determined that Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999) and Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000) do not apply to this action. In addition, this action does not impose any enforceable duty or contain any unfunded mandate as described under Title II of the Unfunded Mandates Reform Act (UMRA) (2 U.S.C. 1501 *et seq.*).

This action does not involve any technical standards that would require Agency consideration of voluntary consensus standards pursuant to section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) (15 U.S.C. 272 note).

VII. Congressional Review Act

Pursuant to the Congressional Review Act (5 U.S.C. 801 *et seq.*), EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 180

Environmental protection, Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: March 16, 2021.

Marietta Echeverria,

Acting Director, Registration Division, Office of Pesticide Programs.

Therefore, for the reasons stated in the preamble, EPA is amending 40 CFR chapter I as follows:

PART 180—TOLERANCES AND EXEMPTIONS FOR PESTICIDE CHEMICAL RESIDUES IN FOOD

■ 1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 321(q), 346a and 371.

■ 2. In § 180.658, amend paragraph (a)(1) by designating the table and adding in alphabetical order in newly designated Table 1 to paragraph (a)(1) the entry ''Persimmon'' and footnote 2 to read as follows:

§ 180.658 Penthiopyrad; tolerances for residues.

(a) * * *

(1) * * *

TABLE 1 TO PARAGRAPH (a)(1)

Commodity	Parts per million
* * * * *	
Persimmon [2]	3
* * * * *	
* * * * *	

[2] There are no U.S. registrations for this commodity as of April 7, 2021.

* * * * *

[FR Doc. 2021–07129 Filed 4–6–21; 8:45 am]

BILLING CODE 6560–50–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, and 27

[WT Docket No. 19–348; FCC 21–32; FRS 18035]

Facilitating Shared Use in the 3100–3550 MHz Band

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document, the Commission adopts changes to its rules to make 100 megahertz of mid-band spectrum in the 3.45–3.55 GHz band available for flexible use. It allocates the 3.45 GHz band to add a co-primary non-Federal fixed and mobile (except aeronautical mobile) allocation and adopted technical, licensing, and competitive bidding rules for this service largely consistent with its rules for other flexible-use wireless spectrum bands. While the majority of incumbent Federal operations in this band will be relocated to alternate spectrum, some operations will continue and must be protected from harmful interference through a system of coordination in specific Cooperative Planning Areas and Periodic Use Areas, described in the *Second Report and Order.* In addition, the Commission requires non-Federal radiolocation operations in the band to sunset operations within 180 days after the grant of new flexible-use licenses and provides for reimbursement of reasonable relocation costs. Further, the Commission requires amateur operators in the band to cease operations within 90 days of the public notice announcing the close of the auction, while allowing these amateur operations to continue in the 3.3–3.45 GHz band pending future Commission action in that spectrum.

DATES:

Effective date: This rule is effective June 7, 2021.

Compliance date: Compliance will not be required for §§ 2.106, 27.14, 27.1603, 27.1605, and 27.1607 of the Commission's rules until the Commission publishes a document in the **Federal Register** announcing that compliance date.

Applicability of Order of Proposed Modification: The Order of Proposed Modification, discussed in section 4 of the **SUPPLEMENTARY INFORMATION**, is applicable as of the date of publication in the **Federal Register.**

FOR FURTHER INFORMATION CONTACT: Joyce Jones, Wireless Telecommunications Bureau, Mobility Division, (202) 418–1327 or *joyce.jones@fcc.gov,* or Ira Keltz, Office of Engineering and Technology, (202) 418–0616 or *ira.keltz@fcc.gov.* For information regarding the PRA information collection requirements, contact Cathy Williams, Office of Managing Director, at 202–418–2918 or *cathy.williams@fcc.gov.*

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's *Second Report and Order, Order on Reconsideration, and Order of Proposed Modification* in WT Docket No. 19–348, FCC 21–32, adopted on March 17, 2021, and released on March 18, 2021. The full text of this document including all Appendices, is available for public inspection at the following internet address: *https://docs.fcc.gov/public/attachments/FCC-21-32A1.pdf.* Alternative formats are available for people with disabilities (Braille, large print, electronic files, audio format), by sending an email to *FCC504@fcc.gov* or calling the Consumer and Governmental Affairs Bureau at 202–418–0530 (voice) or 202–418–0432 (TTY).

Final Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980, as amended (RFA), requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that ''the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.'' Accordingly, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule changes contained in the *Second Report and Order* on small entities. As required by the Regulatory Flexibility Act, an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Further Notice of Proposed Rulemaking* (*FNPRM*) released in October 2020 in this proceeding (85 FR 66888, October

21, 2020). The Commission sought written public comment on the proposals in the *FNPRM*, including comments on the IRFA. No comments were filed addressing the IRFA. This FRFA conforms to the RFA. The Commission will send a copy of the *Second Report and Order, Order on Reconsideration, and Order of Proposed Modification, and Orders*, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

Paperwork Reduction Act

This document contains new or modified information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, it contains new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4).

Congressional Review Act

The Commission will send a copy of the *Second Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

Synopsis

I. Introduction

In the *Second Report and Order* the Commission takes steps to advance Congressional and Commission objectives to make more mid-band spectrum available for fifth generation wireless services, or 5G. Specifically, the Commission begins implementation of the Beat China by Harnessing Important, National Airwaves for 5G Act of 2020 (Beat CHINA for 5G Act of 2020), Consolidated Appropriations Act, 2021, Public Law 116–260, Division FF, Title IX, Sec. 905, which requires the Commission to start an auction to grant new initial licenses subject to flexible use in the 3450–3550 MHz (3.45 GHz) band by December 31, 2021. Together with its Federal partners in the Executive Branch, including the White House Office of Science and Technology Policy and National Economic Council, the National Telecommunications and Information Administration (NTIA), and the Department of Defense (DoD), the Commission has worked with unprecedented speed and collaboration to make 100 megahertz of mid-band spectrum in the 3.45 GHz band available for flexible use. The Commission's framework will enable full-power commercial use (*i.e.,* non-Federal, primary, flexible use, including for private mobile radio services) of this band and require that future licensees deploy their networks quickly, so that that this spectrum is in put in service of the American people. The Commission also takes steps to balance the needs of Federal incumbents where and when they require continued access to the band and relocates important non-Federal weather forecasting services so that they are not adversely impacted by the Commission's actions. Collectively, the 3.45 GHz band and the neighboring 3.5 GHz and 3.7 GHz bands will offer 530 megahertz of contiguous mid-band spectrum for 5G services.

II. Background

The lower 3 GHz band—and the 3450 MHz to 3550 MHz portion of the band (3.45–3.55 GHz band) in particular—has been targeted as spectrum to support 5G both here and abroad, and assessed within the Federal Government, across the legislative and executive branches, as well as within the Commission. The National Telecommunications and Information Administration (NTIA) identified the 3450–3550 MHz spectrum band as a potential candidate for shared use between Federal incumbents and commercial services two years ago. In 2018, Congress passed the Fiscal Year 2018 omnibus spending bill, which directed NTIA to work with the Commission on identifying sharing opportunities in the 3.1–3.55 GHz band.

Congress addressed the pressing need for spectrum to support broadband, including mid-band spectrum, in the Fiscal Year 2018 omnibus spending bill, which included the Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless Act (MOBILE NOW Act) under Title VI of RAY BAUM'S Act. *See* Consolidated Appropriations Act, 2018, Public Law 115–141, Division P, the Repack Airwaves Yielding Better Access for Users of Modern Services (RAY BAUM'S) Act, Title VI (the Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless Act or MOBILE NOW Act). The MOBILE NOW Act mandated that the Secretary of Commerce, working through NTIA: (1) Submit, in consultation with the Commission, a report by March 23, 2020, on the feasibility of ''allowing commercial wireless service, licensed or unlicensed, to share use of the frequencies between 3100 megahertz and 3550 megahertz, and (2) identify with the Commission ''at least 255 megahertz of Federal and non-Federal spectrum for mobile and fixed wireless broadband use'' by December 31, 2022. MOBILE NOW Act section 605(a). Shortly before Congress signed the 2018 omnibus spending bill, NTIA announced that it had identified the 3.45–3.55 GHz band for study for potential repurposing to spur commercial wireless innovation. In 2020, the White House and the DoD formed America's Mid-Band Initiative Team (AMBIT) with the goal of making 100 megahertz of contiguous mid-band spectrum available in the 3.45–3.55 GHz band for full commercial use.

In December 2020, Congress adopted the Beat CHINA for 5G Act of 2020. The Act requires NTIA, no later than June 25, 2021, to ''begin the process of withdrawing or modifying the assignments to Federal Government stations of the [3.45 GHz band] as necessary'' for the Commission to reallocate and auction the band for flexible commercial use. Beat CHINA for 5G Act of 2020 section 905(c)(1). The Act further requires the Commission to begin a system of competitive bidding to grant new initial licenses for the use of a portion or all of the 3.45 GHz band, subject to flexible-use service rules, no later than December 31, 2021. Beat CHINA for 5G Act of 2020 section 905(d)(1)(B). Finally, the Act provides an exemption to the 18-month FCC auction notification requirement in the Commercial Spectrum Enhancement Act (CSEA). *Id.* section 905(d)(2); 47 U.S.C. 923(g)(4)(A)

In September 2020, the Commission released a *Report and Order* (85 FR 64062, October 9, 2020) and the *FNPRM.* The *Report and Order* adopted the Commission's 2019 proposal (85 FR 3579, January 22, 2020) to remove the secondary, non-Federal allocations from the 3.3–3.55 GHz band. The *FNPRM* proposed: (1) Allocation changes to the 3.3–3.55 GHz band to enable future commercial use; (2) coordination between future flexible-use licensees and Federal incumbents that remain in the band; (3) relocation logistics for non-Federal secondary users; and (4) the technical, licensing, and operating rules that would create a successful coordination regime both within the band and with Federal and non-Federal operations in adjacent bands.

III. Second Report and Order

A. Allocating the 3.45 GHz Band for Commercial Wireless Use

Consistent with the Beat CHINA for 5G Act of 2020, the Commission adopts its proposal to add a primary non-Federal fixed and mobile, except aeronautical mobile, allocation to the 3.45 GHz band nationwide. As the Commission noted in the *FNPRM,*

section 303(y) provides the Commission with authority to allocate spectrum for flexible 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.'' 47 U.S.C. 303(y)

The Commission's proposed non-Federal allocation is consistent with and furthers these goals for several reasons. First, the allocation is consistent with international agreements. Indeed, it will harmonize the Commission's allocation for the 3.45 GHz band with international allocations. As 5G Americas notes, there is now a critical mass of countries that have auctioned or otherwise made spectrum available in the 3.3–4.2 GHz range (band n77). Second, the proposed allocation will make more critical mid-band spectrum available for 5G and other advanced wireless services (AWS). The allocation will foster more intensive 5G use of mid-band spectrum to facilitate and incentivize investment in next-generation wireless services. Third, the Commission expects that the allocation will promote investments in the band by flexible-use licensees. Mid-band spectrum is particularly well-suited for 5G buildouts due to its desirable mix of coverage, capacity, and propagation characteristics, and the Commission anticipates that this spectrum will attract significant investment from 5G network operators. Finally, the Commission's actions in the *Second Report and Order* will promote effective coordination between new flexible-use licensees and remaining incumbent Federal operations. No commenter disagrees with the Commission's proposed flexible-use allocation under section 303(y). Accordingly, the Commission adopts the proposal to add a primary non-Federal fixed and mobile, except aeronautical mobile, allocation to the 3.45 GHz band nationwide.

Although the Commission allocates the 3.45 GHz band for non-Federal fixed and mobile (except aeronautical mobile) operations nationwide, at this time, as discussed below, it will only license this band for non-Federal operations in the contiguous United States because the AMBIT efforts limited their focus to the contiguous United States.

B. Cooperative Sharing Regime in the 3.45 GHz Band

The 3.45 GHz band currently is used by the DoD for high- and low-powered radar systems on a variety of platforms in the 3 GHz band, including fixed, mobile, shipborne, and airborne operations. Both NTIA and the AMBIT efforts identified the 3.45 GHz band for cooperative sharing between incumbent DoD operations and new commercial operators, under which commercial providers will be able to use the band on an unrestricted basis, except under a few limited circumstances (described below). Consistent with the conclusions of the Commission's Federal partners, the Commission adopts a cooperative sharing regime for the 3.45 GHz band.

Under this framework, non-Federal systems generally will have unencumbered, full-power use of the entire band across the contiguous United States and, with limited exceptions, Federal systems operating in the band may not cause harmful interference to non-Federal operations in the band. In limited circumstances and in locations where current incumbent Federal systems will remain in the band, however, non-Federal systems will not be entitled to protection against harmful interference from Federal operations (and limited restrictions will be placed on non-Federal operations). These exceptions will occur only in geographic areas specifically identified as Cooperative Planning Areas and Periodic Use Areas. NTIA describes these areas as key military training facilities, important test sites, and strategically significant Navy home ports and shipyards. NTIA stresses that these areas are not exclusion zones. The Commission emphasizes that commercial operations are not precluded within Cooperative Planning Areas and Periodic Use Areas. Rather, incumbent Federal operations and new flexible-use operations must coordinate with each other to facilitate shared use of the band in these specified areas and during specified time periods. The coordination regime the Commission adopts is intended to minimize the impacts from incumbent Federal operations on future commercial operations while still enabling effective Federal operations where and when necessary, given the need to preserve military readiness and capabilities and support real-world operations when required.

This coordination regime builds upon the AWS–3 framework and incorporates lessons learned from AWS–3 and other shared services, such as the Citizens Broadband Radio Service. As with those services, and with AWS–3 in particular, new flexible-use 3.45 GHz Service licensees must coordinate with DoD incumbents to facilitate shared use of the band, here within Cooperative Planning Areas and Periodic Use Areas. But beyond simply coordinating within those areas, Federal and non-Federal operators are encouraged to enter into mutually acceptable operator-to-operator agreements to permit more extensive flexible use within Cooperative Planning and Periodic Use Areas by agreeing to a technical approach that mitigates the interference risk to Federal operations. The current parameters of Cooperative Planning and Periodic Use areas, as discussed further below, are the default, but in practice should be a starting point for negotiations between flexible-use licensees and Federal incumbents; more expansive use by the flexible-use licensee can be agreed to in areas and under circumstances or parameters acceptable to the Federal incumbent. The Commission adopts this progression in coordination regimes to unleash mid-band spectrum for next-generation wireless services. Further, this approach is consistent with the AMBIT's goal of providing immediate, full power, commercial access to 100 megahertz of contiguous spectrum between 3.45–3.55 GHz, to the maximum extent possible. The coordination framework will benefit consumers as well as Federal agencies and the military, as they can also take advantage of these additional commercial broadband and 5G networks and the economies of scale they create.

