” See <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.517210>.

<sup>27</sup> 13 CFR § 121.201, NAICS code 517210.

<sup>28</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ5, Information: Subject Series: Estab and Firm Size: Employment Size of Firms for the U.S.: 2012 NAICS Code 517210. [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/51SSSZ5//naics~517210](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210).

<sup>29</sup> *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

<sup>30</sup> U.S. Census Bureau, 2012 NAICS Definitions, “517410 Satellite Telecommunications”; <http://www.census.gov/naics/2012/def/ND517410.HTM>.

<sup>31</sup> 13 CFR § 121.201, NAICS Code 517410.

<sup>32</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the United States: 2012, NAICS Code 517410 [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/51SSSZ4//naics~517410](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4//naics~517410).

<sup>33</sup> *Id.*

other bands, the cost of compliance should be minimal. Moreover, the revisions the Commission may ultimately adopt should benefit small entities by giving them more information about opportunities in the 1675-1680 MHz band, more flexibility to provide a wider range of services, and more options for gaining access to wireless spectrum.

13. In addition to the proposed rule changes associated with sharing between federal and non-federal users in the 1675-1680 MHz band, there could be new service rule compliance obligations. For new licensed flexible uses in the 1675-1680 MHz band, the *Notice* seeks comment on various service rules that should apply, including construction benchmarks and technical operating requirements. In the event the Commission adopts the proposed service rules and issues licenses for flexible use in the band, any small entity licensee would be required to satisfy construction requirements, and comply with limits on power, out of band emissions, field strength, antenna height, and other existing coordination requirements. Licensees would be responsible for making certain construction demonstrations with the Commission through the Universal Licensing System showing that they have satisfied the relevant construction benchmarks.

14. Assuming that the Commission ultimately decides to add a mobile, except aeronautical mobile, allocation and make the 1675-1680 MHz band available for flexible use, the *Notice* makes proposals and seeks comment on band plans, licensing and operating, and technical rules for the 1675-1680 MHz band spectrum that becomes available for terrestrial mobile and fixed flexible use. The *Notice* proposes to license this spectrum under the Commission's flexible-use, Part 27 rules that permit licensees to provide any fixed or mobile service consistent with the allocations for this spectrum, subject to rules necessary to prevent or minimize harmful interference.

15. *Band Plan(s)*. Given the limited size of the band, the *Notice* proposes to auction 1675-1680 MHz licenses on an unpaired basis for terrestrial fixed and mobile use. Further, to avoid incompatible operations among co-channel or adjacent channel licensees, the *Notice* proposes that 1675-1680 MHz be used solely as a downlink band. Alternatively, the *Notice* seeks comment on whether to authorize this band for a combination of uplink and downlink on a TDD or other basis (as in the adjacent unpaired 1670-1675 MHz band), or for uplink. The *Notice* proposes to license the 1675-1680 MHz band in five-megahertz blocks and on a partial economic area (PEA) basis. The *Notice* seeks comment on the costs and benefits of such alternate approaches, including the likely use cases each would support.

16. *Licensing and Operating Rules*. In order to afford licensees the flexibility to align licenses in the 1675-1680 MHz band with licenses in other spectrum bands governed by Part 27 of the Commission's rules, the *Notice* proposes that licensees in the 1675-1680 MHz band comply with licensing and operating rules that are applicable to all Part 27 services,<sup>34</sup> including assignment of licenses by competitive bidding,<sup>35</sup> flexible use,<sup>36</sup> regulatory status,<sup>37</sup> foreign ownership reporting,<sup>38</sup> compliance

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<sup>34</sup> We note the Commission recently amended several of the rules applicable to Part 27 services. *See Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal et al.*, WT Docket No. 10-112, Second Report and Order and Further Notice of Proposed Rulemaking and Order, 32 FCC Rcd 8874 (2017) (*WRS Renewal Reform 2<sup>nd</sup> R&O and FNPRM*).

<sup>35</sup> 47 U.S.C. § 309(j); 47 CFR §§ 1.2101-1.2114.