1. Cooperative Planning Areas and Periodic Use Areas

Definitions.—During the AMBIT efforts, the DoD identified a list of ''Cooperative Planning Areas,'' within which it anticipates that Federal operations will continue after the assignment of flexible-use licenses in the band. These areas are limited in size and scope and include military training facilities, test sites, Navy home ports, and shipyards. The Commission defines Cooperative Planning Areas as geographic locations in which non-Federal operations shall coordinate with Federal systems in the band to deploy non-Federal operations in a manner that shall not cause harmful interference to Federal systems operating in the band. In these areas, operators of non-Federal stations may be required to modify their operations (*e.g.,* reduce power, add filters adjust antenna pointing angles, install shielding, etc.) to protect Federal operations against harmful interference and to avoid, where possible,

interference and potential damage to the non-Federal operators' systems. Further, in these areas, non-Federal operations may not claim interference protection from Federal systems. However, Federal and non-Federal operators may reach mutually acceptable operator-to-operator agreements to permit more extensive non-Federal use by identifying and mutually agreeing upon a technical approach that mitigates the interference risk to Federal operations. To the extent that high-powered Federal operations will remain that may cause harmful interference to commercial operations, NTIA has recommended that Federal operators should share information about these risks with the commercial operators in the context of coordination agreements. NTIA states that, ''[t]o the extent possible, Federal use in Cooperative Planning Areas will be chosen to minimize operational impact on non-Federal users.'' Letter from Charles Cooper, Associate Administrator, NTIA, to Ronald T. Repasi, Acting Chief, OET, FCC and Donald Stockdale, Chief, WTB, FCC, WT Docket No. 19–348, at Enclosure 1 (filed Sept. 8, 2020) (NTIA 2020 *Ex Parte* Letter).

The Commission includes in part 2 of its rules a more detailed list of parameters for such areas that NTIA has provided. For each Cooperative Planning Area, the Commission provides either a point and radius or a series of geographic coordinates (which create a polygon) to define the boundary of the area. Using this information, potential bidders will be able to determine precisely which areas will require coordination with the DoD. NTIA states that the DoD will create a workbook, similar to the one that it created in the AWS–3 transition, to provide potential bidders with additional information about these areas before bidding commences in the Commission's auction.

In addition, the DoD has identified several ''Periodic Use Areas'' that overlap with certain Cooperative Planning Areas. In these Periodic Use Areas, the DoD will need episodic access to all or a portion of the band in specific, limited geographic areas, in which it will coordinate with affected licensees for specific times and bandwidths. Accordingly, the Commission defines Periodic Use Areas as geographic locations in which non-Federal operations in the band shall not cause harmful interference to Federal systems operating in the band for episodic periods. Moreover, during these times and in these areas, Federal users will require interference protection from non-Federal operations. As with Cooperative Planning Areas, within Periodic Use Area, operators of non-Federal stations may be required to temporarily modify their operations (*e.g.,* reduce power, filtering, adjust antenna pointing angles, shielding, etc.) to protect Federal operations from harmful interference, which may include restrictions on non-Federal stations' ability to radiate at certain locations during specific periods of time. During such episodic use, non-Federal users in Periodic Use Areas must alter their operations to avoid harmful interference to Federal systems' temporary use of the band, and during such times, non-Federal operations may not claim interference protection from Federal systems. However, Federal and non-Federal operators may reach mutually acceptable operator-to-operator agreements such that a Federal operator may not need to activate a Periodic Use Area if a mutually agreeable technical approach mitigates the interference risk to Federal operations. NTIA notes that, ''[t]o the extent possible, Federal use in Periodic Use Areas will be chosen to minimize operational impact on non-Federal users.'' NTIA 2020 *Ex Parte* Letter at Enclosure 1. The Commission notes that ''[r]estrictions and authorizations for the Cooperative Planning Areas remain in effect during periodic use unless specifically relieved in the coordination process.''

The Commission includes a list of Periodic Use Areas in part 2 of its rules. As with Cooperative Planning Areas, the Commission provides either a point and radius or a series of coordinates (which create a polygon) to define the boundaries of the area within which future licensees must coordinate with the DoD. In both Cooperative Planning and Periodic Use Areas, the coordination procedures the Commission adopts in the *Second Report and Order* will ensure maximum possible use of flexible-use licenses while allowing the DoD to continue to operate in these areas with protection against harmful interference adequate to preserve military readiness, capabilities, and national security.

Parameters.—NTIA and the DoD identified 33 Cooperative Planning Areas, 23 of which overlap with Periodic Use Areas. In defining each area, the DoD's analysis employed certain assumptions and parameters, including: (1) 5G networks operating at a maximum power of 1640 watts/MHz in urban environments and 3280 watts/MHz in non-urban environments; (2) an EMI threshold of −35dBm/m2 peak power density from the nearby radar; and (3) damage to 5G networks calculated at a threshold of +35dBm/m2 peak power density from the nearby radar. In the event that the DoD modifies its use in any existing Cooperative Planning or Periodic Use Area so as to decrease the size of such area, the Commission delegates authority to the Wireless Telecommunications Bureau and the Office of Engineering and Technology, in coordination with NTIA, to reflect such smaller areas in its rules. In this regard, the Commission notes that the existing Cooperative Planning and Periodic Use Areas identified by the rules adopted in the *Second Report and Order* cannot be increased in size, and no Cooperative Planning Area or Periodic Use Area not so identified can be added in the contiguous United States.

In general, 3.45 GHz Service licensees will be able to operate within each Cooperative Planning Area, but may need to plan their network layout, choose power levels and antennas, and install filters and shielding, to maximize flexible use of the band, consistent with operator-to-operator agreements they enter into with DoD operators. In certain locations, the DoD operates high-powered radars. Flexible-use licensees must accept interference from these high-powered DoD radars within the Cooperative Planning and Periodic Use Areas, unless the operators are able to reach an agreement that provides additional assurances or protections to each operator. NTIA recommends that ''to the extent that higher power DoD radars located at the CPAs [Cooperative Planning Areas] labeled in [part 2, appendix A of the Commission's rules] may cause harmful interference to commercial operations within these zones, . . . DoD and licensees [should] include in coordination agreements language that acknowledges the risks of harmful interference inside of these zones (along the lines set forth in the AWS–3 coordination agreement template).'' Letter from Charles Cooper, Associate Administrator, NTIA, to Ronald T. Repasi, Acting Chief, OET, FCC and Joel Taubenblatt, Acting Chief, WTB, FCC, WT Docket No. 19–348, at 4 (filed Feb. 19, 2021) (NTIA 2021 *Ex Parte* Letter). In other areas where the DoD operates low-power radars, the Commission expects that the DoD will coordinate with flexible-use licensees for an agreeable path forward. An operator-to-operator agreement could include network deployment plans that minimize impacts on DoD operations, while enabling the widest flexible-use deployments possible. The Commission notes that, unless the entire 3.45 GHz

Service licensed area falls within a Cooperative Planning Area or Periodic Use Area, cooperative sharing will only take place in those portions of a licensee's geographic licensed area that fall within the defined boundaries of a Cooperative Planning Area or Periodic Use Area, and not across the entire licensed area. In other words, outside of the defined boundaries of the Cooperative Planning Area or Periodic Use area, the 3.45 GHz Service licensee will have unencumbered use of the band.

The Commission reiterates that the Cooperative Planning and Periodic Use Areas are not exclusion zones, because licensees will be permitted to operate in these areas subject to the coordination requirements, and these zones were developed based on the Commission's proposed power limits and assuming relatively high antenna heights. In practice, the Commission expects that the areas in which flexible-use licensees may need to adjust their networks will be smaller than the areas encompassed by the Cooperative Planning and Periodic Use Area boundaries the Commission is adopting. First, actual flexible-use operations are likely to use lower towers and lower power than the maximum tower heights and power levels permitted under the Commission's rules, which NTIA and the DoD used in their analyses to generate the Cooperative Planning Areas and Periodic Use Areas. NTIA expects that this ''should result in greater industry access to the spectrum in and around the CPAs and PUAs [Periodic Use Areas].'' NTIA 2021 *Ex Parte* Letter at 3. Second, non-Federal licensees can coordinate with Federal users and enter into operator-to-operator agreements so that new commercial operations would not interfere with protected incumbent Federal systems, or so that any risk of harmful interference to non-Federal operations is mitigated so long as the non-Federal users are operating pursuant to the agreement. For example, as NTIA notes, the DoD could agree to not activate a PUA if a mutually agreeable technical interference mitigation approach is identified. Absent an operator-to-operator agreement permitting more extensive use within a Cooperative Planning or Periodic Use Area, a 3.45 GHz Service licensee must protect Federal incumbents against harmful interference within the area parameters denoted in the table in footnote US431B of § 2.106 of the Commission's rules.

Fort Bragg and Little Rock.—In all but two of the Cooperative Planning and Periodic Use Areas, 3.45 GHz Service licensees must coordinate with the DoD across all 100 megahertz of the spectrum within the areas. In the Fort Bragg, North Carolina, Cooperative Planning Area and Periodic Use Area, in contrast, licensees will only need to coordinate in the lower 40 megahertz of the band, *i.e.,* between 3450–3490 MHz. NTIA indicates that the DoD will only use the lower 40 megahertz of the band in this area, leaving the upper 60 megahertz unencumbered and available for full-power, flexible-use operations in accordance with the rules adopted herein. Thus, licensees in the upper portion of the band, *i.e.,* between 3490–3550 MHz, need not coordinate with the DoD in these areas.

In the Little Rock, Arkansas Cooperative Planning Area, for approximately the first 12 months following the close of the auction for this band, licensees will have to coordinate with the DoD across all 100 megahertz of the spectrum within those areas. After this time period, however, licensees will only need to coordinate in the lower 40 megahertz of the band, as the DoD states that it will vacate the upper 60 megahertz, *i.e.,* between 3490–3550 MHz, by that time.

Federally Authorized Contractor Test Facilities.—Consistent with the *FNPRM* and with NTIA authorizations, Federally Authorized Contractor Test (FACT) facilities that operate within a Cooperative Planning Area or Periodic Use Area pursuant to a NTIA authorization will be treated the same as other Federal facilities within such areas. NTIA authorizes radio stations belonging to and operated by the United States. To the extent that NTIA has authorized such stations to operate within a FACT, those operations should be entitled to the same protections as other Federal operations within Cooperative Planning Areas or Periodic Use Areas, consistent with their NTIA authorizations.

In this context, the Aerospace Industries Association asks the Commission to refine its coordination requirements to include protection for future non-Federal experimental operations at facilities located within Cooperative Planning Areas, as well as experimental operations at the small number of non-Federal facilities that are located outside of Cooperative Planning Areas. The Aerospace Industries Association also asks that the Commission impose coordination obligations for non-Federal test facilities wholly located within Cooperative Planning Areas. Further, the Aerospace Industries Association asks that a coordination process be created either by the National Defense Industrial Association Spectrum Working Group or the Commission to coordinate operations at testing facilities not wholly located within Cooperative Planning Areas. NTIA notes that several radar manufacturing and integration facilities require access to the 3.45 GHz band to perform experimentation and testing for radionavigation and other systems contracted for by Federal agencies. According to NTIA, these facilities typically operate outdoors to accommodate physically large operational systems and NTIA states that these facilities must retain access to the spectrum for testing and experimentation to ensure that agencies' contracting requirements can be fulfilled. NTIA requests that the Commission continue to work with NTIA, the DoD, and other concerned stakeholders to develop a coordination framework to ensure that these non-Federal experimental licensees in the 3.45 GHz band are able to continue to access spectrum to support their critical functions in support of the DoD, in a way that minimizes potential impacts to the 3.45 GHz Service.

The Commission recognizes that the DoD has expended significant time and resources to craft limited Cooperative Planning Areas or Periodic Use Areas that maximize new commercial operations while still allowing effective mission-critical DoD uses. While the DoD's calculations and assessments do not consider future operations by non-Federal radiolocation experimental licensees within or outside these areas, the Commission agrees that these contractor facilities have needs to access the spectrum for testing and experimentation as the Commission has recognized in authorizing various part 5 experimental authorizations. Protection of such operations by rule is outside the scope of the AMBIT efforts. Further, expanding protection to future non-Federal operations at FACT facilities would create uncertainty for potential bidders considering commercial deployments in the band. The Commission notes, however, that non-Federal entities will continue to be able to obtain experimental licenses for such testing under its part 5 rules, which limit experimental use to operations on a non-interference basis and generally require licensees to notify or coordinate with incumbent spectrum users to avoid causing harmful interference. Accordingly, the Commission does not extend coordination obligations on commercial licensees for existing or future non-Federal radiolocation operations authorized under part 5 of the rules regardless of whether they are located either inside or outside of

Cooperative Planning Areas or Periodic Use Areas. The Commission expects all future commercial licensees to cooperate with part 5 licensees when presented with requests for experimentation and testing in the 3.45 GHz band to enable continued development and upgrades of essential DoD systems. Moreover, the Commission encourages all stakeholders to work with the National Defense Industrial Association Spectrum Working Group to develop mutually agreeable practices regarding experimental use of the band for defense radar testing and development. The Commission will monitor the results of this approach and may revisit it as necessary based on the experience of experimental and 3.45 GHz Service licensees. To that end, the Commission encourages parties to provide the Commission with information on this approach if needed.

2. National Emergencies

In light of NTIA's February 2021 letter stating that no specific provision in US431B is needed for Federal use during time of national emergency, the Commission does not adopt such a provision. The Commission agrees with NTIA that section 706(c) of the Communications Act and other relevant authorities provide sufficient ability for the DoD to access the band in the extraordinary circumstances under which a national emergency might necessitate access to the 3.45 GHz band. Accordingly, the Commission need not modify the existing regulatory framework that applies generally to all bands in this regard.

In the *FNPRM,* the Commission, noting that the DoD may require access to the band during times of national emergency to fulfill military operational needs, proposed that Federal users should be authorized to operate within the band pursuant to existing radiolocation authorizations as required to meet operational mission requirements during national emergencies. Numerous commenters ask that the Commission clearly delineate the boundaries of this use and any related coordination procedures.

In response to these comments and upon further review of this issue, NTIA and the DoD now agree that a specific national emergency provision in footnote US431B is not necessary. The Commission agrees with this assessment. Instead of imposing a specific provision for national emergencies, in the extremely rare circumstances under which such operational needs may arise, NTIA states that such operational needs can be accommodated in the 3.45 GHz band (as well as other bands) under and consistent with section 706(c) of the Communications Act and other relevant authorities. Under section 706(c), a national emergency would be triggered by a ''proclamation by the President that there exists a war or threat of war or a state of public peril or disaster or other national emergency.'' 47 U.S.C. 606(c). While similar language was proposed by NTIA for footnote US431B to the Table of Allocations, NTIA now states that this band-specific provision in an allocation footnote is not required in light of existing statutory authorities.

The Commission agrees with commenters and NTIA that a band-specific national emergency provision in US431B is not required and accordingly, it will not adopt the prior proposal in this regard. The Commission reminds future 3.45 GHz Service licensees, however, that pursuant to section 309(h) of the Communications Act, every FCC license shall be subject in terms to the right to use or control conferred by section 706 of this Act. Similarly, nothing under the Commission's auction authority or in the use of competitive bidding shall limit or otherwise affect the requirements of section 309(h), section 706, or any other relevant provisions of the Communications Act. Although NTIA recognizes prospective bidders' need for adequate information to assess risks and prepare business plans for the band, it acknowledges that it would be difficult to provide absolute certainty and predictability regarding the situations under which section 706 (or other authorities) might be invoked. Nonetheless, NTIA notes that additional information may be provided through upcoming workshops or other appropriate venues.

3. Coordination Procedures

Before a commercial licensee commences operations in a Cooperative Planning Area or Periodic Use Area, it must first successfully coordinate with the Federal incumbent. The purpose of coordination is to facilitate shared use of the band in these specified areas and during specified time periods. The coordination procedures outlined here will apply to all 3.45 GHz Service licensees seeking to operate in a Cooperative Planning Area or Periodic Use Area, unless the 3.45 GHz Service licensee and the DoD have reached a mutually agreeable coordination arrangement that provides otherwise. Such arrangements could, for example, document specific notification and activation procedures. While the Commission provides a general description of these procedures here, additional coordination requirements, procedures, and scenarios may be developed, consistent with any Administrative Procedure Act or other legal requirement that may apply, in future public notices, specific operator-to-operator agreements, or other mechanisms. The Commission expects 3.45 GHz Service licensees and Federal incumbents to negotiate in good faith throughout the coordination process (*e.g.,* sharing information about their respective systems and communicating results to facilitate commercial use of the band).

Contact.—The DoD will create an online portal through which a 3.45 GHz Service licensee must initiate formal coordination requests for its relevant systems within associated Cooperative Planning Areas and/or Periodic Use Areas. In addition, according to NTIA, an Incumbent Informing Capability (IIC) also could be developed to facilitate coordination within the Periodic Use Areas. The DoD would use the IIC to schedule the time and frequency span for each episodic use.

Informal Discussions.—Before a 3.45 GHz Service licensee submits a formal coordination request, it may share draft proposals or request that Federal incumbent coordination staff discuss draft coordination proposals. These discussions are voluntary, informal, and non-binding and can begin at any time. 3.45 GHz Service licensees may discuss their proposed deployments and seek guidance on appropriate measures to ensure that electromagnetic compatibility (EMC) analyses produce positive results. 3.45 GHz Service licensees and Federal representatives also may develop an analysis methodology that reflects the characteristics of licensees' proposed deployments and the Federal incumbents' operation. These discussions also can involve developing a process for identification and resolution of interference.

Informal discussions are intended to allow the Federal incumbent and 3.45 GHz Service licensee to share information about their respective system designs and to identify potential issues before a formal coordination request is submitted through the DoD online portal. The Federal incumbents involved, unless they specify otherwise in writing, would not be committing to any final determination regarding the outcome of the formal coordination. The Commission strongly encourages parties to use informal, non-binding discussions to minimize or resolve basic methodological issues upfront, before having the 3.45 GHz Service licensees

submit formal coordination requests. Federal incumbents' transition plans will identify a point of contact that a licensee may contact to initiate informal discussions.

Formal Coordination.—Coordination shall be initiated by the 3.45 GHz Service licensee by formally requesting access to operate within a Cooperative Planning Area and/or Periodic Use Area. This request should be made directly through the DoD online portal. The 3.45 GHz Service licensee must set up its portal account and, once established, the 3.45 GHz Service licensee will receive a user guide and training on the use of the portal and, if applicable, the IIC.

Initiation, Timing, and Affirmative Concurrence.—Unless otherwise agreed between a 3.45 GHz Service licensee and the relevant Federal incumbent, no formal coordination requests may be submitted until nine (9) months after the date of the auction closing Public Notice. 3.45 GHz Service licensees may request informal discussions during this nine-month time period, however, using the point of contact identified in the applicable Transition Plan.

After the first nine (9) months following the close of the auction, the Commission expects that NTIA will require Federal incumbents to review and respond to formal coordination requests made through the portal in a timely manner. The Commission encourages licensees and incumbents, through informal discussions, to prioritize formal coordination requests as appropriate to avoid an overwhelming influx of coordination requests at the conclusion of the nine (9) month quiet period. This will help maximize the quick and efficient review of coordination requests.

Unless otherwise agreed to in writing, the requirement to reach a coordination arrangement is satisfied only by obtaining the affirmative concurrence of the relevant Federal incumbent(s) via the portal. This requirement is not satisfied by omission. The Commission expects that contact information and further details on Federal notification and coordination requirements will be included in a future public notice jointly issued by the Commission and NTIA.

Submission Information.—To submit a formal coordination request, the 3.45 GHz Service licensee must include information about the technical characteristics for its base stations and associated mobile units relevant to operation within the Cooperative Planning Area and/or Periodic Use Area. This information should be provided in accordance with the instructions provided in the DoD's online portal user's guide. The Commission expects that the data fields in the portal will include basic technical operating parameters (*e.g.,* system technology, mobile EIRP, frequency block, channel bandwidth, site name, latitude, and longitude). The Commission also anticipates that the portal will accept attachments that include narratives that explain area-wide deployments.

3.45 GHz Service licensees must prioritize their deployments in the Cooperative Planning Area and/or Periodic Use Area for each Federal incumbent when submitting a formal coordination request. If a licensee is seeking to coordinate with multiple systems or multiple locations of operation controlled by one Federal incumbent, it must specify the order in which it prefers the Federal incumbent process the request (*i.e.,* the order of systems or geographic locations).

Coordination Analysis.—If a 3.45 GHz Service licensee has questions about the result of a coordination request, it may contact the Federal incumbent to propose network design modifications to help address EMC issues raised by the Federal incumbent. The Federal incumbent, where feasible, may review revised technical proposals from the 3.45 GHz Service licensee. Once the 3.45 GHz Service licensee has revised its network design, it must resubmit a formal coordination request, and the 3.45 GHz Service formal coordination process begins again.

The Commission stresses the benefits of informal discussions among 3.45 GHz Service licensees and Federal incumbents, including during the formal coordination process. While in many cases, Federal incumbent staff may be unable to provide specific information about the protected Federal operations and are not responsible for designing the 3.45 GHz Service system, they may offer some suggestions on how to address or mitigate the issue, given the limited information that can be made available on some Federal systems.

Dispute Resolution.—If disputes arise during the coordination process, the Commission strongly encourages parties to negotiate in good faith to resolve them. If a 3.45 GHz Service licensee believes that a Federal incumbent is not negotiating in good faith, the licensee may seek the assistance of NTIA or it can inform the Commission. If a Federal incumbent believes that a 3.45 GHz Service licensee is not negotiating in good faith, it could nonetheless timely respond to a formal request and would have the option to seek assistance from NTIA and/or the Commission. The Commission encourages parties to enter into operator-to-operator agreements that have dispute resolution provisions for any or all possible disputes. If a dispute arises between an incumbent Federal entity and a 3.45 GHz Service licensee over an operator-to-operator agreement, provisions calling for informal negotiation, mediation, or non-binding arbitration efforts between the parties will help to clearly define and narrow the issues for formal agency resolution by NTIA, the Commission, or both agencies acting jointly, as applicable.

Sharing of Sensitive and Classified Information.—Given the classified and sensitive nature of some of the information to be shared by the DoD for effective coordination in the band, the Commission expects that NTIA and the DoD will develop procedures, methods, and means for sharing such information (*e.g.,* through the ''Trusted Agent'' process).

Notification Procedures for Periodic Use Areas.—The Commission anticipates that NTIA will establish notification procedures to govern the DoD's required episodic access to the 3.45 GHz band in Periodic Use Areas. Specifically, the Commission expects that the 3.45 GHz Service licensee(s) and the Federal incumbent will establish operator-to-operator agreements that detail notification processes and timelines prior to the initiation of commercial operations within the Periodic Use Area. The operator-to-operator agreement could, for example, specify the notification process, content, and timelines (*i.e.,* the starting and ending dates and times of such use). The agreements also may specify that the 3.45 GHz Service licensee(s) and the Federal incumbent may use a scheduling tool to complete the notification process or agree to technical limitations to commercial operations (*e.g.,* reduced power levels and antenna pointing angles in lieu of a notification process). The Commission believes that this approach will provide maximum flexibility for the 3.45 GHz Service licensee and the Federal incumbent to develop tailored solutions.

Interference Resolution Process.—The introduction of non-Federal, flexible-use licenses increases the possibility that interference will occur between the new entrants and incumbent Federal users. As reflected in the new footnote US431B to the Table of Allocations, flexible-use licensees in both types of coordination areas (Cooperative Planning Areas and Periodic Use Areas) must not cause harmful interference to Federal users, and Federal users should

minimize the operational impact on non-Federal users. Furthermore, 3.45 GHz Service licensees cannot claim interference protection within the coordination areas, absent an operator-to-operator agreement that specifies otherwise. In instances of identified harmful interference occurring between a Federal and non-Federal operator not addressed by the coordination procedures or operator agreements, the 3.45 GHz Service licensee shall first attempt to resolve the interference directly. If that effort is unsuccessful, the 3.45 GHz Service licensee, if adversely affected, may escalate the matter to the Commission.

Future Workshops and Workbooks.—Commenters widely support the use of workshops to collaborate and coordinate between industry stakeholders and the DoD. NTIA states that it will work with the DoD will make additional information available via a variety of means, including the posting of approved transition plans and a workbook similar to the DoD's AWS–3 Workbook, as well as through upcoming workshops. According to NTIA, such supplemental information will likely include updates on the coordination portal and IIC developments and procedures, as well as guidance on anticipated received power levels from the DoD's high-powered operations, methods and means for sharing proprietary and classified information (*e.g.,* through ''Trusted Agents''), and descriptions of potential national emergency scenarios.

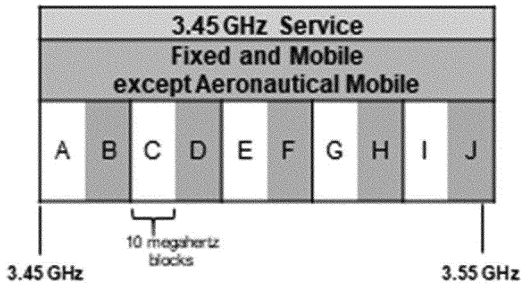
Federal use of the radio spectrum is generally governed by NTIA while non-Federal use is governed by the Commission. Accordingly, NTIA and the Commission may decide that jointly issued further guidance or details concerning Federal/non-Federal coordination, particularly Federal aspects of such coordination is warranted. Such guidance could consist of additional coordination procedures, coordination timelines, notice of complete or incomplete submissions, coordination analysis, and streamlined coordination options. In this regard, to the extent needed, the Commission delegates authority to the Wireless Telecommunications Bureau to work with NTIA staff, in collaboration with affected Federal agencies, to develop a joint FCC and NTIA public notice with additional information on notification and coordination procedures in the 3.45 GHz band as proposed in prior Notices in this proceeding and outlined in the *Second Report and Order.*

C. Band Plan

1. Block Sizes

In the *FNPRM,* the Commission proposed to license the 3.45 GHz band in 20 megahertz blocks to promote efficient and robust use of the band for next-generation wireless technologies, including 5G. The Commission remains committed to that goal, but believes that 10 megahertz blocks will promote wider participation in the 3.45 GHz auction, and will encourage competition in the 3.45 GHz Service while still enabling the deployment of these next-generation wireless services. The Commission also believes this band plan, combined with its decision to license the 3.45 GHz band by partial economic areas (PEAs), strikes the appropriate balance between the 3.7 GHz band, licensed by PEAs in 20 megahertz blocks, and the Citizens Broadband Radio Service, where Priority Access Licenses are licensed by counties in 10 megahertz blocks. The Commission therefore adopts 10 megahertz as the channel size for the 3.45 GHz band in lieu of its proposal of 20 megahertz channels. The Commission will designate these 10 megahertz blocks as A through J, and they will be licensed according to the following channel plan:

Figure 1: Band Plan



The Commission finds that, for this band, 10-megahertz blocks will best serve its dual goals of making 3.45 GHz spectrum accessible to a diverse array of entities while also enabling licensees to obtain sufficient spectrum rights for deploying wideband networks. Carriers will be free to aggregate up to four channels in the 3.45 GHz band to achieve wider blocks as needed to enable their deployments, while others may choose to use only 10 megahertz channels. The Commission finds that 10 megahertz blocks strike the appropriate balance among minimizing coordination issues, maximizing wide-band services, and increasing competition in the band.

2. Spectrum Block Configuration

Unpaired Channels.—The Commission adopts its proposal to allocate the 3.45 GHz band on an unpaired basis to promote a consistent spectral environment with the adjacent 3.5 GHz and 3.7 GHz bands, which are also unpaired in the United States. In contrast to a paired channel configuration that assumes frequency division duplex operations, an unpaired spectrum configuration is technology neutral—it thus enables Time Division Duplex (TDD) operations, which has become increasingly prevalent in deployments of digital broadband networks. In light of this, the Commission in recent years has licensed spectrum used for mobile broadband services on an unpaired basis. This more recent approach is consistent with industry standards and supported by the record. The Commission therefore adopts unpaired channels for this band.

TDD Synchronization.—The Commission recognizes the benefits to all operators that come from TDD synchronization both within and across bands. To minimize the potential for causing or receiving harmful interference while maintaining deployment flexibility and efficiency, the Commission encourages intra-band synchronization where possible and it requires that 3.45 GHz Service licensees

negotiate in good faith with requesting Citizens Broadband Radio Service operators to enable TDD synchronization across these services.