<sup>36</sup> Section 303(y) provides the Commission with authority to provide for flexibility of use if: "(1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users." Balanced Budget Act of 1997, Pub. L. No. 105-22, 111 Stat. 251, 269-69; 47 U.S.C. § 303(y). *See also* 47 CFR §§ 1.2106, 27.2, 27.3.

<sup>37</sup> 47 CFR § 27.10.

<sup>38</sup> 47 U.S.C. § 310; 47 CFR § 27.12.

with construction requirements,<sup>39</sup> renewal criteria,<sup>40</sup> permanent discontinuance of operations,<sup>41</sup> partitioning and disaggregation,<sup>42</sup> and spectrum leasing, and seeks comment on this approach.<sup>43</sup> The *Notice* also proposes an open eligibility standard for licenses in the 1675-1680 MHz band and seeks comment on the proposal that should include a discussion of the costs and benefits of the open eligibility proposal on competition, innovation, and investment. The adoption of an open eligibility approach would not affect citizenship, character, or other generally applicable qualifications that may apply under our rules. The *Notice* further proposes a 15-year term for licenses in the 1675-1680 MHz band. Finally, in the event that the Commission assigns licenses for the 1675-1680 MHz band through competitive bidding, the *Notice* proposes to exclude from eligibility a person who has been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant.<sup>44</sup>

17. Regarding mobile spectrum holding policies, the Commission proposes not to adopt a pre-auction bright-line limit on the ability of any entity to acquire spectrum in the 1675-1680 MHz band through competitive bidding at auction similar to the Commission's approach in the *2017 Spectrum Frontiers Order and FNPRM*. Additionally, in the event of an auction of licenses in the 1675-1680 MHz band, the Commission proposes to review holdings on a case-by-case basis when applications for initial licenses are filed post-auction to ensure that the public interest benefits of having a threshold on spectrum applicable to secondary market transactions are not rendered ineffective.

18. *Performance Requirements.* The *Notice* proposes to require a 1675-1680 MHz band licensee to provide reliable signal coverage and offer service to at least 45 percent of the population in each of its license areas within six years of the license issue date (first buildout requirement), and to at least 80 percent of the population in each of its license areas within 12 years from the license issue date (final buildout requirement).

19. While the *Notice* seeks comment on buildout requirements based on population coverage applicable for a range of fixed and mobile services, the *Notice* recognizes that 1675-1680 MHz licensees have flexibility to provide services potentially less suited to a population coverage metric. In particular, licensees providing Internet of Things (IoT) type fixed and mobile services may benefit from an alternative performance benchmark metric, and the *Notice* seeks comment on the appropriate metric to accommodate such service offerings.

20. Along with performance benchmarks, the *Notice* seeks comment on which penalties will most effectively ensure timely build-out. Specifically, the *Notice* states that, in the event a 1675-1680 MHz licensee fails to meet the first buildout requirement, the licensee's final buildout deadline and license term would be reduced by two years, thereby requiring it to meet the final buildout requirement two years sooner (at 10 years into the license term) and reducing its license term to 13 years. The *Notice* proposes that, in the event a 1675-1680 MHz licensee fails to meet the final buildout requirement for a particular license area, its authorization for each license area in which it fails to meet the buildout requirement shall terminate automatically without Commission action. Additionally, we also propose that, in the event a licensee's authority to operate terminates, the licensee's spectrum rights would become available for reassignment pursuant to the competitive bidding provisions of section 309(j). Further, consistent with the Commission's rules for other licenses, including AWS-1, AWS-3, AWS-4, and H

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<sup>39</sup> 47 CFR § 27.14(k)

<sup>40</sup> *Id.* § 1.949.

<sup>41</sup> *Id.* § 1.953.

<sup>42</sup> *Id.* CFR § 1.950.

<sup>43</sup> *Id.* § 1.9001 *et seq.*

<sup>44</sup> *See id.* § 27.12(b) *citing* 47 U.S.C. § 1404(c).