Specifically, a Citizens Broadband Radio Service operator may request information from a 3.45 GHz Service licensee to enable cross-service TDD synchronization if the Citizens Broadband Radio Service operator provides service, or intends to provide service, in the same or adjacent geographic area as that of the 3.45 GHz Service licensee. A request by a Citizens Broadband Radio Service operator for TDD synchronization will obligate the 3.45 GHz Service licensee to provide sufficient technical information to allow the Citizens Broadband Radio Service operator to synchronize its system with the 3.45 GHz band system and to keep such information current if its network operations change. Negotiations over the information to be provided must be conducted in good faith, with the goal of enabling synchronization between the relevant systems; but there is no obligation on the 3.45 GHz Service licensee to make any changes to its operations or proposed operations. Parties are free to negotiate changes to either or both networks as part of their efforts. Commission staff will be available to assist with negotiations as needed to resolve disputes and ensure good faith cooperation. The Commission similarly encourages industry to keep the Commission apprised of the effectiveness of the good faith requirement adopted, and it may revise further this rule or the rules governing the Citizens Broadband Radio Service in a future proceeding if necessary to encourage further TDD synchronization efforts among the various services in its mid-band allocations.

In order to streamline these negotiations and reduce the administrative burdens on 3.45 GHz Service operators, the Commission encourages industry to develop collaborative means of sharing necessary information among licensees and operators. For example, Spectrum Access System administrators may be well-positioned to assist in this effort because they will be collecting extensive data on Citizens Broadband Radio Service operations in order to fulfill their duties. These administrators may be able to act as a clearinghouse for information necessary to effect synchronization. The Commission similarly expects industry to determine the information necessary for such synchronization efforts in order to protect proprietary information of all parties and to facilitate maximum flexibility on the part of licensees, while still ensuring that the interference mitigation objectives of synchronization are achieved. The Commission also encourages industry to identify for the Commission any challenges they face in negotiations.

The Commission declines at this time to take the additional step of requiring TDD synchronization between networks operating in this band and those in the adjacent Citizens Broadband Radio Service, as some commenters suggest. Mandated synchronization could undermine operator flexibility in determining the best use of this spectrum, especially as use-cases and technologies change over time. While the Commission takes seriously the need to protect operations in the adjacent Citizens Broadband Radio Service from new high-powered uses, it believes the framework it adopts will accomplish that goal while preserving operator flexibility. However, the Commission will monitor the results of this approach, and may revisit it as necessary based on the experience of operators. To that end, the Commission encourages parties to continue to provide the Commission with information on this approach.

Guard Bands.—The 3.45 GHz band will be situated between two active bands. At the upper edge of the band, the Citizens Broadband Radio Service operates in the 3.55–3.7 GHz band, and Federal incumbents use the 3.55–3.65 GHz band. At the lower edge of the band, the primary allocation for Federal radiolocation operations will continue below 3.45 GHz. As discussed below, the Commission finds that adoption of the technical rules the Commission proposed in the *FNPRM* as modified herein will sufficiently protect adjacent operations at both edges of the band. No commenters support the use of guard bands in this band and the Commission declines to create guard bands here.

D. Technical Issues

1. Power Levels

Base Station Power.—To support robust deployment of next-generation mobile broadband services, the Commission in the *FNPRM* proposed to allow base stations in non-rural areas to operate at an effective isotropic radiated power (EIRP) of up to 1640 watts per megahertz. In addition, consistent with other broadband mobile services in nearby bands (*e.g.,* AWS–1, AWS–3, and AWS–4, personal communications services (PCS), and 3.7 GHz), the Commission proposed to permit base stations in rural areas to operate with double the non-rural EIRP limit, with a maximum of 3280 watts per megahertz. Further, the Commission proposed, consistent with the rules adopted in the 3.7 GHz Service, that the adopted power spectral density limit would apply to emissions of all bandwidths, including those of less than one megahertz, to facilitate uniform power distribution across a licensee's authorized band regardless of whether it deploys wideband or narrowband technologies. In the *Second Report and Order,* the Commission adopts these proposals. Because advanced antenna systems often have multiple radiating elements in the same sector, these power limits will apply to the aggregate power of all antenna elements in any given sector of a base station, as proposed in the *FNPRM.* The Commission finds that these power levels will provide licensees with the flexibility to optimize their network designs for wide-area coverage while still enabling successful coexistence with incumbent and adjacent band operations.

While the Commission agrees that the asymmetry in power levels between the 3.45 GHz Service and the Citizens Broadband Radio Service creates the potential for harmful interference, it finds that the protection mechanisms it adopts, including the out-of-band emissions limits adopted below, will minimize such interference. In particular, the Commission believes that harmful interference can be avoided through careful network planning and coordination among spectrum users, including through the requirement it adopts that 3.45 GHz Service licensees negotiate in good faith regarding requests from Citizens Broadband Radio Service users for technical information necessary to enable TDD synchronization among radio systems. The Commission expects operations in both bands to be diverse and complex, stemming from the use of unpaired blocks resulting in downlink and uplink occurring on the same frequencies, as well as dynamic access in the Citizens Broadband Radio Service. This means that base station power reductions to prevent intra- and inter-service interference will be commonplace, regardless of overall power limits imposed by the Commission. As a result, coordination between users within and across bands will be required for successful coexistence and efficient operation of systems in both bands. Such coordination will also facilitate continued effective environmental sensing capability (ESC) operation in and near a 3.45 GHz Service licensee's license area.

The Commission expects 3.45 GHz Service licensees and Citizens Broadband Radio Service licensees,

Spectrum Access Systems, and ESCs to work together to ensure coexistence among systems at the edge of the band. Because the reliable operation of ESCs is essential to enabling spectrum access for licensees of the Citizens Broadband Radio Service, ESCs are subject to protection from harmful interference from adjacent-channel operations as licensee operations. Harmful interference caused to ESC operations will be considered harmful interference to a primary service under the Commission's rules and dealt with accordingly.

Mirroring the approach adopted for the 3.7 GHz Service, the Commission also proposed to extend the same power spectral density limit to emissions with a bandwidth less than one megahertz to facilitate uniform power distribution across a licensee's authorized band regardless of whether wideband or narrowband technologies are deployed. The Commission finds that this EIRP limit allows for flexibility in measurement, permitting testers to measure conducted power and apply the relevant antenna gain adjustment, as well as direct over-the-air EIRP measurement. This is consistent with how equipment certification testing is performed in other bands.

Mobile Power.—The Commission adopts a 1 Watt (30 dBm) EIRP power limit for mobile devices, as proposed in the *FNPRM* and as adopted for the 3.7 GHz Service. The record is largely unanimous in supporting the proposal to align the mobile power limit for the 3.45 GHz Service with those of the 3.7 GHz Service. For the same reasons that the Commission adopts its proposed higher power levels in the case of base station power, it does so for mobile devices as well.

The Commission finds that this mobile power limit will provide an adequate range for operation of different mobile and fixed broadband deployments across a wide variety of use cases. Additionally, this limit will permit operation of mobile power classes as outlined in the 3GPP standards. The Commission also believes a 1 Watt limit is more appropriate for the 3.45 GHz Service than the lower limits imposed in the Citizens Broadband Radio Service due to the expected wider channels and the increased use of advanced antenna systems. As with base station power limits, the Commission believes that providing consistency between mobile 5G deployments in the 3.45 GHz Service and other bands that will be used for these operations is crucial for the band to reach its full potential. Given that mobile stations typically have low duty cycles and are power controlled by their base stations, the effect of mobile operations in the 3.45 GHz Service on operations in the Citizens Broadband Radio Service should be not be significant.

2. Out-of-Band Emissions

Base Station Out-of-Band Emissions.—The Commission adopts base station out-of-band emission (OOBE) requirements based on the proposed limits from the *FNPRM,* which are similar to those in the AWS services and the 3.7 GHz Service. Specifically, base stations will be required to suppress their emissions beyond the edge of their authorization to a conducted power level of −13 dBm/MHz. Commenters support this proposal.

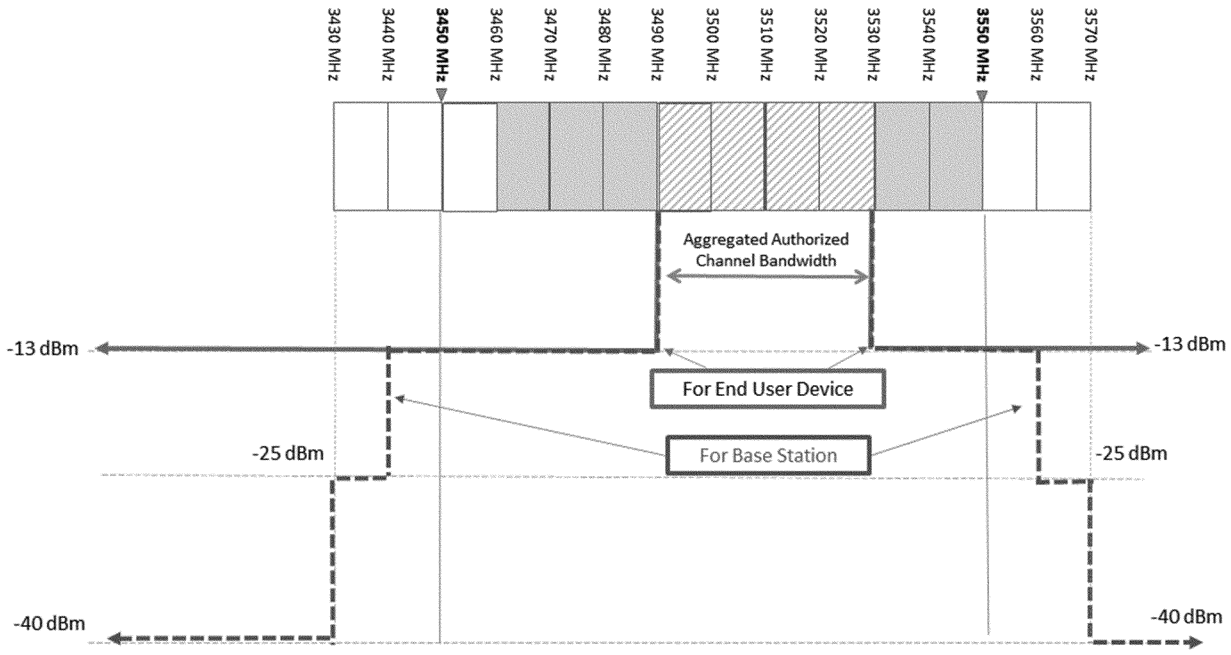
Further, the *FNPRM* proposed a requirement that 3.45 GHz Service base stations meet an additional two-step limit of −25dBm/MHz and −40dBm/MHz at the upper and lower band edges. These limits are consistent with the OOBE limits specified for the Citizens Broadband Radio Service (as implemented for 3GPP band n48). As the Commission noted in the *FNPRM,* these OOBE limits are intended to ensure effective coexistence with mission-critical Federal and other non-Federal services operating in the adjacent bands. The Commission adopts a two-step limit, but modify it slightly from the original proposal.

Specifically, in addition to the OOBE limits within the 3.45 GHz band, the following limits will apply:

- Equal or less than −13 dBm/MHz limit from edge of the band to 10 megahertz down (3440 MHz) and up (3560 MHz);
- Equal to or less than −25 dBm/MHz beyond the 10 megahertz offset from the band edge between 3440 and 3430 megahertz and between 3560 and 3570 megahertz;
- Equal to or less than −40 dBm/MHz below 3430 megahertz and above 3570 megahertz.

We summarize the Commission's final approach in Figure 2 below.

Figure 2: Emissions Mask



The Commission will continue to engage with NTIA and other Federal partners, as well as other stakeholders, on whether there are opportunities to relax this approach while still providing sufficient protection to incumbent users. Moreover, the Commission's decision is specific to the 3.45 GHz band and it takes no position on whether the two-step limit adopted here will be required to protect incumbent users in any future proceedings.

Further, while the Commission acknowledges the concerns raised by some commenters about the impact of OOBE on ESCs in the Citizens Broadband Radio Service, it believes the lower emissions limits adopted will sufficiently protect ESC operations.

Mobile Out-of-Band Emissions.—As with base station OOBE limits, the Commission adopts mobile emission limits similar to its standard emission limits that apply to mobile services. Specifically, mobile units must suppress the conducted emissions to no more than −13 dBm/MHz outside their authorized frequency band. Most commenters agree with the proposed OOBE limits for mobile stations. The Commission finds that stricter limits, such as those used in Citizens Broadband Radio Service to protect the FSS incumbents, are not warranted here because the impact of mobile stations on both commercial and Federal systems in adjacent bands should be insignificant.

Emission Measurement.—For determining OOBE, the Commission applies the part 27 measurement procedures and resolution bandwidth that are used for AWS devices outlined in § 27.53(h), with a slight refinement. Specifically, a resolution bandwidth of 1 megahertz or greater will be used, except in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block where a resolution bandwidth of at least 1% of the emission bandwidth may be employed. The Commission refines the measurement procedure to specify the use of a resolution bandwidth such that, at the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least 1% of the emission bandwidth—but limited to a maximum of 200 kilohertz—may be employed.

3. Measures To Minimize Effects on Adjacent Channel Operations

Protection of Ongoing Federal Operations in the 3.55–3.65 GHz Band.—As the Commission noted in the *FNPRM,* the new 3.45 GHz Service will be adjacent to Federal inland and shipborne radar operations in the 3.55–3.65 GHz portion of the 3.5 GHz band. Because these Federal systems often operate in a mobile manner, the Cooperative Planning Area and Periodic Use Area model the Commission adopts for in-band interference mitigation will not be effective at providing protection to ongoing Federal operations in the adjacent 3.5 GHz band.

The Commission believes that the OOBE limits it adopts above will provide significant protection from harmful interference for these operations, but that additional measures may be necessary to ensure that flexible-use operations at the upper edge of the 3.45 GHz band do not cause harmful interference to these critical Federal operations, particularly in the form of aggregate interference. For that reason, the Commission sought comment in the *FNPRM* on whether additional protection measures are necessary.

Given the uncertainty and need for licensee cooperation with Federal users, the Commission believes that the best way to address this issue will be through the workshops between the DoD and industry, as well as through the ongoing coordination efforts that will arise from those workshops. The Commission anticipates that these flexible, collaborative discussions will lead to the development of the most innovative and least burdensome methods for preventing harmful interference to adjacent Federal operations, balancing deployment flexibility and reliability.

Protection of Ongoing Federal Operations below 3.45 GHz.—The Commission expects that dynamic spectrum use by Federal users will

continue below 3.45 GHz in the form of airborne, shipborne, and ground-based radars. As with protection of radar systems in the 3.55–3.65 GHz band, the Commission believes interference mitigation for DoD systems below 3.45 GHz is best handled as part of future workshops and active coordination efforts between industry and the DoD, rather than through proscriptive rules adopted at this stage.

4. Other Technical Rules

Field Strength Limit and Market Boundaries.—As proposed in the *FNPRM,* the Commission adopts the −76 dBm/m2/MHz power flux density (PFD) limit—at a height of 1.5 meters above ground—at the border of the licensees' service area boundaries, and it also permits licensees operating in adjacent geographic areas to voluntarily agree to higher levels at their common boundaries.

Antenna Height Limits.—Consistent with the proposal in the *FNPRM,* the Commission will not restrict antenna heights for 3.45 GHz band operations beyond the requirements necessary to ensure physical obstructions do not impact air navigation safety. This approach is consistent with part 27 AWS rules, which generally do not impose antenna height limits on antenna structures, and is supported by the record.

Rather than using antenna height limits to reduce interference between mobile service licensees, as has been done in the past, the Commission more recently has used field strength limits at service boundaries to provide licensees more flexibility to design their systems while still ensuring harmful interference protection between systems. As this has proven successful in other services, the Commission adopts that same approach in the 3.45 GHz Service. Further, the Commission believes that such limits would have limited practical effect because it expect that licensees generally will deploy systems predicated on lower tower heights and increased cell density, in order to achieve maximum 5G data throughput to as many consumers as possible. In rural areas where higher antennas may be used to provide longer range to serve sparse populations, the field strength limit at service area boundaries the Commission adopts here will ensure that adjacent area licensees are protected from harmful interference; licensees wishing to use higher antennas must ensure that they do not exceed these limits and cause harmful interference to other licensees. The Commission notes, however, that antenna heights may need to be reduced as part of coordination within Cooperative Planning Areas and Periodic Use Areas in order to protect Federal operations.

Canadian and Mexican Coordination.—The Commissions adopt the proposal from the *FNPRM* to apply § 27.57(c) of the Commission's rules to this band, which requires all part 27 operations to comply with international agreements for operations near the Mexican and Canadian borders. This requirement is consistent with all other part 27 services. Under this provision, licensed operations must not cause harmful interference across the border, consistent with the terms of the international agreements currently in force. The Commission notes that modification of the existing rules might be necessary in order to comply with any future agreements with Canada and Mexico regarding the use of these bands.

General Part 27 Rules.—As proposed in the *FNPRM,* the Commission applies all general part 27 rules to all 3.45 GHz Service licenses, including those acquired through partitioning or disaggregation. Specifically, the Commission applies to the 3.45 GHz Service §§ 27.51 (equipment authorization), 27.52 (RF safety), 27.53(i) (protection of adjacent channels), 27.54 (frequency stability), 27.56 (antennas structures; air navigation safety), and 27.63 (disturbance of AM broadcast station antenna patterns). The record supports this decision, and the application of these general wireless service rules will further the standardization of the 3.45 GHz Service with other commercial wireless services and promote cross-band operability in order to ensure a robust equipment market for licensees and streamline regulatory compliance.

As the Commission has done for other bands governed by part 27 services since 2014, the Commission also requires client devices to be capable of operating across the entire 3.45 GHz band. Specifically, the Commission adds the 3.45 GHz band to § 27.75 of its rules, which requires mobile and portable stations operating in the other flexible-use wireless bands to be capable of operating across the entire relevant band using the same air interfaces that the equipment uses on any frequency in the band. This requirement does not require licensees to use any particular industry standard.

E. Licensing and Operating Rules; Regulatory Issues

As required by the Beat CHINA for 5G Act of 2020, and as part of the Commission's broader comprehensive mid-band strategy to advance 5G networks, the Commission generally aligns the licensing and operating rules for the 3.45 GHz Service with other flexible-use services under the part 27 rules. If and when areas outside the contiguous United States are made available by the DoD, and if PEAs were subsequently licensed by the Commission, these same licensing rules adopted below would apply.

1. Eligibility

As the Commission proposed in the *FNPRM,* it adopts an open eligibility standard for licenses in the 3.45 GHz Service, consistent with established Commission practice. This open eligibility standard does not affect required qualifications, such as citizenship, character, alien ownership, or other generally applicable qualifications that may apply under the Commission's rules. The only commenter to address this issue, T-Mobile, supports the Commission's proposal. This standard will encourage the development of new technologies, products, and services, while helping to ensure efficient use of this spectrum. The Commission will apply the ineligibility provision of the part 27 rules, however, under which a person who, for reasons of national security, has been 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.

2. Mobile Spectrum Holding Policies

After careful consideration of the record, and in the Commission's expert judgment, the Commission finds that it is appropriate to adopt a bright-line, pre-auction limit of 40 megahertz in the 3.45 GHz band, in line with what a diverse group of commenters have proposed. The Commission agrees that adopting an in-band spectrum aggregation limit will effectively balance the statutory objectives informing the Commission's design and implementation of competitive bidding systems because this limit will, for example, help to promote spectrum access and encourage competition in the provision of 5G services, while still supporting the efficient and intensive use of spectrum. Specifically, 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). Furthermore, for auctions like this one that are subject to the CSEA, the Commission must promote the objective of the recovery of 110 percent of estimated relocation or sharing costs as provided to the Commission by NTIA and Federal users; without meeting the reserve price, the Commission cannot conclude the auction. The Commission finds that this pre-auction spectrum limit it adopts will meet the Commission's objectives for this band more effectively than the proposed case-by-case review of post-auction long-form applications.

The Commission acknowledges that it has come to somewhat different conclusions about the application of pre-auction, in-band spectrum aggregation limits to different bands at different times. The Commission's balancing of the various section 309(j) factors in determining whether and what limits to apply in this band reflects, in part, the importance Congress assigned to rapid deployment of this particular band and the timetable set forth in the Beat CHINA for 5G Act. By replacing case-by-case review with a bright-line ex ante limit, the Commission will be able to expedite the licensing of, and deployment by, winning bidders. This approach also reflects the Commission's increased emphasis on the statutory factor of promoting dissemination of licenses among a wider variety of applicants, particularly in the rollout of the next generation of wireless broadband service that is expected to play a much greater role in the nation's economy. In this situation, a pre-auction limit of 40 megahertz effectively balances these statutory factors.

More specifically, while the Commission did not adopt pre-auction limits in the AWS–3 band, the 3.7 GHz band, or in the Spectrum Frontiers proceedings, for the various reasons discussed therein, it did establish such limits in other proceedings, based on the assessment that, under the operative circumstances there, such limits would serve the public interest. For example, it established a spectrum reserve of up to 30 megahertz in the 600 MHz Broadcast Incentive Auction to ensure against excessive concentration of below-1–GHz spectrum. In the CBRS 3.5 GHz band auction, the Commission set a 40 megahertz limit on the aggregation of PALs in order to ensure against excessive concentration within that band, particularly given the unique dynamic sharing scheme in that band, which included Federal and non-Federal sharing. The 3.45 GHz band also will involve a mechanism for sharing by Federal and non-Federal users in specific areas. The Commission finds that, on balance, the public interest is best served by adopting such a pre-auction spectrum aggregation limit in the 3.45 GHz band. The Commission concludes that a limit of 40 megahertz out of the total of 100 megahertz in the context of the 3.45 GHz band will facilitate competitive access, promote innovation, and lead to a greater diversity of bidders, while at the same time ensuring that the reserve price is met.

In addition, in order to prevent any post-auction undermining of in-band limits, and the balancing of statutory factors that they further, the Commission retains the 40 megahertz cap for four years following the auction. The Commission acknowledges that its public interest goals in adopting a bright-line limit for this band could be undermined if entities that win 40 megahertz of spectrum at auction could then acquire more 3.45–3.55 GHz spectrum post-auction in the secondary market. While the Commission has a general policy of promoting flexibility in secondary market transactions, the Commission finds that adopting a holding period of four years, which correlates to the first performance benchmark for 3.45 GHz Service licensees, appropriately balances its public interest goals in setting the pre-auction limit while still retaining flexibility in the secondary market over the medium term. Accordingly, the Commission concludes that no entity can hold more than 40 megahertz of 3.45–3.55 GHz spectrum for a period of four years after conclusion of the auction.

In the mobile wireless marketplace, the Commission has consistently defined the product market as a combined ''mobile telephony/broadband services'' market that is comprised of mobile voice and data services, including mobile voice and data services provided over advanced broadband wireless networks. In this item, the Commission adopts flexible-use rules to enable just that—terrestrial mobile use of this spectrum for the deployment of 5G and other upcoming advanced wireless services.

Spectrum is an essential input into that provision of wireless services, and for that reason, the Commission has applied a spectrum screen in evaluating proposed secondary market transactions involving spectrum in order to help identify those transactions that raise competitive concerns due to excessive concentration of spectrum. As such, given that the 3.45 GHz band will become suitable and available in the near term for the provision of mobile telephony/broadband services, the Commission finds that including this 100 megahertz of spectrum in the 3.45 GHz band in the input market for spectrum best supports the public interest. The Commission finds that the 3.45 GHz spectrum is suitable and available for the provision of mobile wireless services in the same manner as other spectrum bands that currently are included in the Commission's spectrum screen as applied to secondary market transactions. Accordingly, the Commission will add these 100 megahertz to the spectrum screen once the auction closes. Most commenters support this approach.

The Commission notes the main purpose of the spectrum screen is to act as an analytical tool in helping to identify those markets in which: (1) There could be an increased likelihood that rival service providers or potential new entrants would be foreclosed from expanding capacity, deploying mobile broadband technologies, or entering the market; and (2) rivals' costs could be increased to the extent that they would be less likely to compete robustly. As such, what is critical is whether the spectrum is suitable and available in the near term, and not whether it is currently deployed. The Commission finds that the 100 megahertz of 3.45–3.55 MHz spectrum will be suitable and available upon conclusion of the auction, and therefore, should be included in the spectrum screen at that point. Taken together, the pre-auction spectrum aggregation limit and four-year prohibition on transfers of 3.45 GHz Service licenses will help promote diversity in bidders while allowing flexibility to engage in secondary market transactions in time, and the inclusion of the spectrum in the spectrum screen will further the Commission's interest in continuing to monitor for excessive concentration of spectrum holdings across all bands suitable and available for the provision of mobile wireless services.

3. Geographic Licensing

Use of Geographic Licensing.—Consistent with the Commission's approach in several other bands used to provide fixed and mobile services, the Commission finds that it is in the public interest to license the 3.45 GHz Service on an exclusive, geographic area basis. Geographic area licensing provides flexibility to licensees, promotes efficient spectrum use, and facilitates rapid assignment of licenses when using competitive bidding because mutually exclusive applications are received. There is wide support in the record for licensing the 3.45 GHz band flexible-use spectrum on an exclusive, geographic basis, and the Commission finds that such an approach will give certainty to licensees and provide the efficiencies of scale and scope that drive innovation, investment, and rapid deployment of next generation services.

Geographic License Area.—In the *FNPRM,* the Commission proposed to issue licenses on a PEA basis for the 3.45 GHz Service. Based on the record and consistent with the Commission's proposal, the Commission finds that PEAs are the appropriate license area for the technical rules it adopts in this band. In particular, the Commission agrees with commenters that, given its decision to adopt higher-powered operation in this band, PEAs will better assist carriers in making the most of the capabilities of 5G networks and encourage investment in furtherance of the goals found in section 303(y) of the Communications Act. These higher power levels allow larger coverage areas and encourage providers to take advantage of macro-cell deployments where possible, which are better suited to PEAs than a smaller license area. T-Mobile notes in particular that higher power levels combined with PEA license areas will promote service in rural areas.

Similarly, the availability of spectrum aggregation across other bands with similar technical rules make PEAs a better choice for the 3.45 GHz Service. The 3.7 GHz band, as well as several other recently licensed services, are licensed on a PEA basis, and the Commission finds that the goal of facilitating 5G service in the 3.45 GHz band is best served by aligning the band's rules with those of these bands.

For this reason, the Commission is not persuaded that it should license the 3.45 GHz band by counties or by census tracts. While the Commission recognizes that there are benefits of smaller license areas as a general matter, it declines to adopt license areas smaller than PEAs for the 3.45 GHz band, given its decision to allow higher-powered operations in this band.

Non-CONUS Geographies and the Gulf of Mexico.—As was noted in the *FNPRM,* the AMBIT efforts focused on licensing the 3.45 GHz band within the contiguous United States only, and for that reason the Commission proposed to exclude Alaska, Hawaii, and the U.S. Territories from 3.45 GHz band licensing at this time. NTIA recently affirmed that the Gulf of Mexico should not be considered for auction at this time. While the DoD may conduct further analysis at a later date, its transition plans filed with NTIA do not include areas outside of the contiguous United States or the Gulf of Mexico. As such, the Commission will not issue 3.45 GHz Service licenses in Alaska, Hawaii, the U.S. Territories, or the Gulf of Mexico at this time. While many commenters urge the Commission to license this and other mid-band spectrum in areas outside the contiguous United States, the Commission believes it would be premature and unwise for it to move beyond the AMBIT agreement in licensing the 3.45-GHz band in areas where the DoD has not committed to clearing or coordinating in the band to allow for its use.

The Commission recognizes, however, that over time more areas may become available for 3.45 GHz band use. In the *FNPRM,* the Commission noted that additional analysis by NTIA and the DoD, in cooperation with industry stakeholders may identify additional Cooperative Planning Areas and Periodic Use Areas outside the contiguous United States. To take advantage of any such future analysis that takes place, the Commission sought comment on whether it should delegate authority to the Wireless Telecommunications Bureau and the Office of Engineering and Technology to make any future adjustments to these areas as they deem appropriate and several commenters support the Commission doing so. In order to maximize future opportunities for 3.45 GHz band access, including in areas not otherwise licensed by the Commission's rules, such as PEAs in Alaska, Hawaii, the Gulf of Mexico, and other areas outside the contiguous United States, the Commission therefore delegates authority to the Wireless Telecommunications Bureau and the Office of Engineering and Technology, in coordination with NTIA, to create additional Cooperative Planning Areas and Periodic Use Areas as necessary to facilitate commercial network expansion into areas outside the contiguous United States. These new areas may be created upon notification from NTIA that non-Federal operations can occur, either alongside ongoing Federal operations or in areas cleared of those operations. The Commission further authorizes the Wireless Telecommunications Bureau and the Office of Economics and Analytics to consider applications and assign licenses for the PEAs associated with such additional Cooperative Planning Areas and Periodic Use Areas consistent with the licensing, technical, and competitive bidding rules the Commission is adopting, as such new areas are created for the 3.45 GHz band. Insofar as it becomes necessary to authorize non-Federal fixed and mobile (except aeronautical mobile) operations in these new license areas on the basis of rules that differ from the rules adopted here, the Commission delegates authority to the Wireless Telecommunications Bureau and Office of Engineering and Technology to conduct a rulemaking proceeding to make necessary changes to accommodate Federal operations and impose requirements on licenses for those new areas as needed.