Block, the *Notice* proposes that any 1675-1680 MHz licensee who forfeits its license for failure to meet its performance requirements would be precluded from regaining the license.

21. *Compliance Procedures.* In addition to compliance procedures applicable to all Part 27 licensees, including the filing of electronic coverage maps and supporting documentation, the *Notice* proposes that such electronic coverage maps must accurately depict the boundaries of each license area in the licensee's service territory. If a licensee does not provide reliable signal coverage to an entire license area, the *Notice* proposes that its map must accurately depict the boundaries of the area or areas within each license area not being served. Further, the *Notice* proposes that each licensee also must file supporting documentation certifying the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology. We seek comment on these proposals. We also seek comment on whether small entities face any special or unique issues with respect to the transition such that they would require additional time to comply.

22. *Renewal Term Construction Obligations.* The *WRS Renewal Reform FNPRM* proposed to apply rules adopted in that proceeding to all flexible geographic licenses.<sup>45</sup> Given the proposal to license this band on a geographic basis for flexible use, any additional renewal term construction obligations proposed in the *WRS Renewal Reform FNPRM* also would apply to licenses in the 1675-1680 MHz band. Accordingly, the *Notice* seeks comment on whether there are unique characteristics of the 1675-1680 MHz band that might require a different approach than the various proposals raised by the *WRS Renewal Reform FNPRM*.

23. *Competitive Bidding Procedures.* Consistent with the competitive bidding procedures the Commission has used in previous auctions, the *Notice* proposes that the Commission would conduct any auction for licenses for spectrum in the 1675-1680 MHz band in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's rules.<sup>46</sup> Specifically, the *Notice* proposes to employ the Part 1 rules governing competitive bidding design, designated entity preferences, unjust enrichment, application and certification procedures, payment procedures, reporting requirements, and the prohibition on certain communications between auction applicants. Under this proposal, such rules would be subject to any modifications that the Commission may adopt for its Part 1 general competitive bidding rules in the future.<sup>47</sup> The *Notice* seeks comment on whether any of our Part 1 rules would be inappropriate or should be modified for an auction of licenses in this frequency band. In particular, the *Notice* seeks comment on proposals for bidding credits for designated entities in this band. As with other flexible use licenses in recent years, the *Notice* proposes to adopt in this band, bidding credits for the two larger designated entity business sizes provided in the Part 1 rules. The *Notice* also proposes to offer rural service providers a designated entity bidding credit for licenses in this band.<sup>48</sup> The *Notice* asks commenters addressing these proposals to consider what details of licenses in the band may affect whether designated entities will apply for them.

24. *Technical Rules.* Consistent with existing rules for other advanced wireless services, the

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<sup>45</sup> *WRS Renewal Reform 2<sup>nd</sup> R&O and FNPRM*, 32 FCC Rcd at 8915, paras. 111-12.

<sup>46</sup> See 47 CFR §§ 1.2101-1.2114.

<sup>47</sup> In its most recent amendments to the Part 1 competitive bidding rules, the Commission, among other things, updated the standardized schedule of small business size standards, instituted a rural service provider bidding credit, and adopted a process by which we may establish a reasonable monetary limit or cap on the total amount of bidding credits that an eligible small business or rural service provider may be awarded in a particular auction. *Competitive Bidding Update Report & Order*, 30 FCC Rcd at 7530-31, para. 88, 7539-48, paras. 109-130.

<sup>48</sup> 47 CFR § 1.2110(f)(4)(i) (bidding credit of 15 percent for applicants meeting the requirements for being designated as a rural service provider). An applicant eligible for both small business bidding credits and rural service provider bidding credits may only receive one of the two credits. *Id.* § 1.2110(f)(2)(i).