4. License Term and Renewal

License Term.—In the *FNPRM,* the Commission proposed 15-year license terms for the 3.45 GHz Service, which would be consistent with those adopted for the 3.7 GHz Service. As with the 3.7 GHz Service, the Commission believes that additional time for licensees to engage in, and recoup costs for, long-term investments may be necessary here given the need to coordinate Federal spectrum usage in this band with affected licensees. The Commission adopts its proposal to grant 3.45 GHz Service licenses for 15-year terms. Commenters widely support a 15-year license term. The Commission finds that the application of its standard 15-year license term for flexible-use licenses to the 3.45 GHz Service supports its overall goal of providing uniform licensing rules for this band and other flexible-use bands that predominantly host next-generation wireless networks. The Commission also agree with U.S. Cellular Corporation that providing sufficient time for licensees to realize reasonable returns on their investments is particularly important for spurring investment in rural areas, where returns on investment take longer to achieve as a result of lower population densities in such areas.

Renewal.—As proposed in the *FNPRM,* the Commission will apply its general part 27 renewal requirements for wireless licenses to the 3.45 GHz Service, as the Commission has for the

3.7 GHz Service and the Citizens Broadband Radio Service. The Commission will include the 3.45 GHz Service in the unified renewal framework for Wireless Radio Services. This means that 3.45 GHz Service licensees must comply with § 1.949 of the Commission's rules and demonstrate that, over the course of their license term, they either (1) provided and continue to provide service to the public, or (2) operated and continue to operate the license to meet the licensee's private, internal communications needs. Satisfaction with this requirement may be demonstrated either through the renewal showing in paragraph (f) of that rule or the relevant safe harbor found in paragraph (e).

As with other licensing rules the Commission adopts in this item, the Commission finds that the application of this renewal standard to the 3.45 GHz Service will help create uniform licensing rules for across flexible-use bands likely to host next-generation wireless networks. The Commission believes the likely use of this band for 5G and other wireless broadband services is well-suited to this renewal framework. Commenters support applying part 27 renewal rules to the 3.45 GHz Service.

5. Performance Requirements

Traditional Performance Benchmarks.—In addition to adopting renewal standards, the Commission also establishes performance requirements to ensure that spectrum is used intensely and efficiently. Performance requirements play a critical role in ensuring that licensed spectrum does not lie fallow. The Commission has applied different performance and construction requirements to different bands on a case-by-case basis, based on the unique circumstances surrounding deployment in that spectrum.

In the *FNPRM,* the Commission proposed that 3.45 GHz Service licensees offering mobile or point-to-multipoint service provide reliable signal coverage and offer service to at least 45% of the population in each of their license areas within eight years of the license issue date (first performance benchmark), and at least 80% of the population in each of their license areas within 12 years of the license issues date (second performance benchmark). For licensees providing fixed service, it proposed that they must demonstrate within eight years of the license issue date that they have four links operating and are providing service where the population within each license area is equal to or less than 268,00 people; where population within the license area is greater than 268,000, it must show that at least one link is in operation and providing service, either to customers or for internal use, for every 67,000 persons within a license area (first performance benchmark). By 12 years after the license issue date, the Commission proposed that point-to-point licensees must have eight links operating and providing service, either to customers or for internal use, if the population within the license area is equal to or less than 268,000, or if the population is greater than this, that it is providing service and has at least two links in operation per every 67,000 persons within a license area (second performance benchmark).

For the 3.45 GHz Service, the Commission determines that accelerated performance requirements, as compared to what was proposed in the *FNPRM,* are appropriate. While the Commission maintains the proposed signal coverage and link benchmarks, it reduces the timelines under which 3.45 GHz Service licensees must meet the first and second benchmarks. Specifically, 3.45 GHz Service licensees must meet the first performance benchmark at four years after the license issue date and must meet the second performance by at eight years after the license issue date. The Commission finds the four- and eight-year timeline will better serve the public interest for several reasons.

First, the 3.45 GHz band is not necessarily ''greenfield'' spectrum, a fact that the Commission has considered when it has adopted longer performance requirement deadlines. Rather, much of the 3 GHz band—including the 3.45 GHz band—has already been allocated for 5G use globally, with standard setting and global harmonization well underway and the technology for 5G deployment in the 3.45–3.55 GHz band is already available in the marketplace. As discussed above, 3GPP has specified two spectrum operating bands for 5G that overlap with the 3.45 GHz band: Band n77 (3.3–4.2 GHz) and band n78 (3.3–3.8 GHz). The Commission believes that the potential for economies of scale in the deployment of equipment in this band and adjacent bands can facilitate the widespread deployment of devices and services in this band in the near-term. As a result, the Commission anticipates that licensees can meet its revised performance benchmark deadlines.

Second, the Commission believes that these reduced timelines will better encourage robust investment and deployment and ensure that this valuable mid-band spectrum does not lie fallow. As discussed, the Commission is working swiftly to be ready to auction this spectrum in 2021 and it has set aggressive timelines for the clearing of secondary, non-Federal incumbents; and the DoD is similarly working quickly to prepare this band for rapid deployment. In addition, the Commission believes that its more aggressive performance timelines will further the clear Congressional intent in the Beat CHINA for 5G Act of 2020 not only to make this spectrum available to industry, but also to position it for rapid deployment. Making the most of these efforts requires 3.45 GHz licensees to be similarly focused on building out these networks as quickly as possible. Third, such aggressive timelines for deployment have been applied to mid-band spectrum before, most recently in the 2.5 GHz band, where the Commission noted that the critical role of mid-band spectrum in today's spectrum environment warrants such an approach.

Internet-of-Things (IoT) Performance Benchmarks.—In the *FNPRM,* the Commission also proposed to adopt the IoT alternate performance requirements used for the 3.7 GHz Service to give licensees the flexibility to provide services potentially less suited to a population coverage metric. Specifically, the Commission proposed that 3.45 GHz Service licensees providing IoT-type services could demonstrate that they offer geographic area coverage of 35% of the license area at the first performance benchmark 65% of the license area at the second performance benchmark.

The Commission adopts the proposed alternative IoT performance metrics but reduce the timeline under which 3.45 GHz Service licensees must meet them, consistent with the timeline it adopts for traditional performance benchmarks. For the same reasons that the Commission reduces the timeline for meeting the first and second population coverage and link-based benchmarks, it likewise reduces the timeline for meeting the alternative IoT performance benchmarks to four and eight years after the license issues date, respectively.

Failure to Meet Performance Requirements.—Alongside the performance benchmarks the Commission adopts, it also adopts meaningful and enforceable penalties for failing to meet those benchmarks. In the *FNPRM,* the Commission proposed that, in the event a licensee fails to meet the first performance benchmark, its second benchmark and license term would be reduced by two years, thereby requiring it to meet the second performance benchmark two years sooner and its license term would be

reduced by two years. If a licensee fails to meet the second performance benchmark, the Commission proposed that its authorization for each license area in which it fails to meet the performance requirement would terminate automatically without Commission action.

Given the four- and eight-year timeline the Commission has adopted, the Commission modifies slightly this proposal. Accordingly, if the 3.45 GHz Service licensee fails to meet the first performance benchmark (at four years), its second benchmark period will be reduced by one year (*i.e.,* must be met at seven years after the issues date). Similarly, failure to meet the first performance benchmark will likewise reduce the license term by one year—*i.e.,* the license term would be reduced to 14 years. Consistent with the *FNPRM,* if a 3.45 GHz Service licensee fails to meet the second performance benchmark, its authorization for each license area in which it fails to meet the performance requirements will terminate automatically without Commission action.

The Commission also adopts its proposal that, in the event a 3.45 GHz Service licensee's authority to operate terminates, its spectrum rights should become available for reassignment pursuant to the competitive bidding provisions of section 309(j). 47 U.S.C. 309(j). Consistent with the Commission's rules for other part 27 licenses, any 3.45 GHz Service licensee that forfeits its license for failure to meet its performance requirements shall be precluded from regaining that license.

Compliance Procedures.—As it did in the 3.7 GHz Service, the Commission in the *FNPRM* proposed to require 3.45 GHz Service licensees to submit electronic coverage maps that accurately depict both the boundaries of each licensed area and the coverage boundaries of the actual areas to which the licensee provides service or, in the case of a fixed deployment, the locations of the fixed transmitters associated with each link. The Commission adopts this proposal. Each coverage filing must include supporting documentation certifying the type of service that the licensee 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. Consistent with the Commission's proposed rule, to demonstrate compliance with these performance requirements, licensees must use the most recently available decennial U.S. Census Data at the time of measurement and must base their measurements of population or geographic area served on areas no larger than the Census Tract level.

6. Licensed-By-Rule Use

In the *FNPRM,* the Commission sought comment on potentially authorizing ''license-by-rule'' operations in the 3.45 GHz band. It noted that such opportunistic use of spectrum is permitted in the General Authorized Access tier of the adjacent Citizens Broadband Radio Service. The Commission asked whether this should be permitted generally or where not all spectrum licenses are sold at auction. The Commission asked commenters to explain the effect of allowing such operations on the Commission's efforts to ensure adequate protection of incumbent and licensee operations from harmful interference, and whether a database or other coordination techniques would create unnecessary burdens on licensees or hinder incumbent protection.

Some commenters support this proposal and note that opportunistic access can help to ensure this spectrum is put to immediate and intensive use. Indeed, in the Commission's *Report & Order* establishing the Citizens Broadband Radio Service, the Commission stated that ''permitting opportunistic access to unused Priority Access channels would maximize the flexibility and utility of the 3.5 GHz Band for the widest range of potential users'' and ''ensure that the band will be in consistent and productive use.'' *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, 80 FR 36164, June 23, 2015, and Second Further Notice of Proposed Rulemaking, 80 FR 34119, June 15, 2015, 30 FCC Rcd 3959, 3983, para. 72 (2015). Thus, the Commission has not only authorized opportunistic use of locally unused spectrum in the adjacent CBRS band but also by unlicensed TV White Space operations in the 600 MHz band. These comments make clear, however, that implementing opportunistic use would require the use of some type of automated frequency coordination mechanism, such as the Spectrum Access System that is used in the Citizens Broadband Radio Service, and many commenters oppose such a mechanism because of the reporting burden it places on licensees. Although Spectrum Access Systems have coordinated opportunistic use of locally unused spectrum in other bands, the Commission declines to adopt this approach in the 3.45 GHz band at this time.

In the Citizens Broadband Radio Service band, Federal incumbent use is constantly changing, requiring a dynamic spectrum sharing environment and using automated coordination mechanisms to enable that environment. This approach allows the provision of a General Authorized Access tier without imposing additional requirements on Priority Access Licensees. Here, because the DoD and the Commission have worked collaboratively on a different sharing regime in the band, the limited Federal operations that remain indefinitely in the band will not require dynamic spectrum sharing. The goal shared by the Commission and the Executive Branch, including the DoD, has been to minimize requirements on licensees to coordinate their operations with third-party systems, thereby allowing maximum opportunities for flexibility in deployment and operational design. Permitting licensed-by-rule operations would require implementing coordination mechanisms similar to the Spectrum Access Systems found in the Citizens Broadband Radio Service. In light of the work that the DoD has done to plan for clearing the band, and the Commission's statutory mandate to begin a system of competitive bidding to auction some or all of the 3.45 GHz band by December 31, 2021, the Commission declines to permit licensed-by-rule operations at this time.

Similarly, based on the framework developed for this band, permitting licensed-by-rule operations near Cooperative Planning Areas and Periodic Use Areas would limit the ability of the DoD to work directly with licensees to ensure continued access as needed while minimizing the burden on commercial wireless operations. The DoD's work on determining the boundaries of these areas relies on its ability to cooperate with licensees to design and plan its use of the 3.45 GHz band. Although different coordination or exclusion areas might be designed in the future to accommodate opportunistic use enforced by a Spectrum Access System or similar mechanism, the Commission declines at this time to adopt any proposal that would involve licensed-by-rule use in this band. Nevertheless, the Commission recognizes that there may be potential opportunities in the future to consider steps it might take, in cooperation with NTIA and other Federal partners, to effect an overall

rationalization of the non-Federal services in the 3 GHz band.

F. Competitive Bidding Rules

The Communications Act requires that the Commission resolve any mutually exclusive applications for new flexible-use licenses in this band through a system of competitive bidding. Consistent with the competitive bidding procedures used by the Commission in previous auctions, the Commission adopts the proposal in the *FNPRM* to conduct any auction for licenses in this band in conformity with the general competitive bidding rules set forth in part 1, subpart Q, of the Commission's rules. These part 1 rules govern competitive bidding design, application and certification procedures, reporting requirements, and the prohibition on certain communications regarding the auction. In addition, the part 1 rules address designated entity preferences and unjust enrichment, and provide a framework for the auction process. The commenters that address this issue generally support the proposal. Consistent with the part 1 rules, the Commission separately considers a Public Notice seeking comment on procedures for an auction of new licenses in this band, thereby beginning the separate pre-auction process. *See Auction of Flexible-Use Service Licenses in the 3.45–3.55 GHz Band for Next-Generation Wireless Services; Comment Sought on Competitive Bidding Procedures for Auction 110,* AU Docket No. 21–62, Public Notice, FCC 21–33 (2021) (Mar. 17, 2021), which is published elsewhere in this issue of the **Federal Register**.

Given the record and the Commission's experience in successfully conducting auctions pursuant to the part 1 rules, the Commission adopts the proposal to employ those rules when developing the auction for new licenses in this band. Should the Commission subsequently modify its general competitive bidding rules, the modifications would apply here as well. If and when areas outside the contiguous United States are made available by the DoD, the part 1 rules would similarly apply to any PEAs licensed by competitive bidding in those areas.

As the Commission observed in the *FNPRM,* under the Commercial Spectrum Enhancement Act (CSEA), Federal entities operating on certain frequencies that have been reallocated from Federal to co-primary Federal and non-Federal use and assigned by the Commission through auction are eligible for reimbursement for the cost of relocating or sharing their operations. In order to provide for such reimbursement, the Communications Act requires that the ''total cash proceeds'' from the auction of these frequencies must equal at least 110% of the estimated relocation or sharing costs of incumbent Federal operations. Based on the current allocation of the 3.45 GHz band for uses by the DoD and the DoD's planned sharing arrangements and relocation of some operations out of the band to make way for commercial use as part of the AMBIT agreement, this spectrum qualifies as eligible frequencies under the CSEA. Accordingly, the reserve price for any auction of 3.45 GHz band licenses at a minimum will be 110% of expected Federal relocation costs, based on the estimate of relocation costs provided to the Commission by NTIA consistent with the CSEA. In the public notice seeking comment on procedures for an auction of new licenses in this band being separately considered, the Commission seeks comment on setting that aggregate reserve price at $14,775,354,300.

Designated Entity Provisions.—In the *FNPRM,* the Commission sought comment on whether to offer bidding credits to designated entities in any auction of new licenses in this band. When authorizing the Commission to use competitive bidding, Congress required that the Commission ''ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services.'' Based on the Commission's prior experience with the use of bidding credits in spectrum auctions, the Commission finds that using bidding credits is an effective tool to achieve the statutory objective of promoting participation of designated entities in the provision of spectrum-based services.

Small Businesses.—One way the Commission fulfills this mandate is through the award of bidding credits to small businesses. In the *Competitive Bidding Second Memorandum Opinion and Order, Implementation of Section 309(j) of the Communications Act—Competitive Bidding,* PP Docket No. 93–253, Second Memorandum Opinion and Order, 59 FR 44272, August 26, 1994, 9 FCC Rcd 7245, 7269, para. 145 (1994); *see also* 47 CFR 1.2110(c)(1), the Commission stated that it would define eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold. Further, in the *Part 1 Third Report and Order, Updating Part 1 Competitive Bidding Rules,* WT Docket No. 14–170, Report and Order, 80 FR 56764, September 18, 2015, 30 FCC Rcd 7493, 7521, para. 145 (2015), and the more recent *Competitive Bidding Update Report and Order, Amendment of Part 1 of the Commission's Rules—Competitive Bidding Procedures,* WT Docket No. 97–82, Third Report and Order, 63 FR 2315, January 15, 1998, 13 FCC Rcd 374, 388, para. 18 (1997), the Commission, while standardizing many auction rules, determined that it would continue to use a service-by-service approach to defining small businesses. In the *FNPRM,* the Commission proposed to adopt bidding credits for the larger two of the three designated entity business sizes provided in the part 1 rules.

In adopting competitive bidding rules for other spectrum bands that will be used for 5G services, the Commission included provisions for designated entities to promote opportunities for small businesses, rural telephone companies, and businesses owned by members of minority groups and women to participate in the provision of spectrum-based services. For example, the Commission adopted two small business definitions for the auction of licenses in the 3.7 GHz band. These two small business definitions are the higher two of the three small business average gross revenues thresholds in the Commission's standardized schedule of bidding credits.

The Commission adopts the proposal in the *FNPRM* to apply the two small business definitions with higher average gross revenues thresholds to auctions of overlay licenses in the 3.45 GHz band. Accordingly, an entity with average annual gross revenues for the preceding five years not exceeding $55 million will qualify as a ''small business,'' while an entity with average annual gross revenues for the preceding five years not exceeding $20 million will qualify as a ''very small business.'' Since their adoption in 2015, the Commission has used these gross revenue thresholds in auctions for licenses likely to be used to provide 5G services in a variety of bands. The results in these auctions indicate that these gross revenue thresholds have provided an opportunity for bidders claiming eligibility as small businesses to win licenses to provide spectrum-based services at auction. Furthermore, by adopting thresholds that are not overly inclusive of qualified bidders, the Commission preserves the effectiveness of designated entity benefits for the parties that the Commission's

designated entity rules are intended to benefit.

The Commission also adopts the proposal in the *FNPRM* to provide qualifying ''small businesses'' with a bidding credit of 15% and qualifying ''very small businesses'' with a bidding credit of 25%, consistent with the standardized schedule in part 1 of the Commission's rules. This proposal, supported by the Wireless internet Service Providers Association (WISPA), was modeled on the small business size standards and associated bidding credits that the Commission adopted for a range of other services. The Commission believes that this two-tiered approach has been successful in the past, and it will employ it once again. The Commission believes that use of the small business tiers and associated bidding credits set forth in the part 1 bidding credit schedule will provide consistency and predictability for small businesses.

Rural Service Providers.—In the *FNPRM,* the Commission also sought comment on a proposal to offer a bidding credit for rural service providers. The rural service provider bidding credit awards a 15% bidding credit to those that service predominantly rural areas and that have fewer than 250,000 combined wireless, wireline, broadband and cable subscribers. As a general matter, the Commission ''has made closing the digital divide between Americans with, and without, access to modern broadband networks its top priority . . . [and is] committed to ensuring that all Americans, including those in rural areas, Tribal lands, and disaster-affected areas, have the benefits of a high-speed broadband connection.'' WISPA supports this proposal as consistent with the Commission's approach in other flexible-use bands.

The Commission finds that a targeted bidding credit will better enable entities already providing rural service to compete for spectrum licenses at auction, and in doing so, will increase the availability of 5G service in rural areas. Accordingly, the Commission will apply the rural service provider bidding credit in auctions of new licenses in this band.

G. Relocation of Secondary Non-Federal Radiolocation Operations

1. Timing of Relocation

In the *Report and Order*, the Commission determined that secondary radiolocation licensees would be relocated to the 2.9–3.0 GHz band. In the *FNPRM*, it proposed that authorization for these secondary, non-Federal radiolocation operations in the to-be-cleared spectrum would cease on a date consistent with the first possible grant of flexible-use authorizations to new users in the band. As an example, the Commission noted that a licensing scheme that would result in an auction would see non-Federal radiolocation use sunset within 90 days of the close of the auction, because that date is ''consistent with the first possible grant of flexible-use authorizations.''

NBCUniversal and Nexstar Broadcasting argue that 90 days after the auction closes is insufficient for them to take the steps needed relocate their Doppler radar systems. For example, NBCUniversal projects that it will take 18 months total for its transition given the production and procurement of equipment needed to transition NBCUniversal's four Doppler weather radar sites to the 2.9–3.0 GHz band, labor to manufacture and install new equipment, and equipment certification testing for its new operations. Nexstar projects that its transition will take 12–15 months for its one radar system. NBCUniversal and Nexstar argue that they should be permitted to continue operations until such time that flexible-use licenses are prepared to deploy services in the relevant markets, or in the alternative, asks the Commission to establish a sunset date of at least 180 days (*i.e.,* 6 months) after new flexible-use licenses in the relevant markets are granted.

The Commission finds persuasive the arguments raised by Nexstar and NBCUniversal regarding the amount of time needed to successfully complete their transitions. The Commission finds the public interest will be best served by adopting a sunset date of the secondary radiolocation authorization 180 days after the new flexible-use licenses are granted. The Commission also delegates authority to the Office of Engineering and Technology to cease certifying radiolocation equipment for the 3.45 GHz band 180 days after the new flexible-use licenses are granted. Secondary radiolocations users and the new flexible-uses licenses in a given market may of course enter into private agreements to complete the relocation process sooner.

The Commission sought comment in the *FNPRM* on interim timing and benchmarks for the transitioning of secondary, non-Federal radiolocation operations out of the 3.3–3.55 GHz band. No commenter suggests any such specific interim benchmarks or deadlines and the Commission finds no need to adopt any given the limited number of licensees that need to be transitioned. Secondary, non-Federal radiolocation licensees must relocate their operations by the sunset date.

2. Relocation Reimbursement

In the *FNPRM*, the Commission sought comment on whether to require new flexible-use licensees to reimburse secondary, non-Federal radiolocation operators for their relocation costs pursuant to the Emerging Technologies framework, despite the secondary status of these operations. The Commission finds that, in this unique instance, the public interest is served by requiring new flexible-use licensees to reimburse secondary, non-Federal radiolocation users for their reasonable relocation expenses, particularly given the limited number of secondary radiolocation users, the public safety benefit their operations provide to millions of Americans, and the relatively small relocation costs at issue. The Commission's Emerging Technologies framework represents a broad set of tools that the Commission uses to facilitate the process of making spectrum available for new uses. Generally, the Commission applies the framework when it is necessary to relocate incumbent licensees in order to introduce new services into a frequency band. The application of specific relocation and cost-sharing processes under the framework varies for each frequency band and is based on the types of incumbent licensees and the particular characteristics of the band. In the *FNPRM*, the Commission noted that secondary users are normally not subject to reimbursement because secondary users cannot claim protection from primary operations, including those subsequently licensed by the Commission.

In order to ensure the speedy clearing of the 3.3–3.55 GHz band and minimize disruptions to the weather radar systems operated by secondary radiolocation users, the Commission will require new flexible-use licensees in the 3.45 GHz Service to reimburse secondary, non-Federal radiolocation licensees for reasonable costs related to the relocation of those operations to the 2.9–3.0 GHz band, including the costs of a relocation clearinghouse's administration of the reimbursement. Several factors lead the Commission to conclude that requiring reimbursement of these secondary, non-Federal radiolocation users supports the public interest in this specific instance. First, the operations of secondary radiolocation licensees provide an important public safety service by informing broadcasters' reports on severe, often life-threatening weather events. As both NBCUniversal and Nexstar note, their current transmitters

and related equipment must be replaced in order for their systems to work in the 2.9–3.0 GHz band; they cannot simply be retuned. Given the public interest value served by these Doppler radar networks, and when combined with the limited number of networks at issue, the Commission finds that the public interest is served by minimizing any transition-related disruption to these operations.

Second, there are very few radiolocation licensees that need to be relocated. In fact, there are only a total of seven licenses that need to relocate out of the band. Compared to other Commission relocation efforts, the number of licensees that need to be moved out of the band here is significantly fewer, and indeed is miniscule compared to the number of flexible-use licenses that will be made available at auction.

Third, the overall estimated costs of reimbursement for the weather radar systems to relocate to the 2.9–3.0 GHz band is minimal and the Commission does not believe that it will jeopardize the overall success of the auction of flexible-use licenses. NBCUniversal estimates that it will cost $2.16 million to relocate all four of its radar systems, inclusive of equipment and labor. Nexstar estimates about $1 million for its systems' relocation. This is a total of just over $3 million dollars in relocation costs for a band that is expected to generate much more in revenue at auction.

Fourth, the Commission notes that these secondary radiolocation users face relatively minimal limitations from existing Federal primary users, which are geographically concentrated in particular locations. As such, the weather radar systems current operate without risk of harmful interference despite their secondary status.

For all these reasons, the Commission finds that reimbursement of secondary radiolocation users is appropriate in this specific instance. The Commission stresses, however, that secondary users generally are not entitled to reimbursement for the expense of transitioning to another band. As a general matter, because such users are not entitled to cause harmful interference to, or seek protection from, primary users, such users have no reasonable expectation that their investments in a band will be reimbursed in a spectrum transition under the Commission's Emerging Technologies framework. Indeed, absent the presence of all of the unique factors described, the Commission would not mandate reimbursement here. Consistent with the Commission's longstanding policy, secondary users should not expect that they will be reimbursed as part of a spectrum band clearing.

3. Cost Allocation Structure

The Commission will require that the reasonable relocation reimbursement costs be shared by all 3.45 GHz Service licensees, regardless of location, rather than only those whose licenses would otherwise have been encumbered by the relocating incumbent operations. The Commission finds this to be the fairest and most efficient approach given the high-powered nature of many of these radiolocation stations, and the engineering and administrative difficulties inherent in attempting to determine which licensees would be directly affected by their operations. Given the estimated cost of relocation for all secondary, non-Federal radiolocation licenses, the burden on each licensee will be small relative to the cost of the license itself. Further, even if not directly affected, all 3.45 GHz Service licensees will benefit from a band fully cleared of secondary, non-Federal incumbents. While this basic structure has now become common in the Commission's application of the Emerging Technologies framework, the Commission's application in this instance seeks to streamline reimbursement and minimize the burdens on both incumbents and incoming licensees.

All new entrants to the band will be responsible for reimbursement of a pro rata share of reasonable relocation costs of non-Federal radiolocation operations. In other words, the total relocation costs will be divided by the number of 3.45 GHz Service licenses and each licensee will be required to pay their share based on the number of licenses they hold. If all licenses offered at auction are ultimately issued, this will mean each license held will require payment of approximately 0.025% of the total reimbursement costs.

The Commission finds that this structure provides an efficient and equitable option given the limited number of licensees requiring reimbursement and the complexity in determining which licenses are affected by the high-powered radiolocation systems being relocated. It will ensure that non-Federal radiolocation licensees are able to continue their operations without service interruptions while fairly distributing the costs of clearing the band across all new licensees. It also will avoid complex calculations as to which licensees are affected by the non-Federal radiolocation operations being relocated. These operations are typically high-powered, which allows them to detect and monitor weather patterns over hundreds of miles, but also have the potential to cause harmful interference to wireless broadband operations across several PEAs and not only the one in which they are located. It will therefore speed the process of clearing the band, making it available for deployment as soon after the grant of flexible-use licenses as possible.

As the Commission has done in past proceedings, it delegates to the Wireless Telecommunications Bureau, working in coordination with the Office of the Managing Director, authority to develop and implement a clearinghouse selection process similar to the process used in the 3.7 GHz proceeding; this delegation includes the authority to seek notice and comment on the parameters of additional considerations that should inform the creation and administration of the cost-sharing plan to help implement the Commission's decision here and, if necessary for the purposes of the more limited relocation here, to adjust the procedures adopted in that proceeding to tailor them to the relocation in this proceeding. Any disputes as to the reimbursement of particular expenses will be resolved by the Wireless Telecommunications Bureau.

3.45 GHz Service licensees will be required to pay their share of the reimbursement obligations subject to procedures to be specified by public notice. Non-Federal secondary radiolocation licensees must submit their expenses for relocating operations authorized under their licenses and existing as of the date of the Commission's temporary freeze on non-Federal applications in the 3.3–3.55 GHz band subject to procedures to be specified by public notice.

Due to the timing of the relocation of secondary, non-Federal radiolocation incumbents, the Commission agrees with NBCUniversal that the reimbursement requirement should include reasonable expenses incurred before the adoption of the *Second Report and Order*, provided that such expenses are legitimate, documented, required by the transition, and occurred subsequent to the adoption of the first *Report and Order* in this proceeding. These expenses include radar components being replaced to accommodate the stations' new frequencies, installation costs, professional services such as engineering to ensure coordination with incumbent operations in the 2.9–3.0 GHz band, and licensing costs related to the new equipment and frequencies. Expenses for other purposes, however,

such as optional equipment upgrades, will not be permitted. The clearinghouse will have the authority to determine if expenses are eligible for reimbursement, with any disputes to be resolved by the Wireless Telecommunications Bureau.