*Notice* proposes power limits for fixed and base stations of 2000 watts peak equivalent isotropically radiated power. For out of band emissions, the *Notice* proposes that emissions be kept to a level that will provide protection to incumbent services in adjacent bands, while allowing the full use of the new band, and therefore proposes to apply an out-of-band-emission (OOBE) limit of  $43 + 10 \log_{10}(P)$  dB, where P is the transmit power in watts. Further, to determine compliance with the OOBE limit, the *Notice* seeks comment on using a measurement bandwidth for base stations of one megahertz or greater, with some modification in the one megahertz bands immediately outside and adjacent to the frequency block where a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

25. Consistent with the limits used in AWS-1 and other AWS services, the *Notice* proposes to limit a licensee's predicted or measured field strength to 47 dB $\mu$ V/m (or less) at any location along the border of its license area. The *Notice* does not propose to limit the height of antennas for either fixed or base stations. With respect to border-area operations, the *Notice* proposes to apply Section 27.57(c) of our rules, which provide that several AWS services, including WCS, AWS-1, AWS-3, AWS-4 and H Block are subject to international agreements with Mexico and Canada. Lastly, the *Notice* proposes that several additional technical rules applicable to all Part 27 services, including sections 27.51 Equipment authorization, 27.52 RF safety, 27.54 Frequency stability, and 27.56 Antennas structures; air navigation safety should apply to all 1675-1680 MHz band licensees, including licensees who acquire their licenses through partitioning or disaggregation (to the extent the rules permit such aggregation). We seek comment on this approach, including its costs and benefits.

26. At this time, the Commission is not currently in a position to determine whether, if adopted, the proposed rules in the *Notice* will require small entities to hire attorneys, engineers, consultants, or other professionals and cannot quantify the cost of compliance for small entities with the potential rule changes and compliance obligations raised herein. However, we expect the information we receive in comments on our proposals, including cost and benefit analyses, to help us identify and evaluate relevant matters for small entities, including compliance costs and other burdens that may result from the matters raised in the *Notice*.

#### **E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered**

27. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof for small entities.”<sup>49</sup>

28. In this proceeding, the Commission seeks to identify potential opportunities for additional flexible access—particularly for wireless broadband services—in 5 megahertz of spectrum between 1675-1680 MHz (the band). While lacking specific data in general, which includes data on small entities, the Commission has taken steps to enable it to minimize the economic burden on small entities. For example, based on its finding that five-megahertz blocks would provide entry opportunities for small and rural service providers, the Commission proposes to license the 1675-1680 MHz band in five-megahertz blocks and seeks comment on this proposal. The Commission also took into consideration facilitating access to spectrum by small providers, among other things, when determining its proposal to use partial economic area (PEA) basis to license the 1675-1680 MHz band and has requested cost and benefit data be provided by commenters with their recommended licensing approach.

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<sup>49</sup> 5 U.S.C. § 603(c)(1)-(4).

29. Throughout the *Notice*, the Commission seeks comment on whether small entities face any special or unique issues with respect to its proposals. The Commission also seeks comment on modifications that could be made to our rules regarding administrative processes that would reduce the economic impacts of proposed rule changes on small entities. Seeking comments specifically targeting small entities should provide the Commission with the requisite data to consider the most cost-effective approach to minimize the economic impact for such entities while achieving its statutory objectives.

30. For small entities who must allocate resources carefully over the length of their license term and have more limited funds should they be required to compete at auction for a particular license, the certainty of the proposed 15-year license term should be beneficial and provide licensees with sufficient incentive to make the long-term investments necessary for compliance. In addition, the proposal to use bidding credits, if adopted, should also result in economic benefits for small entities. If bidding credits are adopted for the 1675-1680 MHz band, the Commission seeks comment on defining a small business as an entity with average gross revenues for the preceding five years not exceeding \$55 million, and a very small business as an entity with average gross revenues for the preceding five years not exceeding \$20 million. A qualifying “small businesses” would be eligible for a bidding credit of 15 percent and qualifying “very small businesses” would be eligible for a bidding credit of 25 percent.

31. The Commission finds an overriding public interest in encouraging investment in wireless networks, facilitating access to scarce spectrum resources, and promoting the rapid deployment of mobile services to Americans. All licensees, including small entities, play a crucial role in achieving these goals. Thus while the *Notice* does not propose any exemption for small entities, as mentioned above, the Commission seeks comment on alternative obligations, timing for implementation, scope of subject licenses, penalties for failure, and other measures that could accommodate the needs and resources of small entities. The Commission will carefully consider these matters as it relates to small entities before adopting final rules in this proceeding.

**F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules**

32. None.

**STATEMENT OF  
CHAIRMAN AJIT PAI**

Re: *Allocation and Service Rules for the 1675-1680 MHz Band*, WT Docket No. 19-116

For four years under the prior Administration, the President's budget proposed that the FCC take action to make spectrum in the 1675-1680 MHz band available for flexible use, subject to sharing arrangements with federal weather satellites. But nothing happened. It was all talk, no action.

Under this Administration, things have changed. In 2017, the National Oceanic and Atmospheric Administration began a study of spectrum sharing in the 1675-1680 MHz band. And now, this Commission is proposing to make this band available for flexible use subject to sharing arrangements with federal weather satellites. Our goal is to free up more spectrum for wireless broadband while also including safeguards to ensure that any new commercial operations don't result in harmful interference to incumbent federal operators. Of course, our consideration of how best to accomplish these objectives will be informed by the results of NOAA's study.

Our action today is just another example of our aggressive, "all of the above" strategy to free up spectrum for commercial use. In January, we finished an auction of spectrum in the 28 GHz band. We are currently conducting an auction of the 24 GHz band. We recently announced that, on December 10, we'll be launching a single auction of 3,400 MHz of spectrum in the upper 37, 39, and 47 GHz bands, which will be the largest spectrum auction in American history. We've also been working to repurpose mid-band spectrum for 5G: from rulemakings to free up spectrum in the 2.5 GHz, 3.7 GHz, 4.9 GHz, and 6 GHz bands, to our upcoming auction in the 3.5 GHz band, to ongoing work with our federal partners to share the 3.1 GHz, 3.45 GHz, and 5.9 GHz bands, in the past two years we have put over 2,500 megahertz of prime, mid-band spectrum on the table for high-speed wireless broadband.

All of these accomplishments on airwaves would not be possible without the labors of our talented staff. And in particular, I would like to thank the following for their work on this item: Lloyd Coward, Anna Gentry, Joyce Jones, Charles Mathias, Roger Noel, Paul Powell, Becky Schwartz, Dana Shaffer, and Cecilia Sulhoff from the Wireless Telecommunications Bureau; Nicholas Copeland, Catherine Matraves, Giulia McHenry, Gary Michaels, and Emily Talaga from the Office of Economics and Analytics; Paul Murray and Ronald Repasi from the Office of Engineering and Technology; Deborah Broderson, David Horowitz, and Bill Richardson from the Office of General Counsel; and Chana Wilkerson from the Office of Communications Business Opportunities. I look forward to working with them and our federal counterparts in the months to come so that we can bring this rulemaking to a prompt resolution.

**STATEMENT OF  
COMMISSIONER BRENDAN CARR**

Re: *Allocation and Service Rules for the 1675-1680 MHz Band*, WT Docket No. 19-116

Under this FCC's leadership, the Commission has focused on winning the race to 5G by modernizing our rules to reflect new technology. Our reforms have centered on two areas: infrastructure and spectrum.

On infrastructure, our old rules were written for 200-foot macro towers, when we know that 5G will require millions of new small cells to densify wireless networks. So in March of last year, we updated the federal rules governing small cell builds, and in September, we set reasonable fee and time limits on the local approval process. The results? The U.S. has leapfrogged our global competitors. We now have the largest 5G buildout in the world. Now, that may not sit well with the naysayers who are convinced we're losing to China. But the fact is the U.S. will have 92 5G builds by year's end while China has announced plans for zero.

On spectrum, the race to 5G can only be won with an all-of-the-above approach: high-, mid-, and low-band spectrum. On high-band, we completed the first millimeter wave auction in the world in January, we will finish our work on 24 GHz later this month, and then we will move on to auction 37, 39, and 47 GHz later this year. On low-band, we completed the 600 MHz incentive auction in 2017, are overseeing the repack of broadcasters currently, and moved forward on 900 MHz.

Which brings us to the mid-band. In 2017, one of the first actions the new FCC took was to launch a rulemaking to look at mid-band spectrum—from 3 GHz up. There were plenty of people who didn't see mid-band as a top priority back then, and they questioned whether our efforts to identify large swaths of 5G spectrum in these bands would bear fruit. The FCC's progress since then has helped change that narrative.

On 3.5 GHz, Commissioner O'Rielly led the agency's efforts to ensure that this mid-band spectrum will work in the real world. On 2.5 GHz, the Chairman advanced a plan that could unlock nearly 200 MHz of prime mid-band spectrum. In the 5 GHz and 6 GHz bands, the Chairman moved quickly with concrete steps to free up hundreds of megahertz of spectrum. On the C-band—3.7 GHz to 4.2 GHz—I put forward my thoughts in a speech two months ago and just last week the agency put out a notice that seeks focused comment.

Today, we continue the two-and-a-half year effort to free up prime, mid-band spectrum. The 5 MHz before us is a small sliver of spectrum, to be sure. But if it's combined with adjacent and nearby channels, we could have a 40 MHz block that offers high-throughput at great distance. Those are excellent characteristics for next-gen mobile broadband.

I remain confident that with continued hard work and our all-of-the-above spectrum strategy, America will win the race to 5G. And this item is one step towards the finish line. It has my support.

**STATEMENT OF  
COMMISSIONER JESSICA ROSENWORCEL**

Re: *Allocation and Service Rules for the 1675-1680 MHz Band*, WT Docket No. 19-116

Today's rulemaking begins a proceeding to make a bit of spectrum in the 1675-1680 MHz band available for shared use. This will take place only after the completion of a government study and an auction that is not scheduled. The issues associated with this five megahertz block of spectrum have been kicking around these halls for more than five years, so this rulemaking has my support.

But I am afraid this small step involving a small block of mid-band spectrum does not change a big truth. The United States has a mid-band spectrum problem. Over the past two years this agency has flooded private markets with high-band airwaves. But this country is increasingly alone in its mission to make millimeter wave spectrum the core of its domestic 5G approach. This means we have internationally ceded leadership when it comes to mid-band airwaves. If you want evidence this is true it is all around us. Start with South Korea, which last year wrapped up an auction of the 3.5 GHz band. At roughly the same time Spain and Italy held auctions for the 3.6-3.8 GHz bands. Austria did the same with similar airwaves earlier this year. Switzerland, Germany, and Japan also have auctioned a range of mid-band spectrum just a few months ago. Meanwhile, China has already allocated 300 megahertz of mid-band spectrum for next generation mobile use. In the United States, we have made available zero.

This is a problem. If we continue our current path prioritizing millimeter wave we may find ourselves without a global supply base as mid-band becomes the core of worldwide 5G service. This means less scale, higher costs, interoperability challenges, and less security as other nations' technologies proliferate. Moreover, recent commercial launches of 5G service are confirming what we already know—that commercializing millimeter wave is not easy, given its propagation challenges. The network densification these airwaves require is costly and in fact, may never reach rural America.

It's time for the United States to flip its wireless priorities and pivot to mid-band spectrum. These airwaves offer the mix of capacity and coverage we need for 5G to ever be deployed nationwide. This means scheduling an auction of the 3.5 GHz band and developing auction rules. It means moving faster on a plan for the 3.7-4.2 GHz band. We should explore innovative opportunities for making more efficient use of the 2.5 GHz band. Plus, we need to press our federal partners to work collaboratively with us to open more mid-band spectrum for new commercial use. But above all, we need to recognize what we do here today with a discrete five megahertz of mid-band spectrum is not enough. Our national leadership is at stake and it's time to pivot our priorities so that next generation wireless service can truly reach every community across the country.