4. Section 316 License Modification

In the *FNPRM*, the Commission proposed to use its section 316 authority to modify existing secondary, non-Federal radiolocation licenses such that they are no longer authorized to operate in the 3.3–3.55 GHz band and instead will be authorized for operation in the 2.9–3.0 GHz band. The Commission adopts this proposal and issues an Order of Proposed Modification under section 316 to modify these licenses to operate on their new frequencies. This license modification will allow the Commission to clear the 3.3–3.55 GHz band for flexible-use operations while ensuring that these secondary, non-Federal radiolocation operations can continue to offer the same services as they do currently. The Commission finds that the modification is in the public interest, as it will spur investment in—and deployment of—next-generation wireless services, while ensuring that incumbent space station services will be able to maintain the same services as they are currently providing. The Commission delegates authority to the Wireless Telecommunications Bureau to modify the relevant licenses as needed to specify the new frequencies for each.

H. Continued Operation of Amateur Stations in Part of the 3.3–3.45 GHz Band

Bifurcation of the Amateur Band.—In the *Report and Order*, the Commission terminated the allocation for secondary amateur operations in the 3.3–3.5 GHz band in order to clear the way for flexible-use operations. In the *FNPRM*, it proposed to bifurcate the sunset of this allocation in order to allow amateur operations to continue for the time being in that portion of the band not yet ready for commercial operations, while more rapidly clearing the portion necessary to accommodate the new 3.45 GHz Service. This proposal would allow amateur operations to continue in the lower portion of the band while the Commission, NTIA, and the DoD continue to analyze whether that spectrum can be reallocated for flexible use. Specifically, the Commission proposed splitting the band at 3400 MHz, which would allow amateur use in 100 megahertz while also providing a buffer to protect flexible-use operations at the lower edge of the 3.45 GHz band, and it sought comment on this proposal.

The Commission adopts its proposal to bifurcate the band, however, it adjusts its proposal and sets 3450 MHz as the frequency at which the band will be split. Based on the record, the Commission finds that this best supports the public interest and continued amateur use below the 3.45 GHz band. While the *FNPRM* proposed a guard band of 50 megahertz, the record demonstrates that such a guard band is unnecessary given the nature of amateur operations in the band. No commenter provides technical justification for a guard band, and the Commission agrees with the Amateur Radio Relay League's (ARRL) assessment that the guard band is not necessary from a technical standpoint. The Commission also recognizes that the nature of amateur equipment realities makes the 50 megahertz at 3400–3450 MHz particularly valuable to amateur operators because it means existing equipment can continue to operate in the band for the time being. The Commission therefore allows secondary amateur operations to continue in the 3400–3450 MHz portion of the band. The Commission emphasizes, however, that amateur licensees remain secondary users, and those that operate on frequencies close to the 3450 MHz band edge must do so with particular caution to avoid causing harmful interference to flexible-use licensees in the 3.45 GHz Service, which hold primary status. In light of these considerations, while amateur operations between 3450 MHz and 3500 MHz must cease within 90 days of the public notice announcing the close of the auction for the 3.45 GHz Service, as specified in the *Report and Order*, amateur operations may continue between 3300 MHz and 3450 MHz while the Commission, NTIA, and the DoD continue to analyze whether that spectrum can be reallocated for commercial wireless use.

The Commission agrees with T-Mobile that amateur operators that choose to remain in this band must do so fully aware of the Commission's ongoing efforts to clear the entire 3.1–3.45 GHz band for commercial operations as soon as possible. As the Commission stressed in the *FNPRM*, any amateur operations that continue to operate in the 3.3–3.45 GHz band do so on a secondary basis, with the allocation subject to sunset at any time. There is no expectation that such operations will be accommodated in future planning for commercial wireless operations in this spectrum, or that amateur operators will receive more than a short period of notice before their operations must cease.

Consistent with the Commission's *FNPRM*, the Commission declines to provide reimbursement of ''relocation costs'' of amateur operations in this band. ARRL suggests that some equipment might be ''stranded'' if the Commission prohibited continued operations in the 3400–3450 MHz portion of the band and argued reimbursement might be justified if equipment were stranded. Because the Commission permits amateur operations to continue on a secondary basis in the 3400–3450 MHz portion of the band, this specific reimbursement issue is moot. More generally, the Commission declines to require 3.45 GHz Service licensees to reimburse amateur users for any potential costs related to their transitions to other amateur bands given the vastly different situation of amateur operators as compared to secondary, non-Federal radiolocation operators in the band. As the Commission noted above, requiring reimbursement of secondary users' relocation expenses is itself a departure from Commission precedent; the Commission took this step for secondary, non-Federal radiolocation users given the very small number of licensees, the nature of the equipment they use for their high-power weather radar systems, the public safety benefits they provide and the risk to life and property from potential interruption to that service, and the relatively minimal costs of relocating these five incumbent systems as compared to the value of this spectrum for flexible-use services. Similar exigent circumstances do not exist here with respect to the hundreds of amateur users in the band, especially given that they have other options available to them within and outside the 3 GHz band.

Section 316 Modification.—Finally, the *FNPRM* sought comment on whether the Commission must modify amateur licenses pursuant to the Commission's section 316 authority in order to accomplish its proposed changes to the amateur allocation. No commenters addressed this question. In the *FNPRM*, the Commission noted that, due to the unique nature of amateur licensing, there are no new frequencies being specified for amateur operations; amateurs will instead be permitted to use any frequency already allocated to amateur use. Amateur service operators are granted licenses of a particular class, not a license to operate on particular frequencies. Further, because of this bifurcation of the band, amateur operators should require only minimal software changes to their operations, if any changes are required at all. For

these reasons, the Commission concludes that the changes to its part 2 and part 97 rules already adopted in this proceeding, along with the part 2 rule changes being adopted, are sufficient to effectuate this change, and no section 316 license modification is necessary.

IV. Order On Reconsideration

In the *Report and Order*, the Commission sunset the secondary amateur allocation in the 3300–3500 MHz band in order to make way for the use of this spectrum for commercial wireless services. It noted that clearing all secondary, non-Federal operations, including those of amateur operators, will allow the maximum use of the band by flexible-use licensees, and that clearing the entire band, rather than simply the portion being reallocated immediately, will prevent adjacent-channel interference and facilitate future clearing of the entire band for flexible use. However, in order to ensure that spectrum continues to be used efficiently, in the *FNPRM* the Commission proposed, and indeed adopted as part of the *Second Report and Order* here, a bifurcated sunset date for that allocation to allow amateur use to continue below 3450 MHz.

ARRL, The National Association for Amateur Radio, seeks reconsideration of the decision in the *Report and Order* to sunset the amateur allocation in order to clear the 3.3–3.5 GHz band. In its petition, ARRL argues that the nature of amateur use is such that it will not cause harmful interference to commercial wireless operations in the 3.45 GHz Service and that the public interest is not served by removing amateur operations from spectrum not being actively considered for commercial wireless use. These arguments reiterate points made by ARRL in its original comments in this proceeding. The Commission denies ARRL's request.

Reconsideration may be appropriate when the petitioner demonstrates that the original order contains a material error or omission, or raises additional facts that were not known or did not exist until after the petitioner's last opportunity to present such matters. Petitions for reconsideration that do not warrant consideration by the Commission include those that: Fail to identify any material error, omission, or reason warranting reconsideration; rely on facts or arguments which have not been previously presented to the Commission; rely on arguments that have been fully considered and rejected by the Commission within the same proceeding; or relate to matters outside the scope of the order for which reconsideration is sought.

The Commission dismisses ARRL's petition as procedurally deficient. The petition fails to identify a material error or omission, raise facts not known before the last opportunity to present such matters, or demonstrate that reconsideration would be in the public interest. Instead, ARRL's petition simply repeats arguments previously raised, considered, and rejected during the initial comment period in this proceeding. As its rules make clear, the Commission need not consider petitions for reconsideration that merely repeat arguments the Commission previously rejected. Indeed, ARRL's claim that the Commission's conclusion that amateur operations are incompatible with mobile and fixed services intended to be provided by the new non-Federal primary licensees is conclusory shows that ARRL recognizes that the Commission did address its concerns and reach a conclusion regarding them. Simply repeating its assertion that secondary amateur operations can coexist with flexible-use operations, both during deployment and beyond, is not a ground for reconsideration of the Commission's decision in the *Report and Order*.

As an alternate and independent basis for the Commission's decision, ARRL's petition also fails on the merits. First, ARRL argues that the Commission's decision in the *Report and Order* leaves large amounts of spectrum vacant. This is not the case. Under the rules adopted here, amateur use will be permitted to continue in the 150 megahertz between 3.3 GHz and 3.45 GHz until the Commission acts to adopt rules permitting commercial wireless use of that part of the band, and flexible-use operations will commence in the spectrum between 3.45–3.55 GHz. All spectrum in which amateur operations are ceasing operation will remain in use, or be available for use at the discretion of Federal or non-Federal primary users. The entire band will also continue to be used for Federal operations. As a result of this decision, no spectrum will be left vacant, and that which is not actively in use at any particular time has been removed from amateur access in order to provide for full flexibility in use by 3.45 GHz Service licensees.

Second, ARRL argues that the Commission's grounds for rejecting its claims were conclusory and depart from its earlier spectrum policy, such as the Emerging Technology framework, because the Commission in the Emerging Technologies Order encouraged spectrum sharing and did not sweep away incumbent users on a date certain as is done in this proceeding. The Commission disagrees. While it is true that some band reallocations done under the Emerging Technologies framework permitted incumbent operations to continue while new entrants deployed, the Emerging Technologies framework represents a broad set of tools that the Commission uses to facilitate the process of making spectrum available for new uses. The application of specific relocation and cost-sharing processes under the framework generally varies for each frequency band and is based on the types of incumbent licensees and the particular characteristics of the band. While the Commission agrees with ARRL that certain provisions of the Emerging Technologies Order were highly successful in accomplishing the transition to PCS in the 2 GHz bands, the Commission is required by the Administrative Procedure Act to provide the essential facts upon which its decisions are based and explanations with actual facts and evidence beyond merely repeating conclusory statements, as ARRL explains in its Reply.

Contrary to ARRL's claims that the Commission's reasoning was conclusory, ARRL's proposal to apply certain provisions of the 1993 Emerging Technologies Order (58 FR 59174, November 8, 1993)—without accounting for the differences between the transition to PCS in the 2 GHz band and the 3.45 GHz reallocation—is conclusory and unreasoned. In adopting a new framework for the 3.45 GHz band, the Commission did just that: The Commission considered the technical characteristics of the band, the feasibility of sharing spectrum between incumbent and incoming operations, and the alternate spectrum available to those incumbents. In this case, the rapid deployment of flexible-use operations in this band, and the provision of full flexibility for new wireless broadband deployment, are critical to making the most of the extensive work being done across the Federal Government to open this band for flexible use. The Commission's decision to sunset the secondary amateur allocation in the 3.3–3.5 GHz band in order to make way for the use of this spectrum for flexible-use wireless services and to adopt a bifurcated sunset date to allow amateur use to continue below 3450 MHz is supported by the unique circumstances and particular characteristics of the band.

Further, as noted in the *Report and Order*, amateur operators have alternate spectrum, including in the 3 GHz band, in which to conduct their operations without creating interference concerns

and notification requirements for flexible-use wireless licensees. CTIA agrees with the Commission's reasoning that requires amateur operators to relocate by a sunset date, stating that this approach is entirely reasonable because amateur operators can move to myriad other bands that have an amateur allocation. As the Commission explained in the *Report and Order*, the record strongly favored a full clearing of the band before the grant of new flexible-use licenses in order to avoid reducing the deployment flexibility of new flexible-use licensees. This is due to the different nature of flexible-use operations relative to Federal radiolocation operations, and the different spectrum available for secondary use with the change in primary user of this band. With respect to this band, the Commission in the *Report and Order* found, and the Commission affirms here, that allowing amateur operations to continue until each individual frequency is put in use by a new 3.45 GHz Service licensee in that specific location would place an unnecessary burden on new licensees to ascertain the location and nature of amateur operations and provide proper notice to them. The Commission agreed with the concerns about burdens on licensees created by ARRL's proposal and believed that relying on amateurs to design their systems so as not to interfere with commercial operations would unreasonably restrain the flexibility commercial wireless licensees expect when spectrum rights are awarded at auction and is not in the public interest. Allowing maximal flexibility in network design, deployment, and operation will increase investment in communications services and systems and technological development by providing maximum opportunities for deployment of flexible-use services. The Commission finds that ARRL has offered nothing in its petition to rebut the Commission's conclusions.

In an *ex parte* filed following the public release of the draft of this item, ARRL argues again that there is no justification offered for the Commission's position. But even in that filing, ARRL acknowledges that its proposal for continued secondary access would impose burdens on 3.45 GHz Service licensees. In particular, before deploying pursuant to its license, a new 3.45 GHz licensee would be required to perform a spectrum survey combined with notice to amateurs in an area of proposed service, or to work with ARRL and issue a public notification of its build-out plans. This structure is, by definition, a restriction on licensee flexibility in deployment and a burden imposed on primary licensees in order to enable secondary access. The Commission does not believe that continued access to this spectrum for amateur operations justifies these limitations on the use of the band by 3.45 GHz Service licensees, especially given continued amateur access to 100 megahertz of this band.

ARRL argues that alternative spectrum may not be suitable for several specific amateur uses, including propagation studies and related weak signal and moon bounce operations, since by their nature they are dependent upon and studying the particular properties of the 3.3–3.5 GHz spectrum. As the Commission made clear in the *Report and Order*, amateur stations operating in the 3 GHz band have several other nearby bands available to them with similar propagation characteristics. ARRL notes in its reply that some amateur uses cannot be replicated in the numerous other spectrum bands available for amateur operations; to the extent that this is true, it is nonetheless outweighed by benefits of full clearing of this spectrum—ensuring that the spectrum is used intensely and efficiently, creating a spectral environment that will support wireless broadband operations, and promoting commercial interest and investment in the band.

The Commission made clear in the *Report and Order* that the full clearing of spectrum is necessary to ensure the intensive and efficient use of spectrum, create a spectral environment that will support wireless broadband operations, and promote commercial interest and investment in the band. ARRL has provided no new argument as to why this decision is incorrect or not in the public interest, and the Commission therefore denies its petition for reconsideration.

In a recent ex parte, ARRL asks that amateur use be permitted to continue in Alaska, Hawaii, and U.S. Territories. The Commission denies this additional request. The marginal benefits of allowing a temporary continuation of secondary amateur operations outside the contiguous United States is outweighed by the public interest benefits of removing this potential hurdle to future flexible use licensing in Alaska, Hawaii, and U.S. Territories. Clearing secondary amateur operations from these areas today will simplify and hasten the process of introducing flexible-use licensing in these areas in the future, in line with the Commission's other decisions in this proceeding and with the Congressional direction to make the licenses available for flexible use expeditiously.

V. Ordering Clauses

It is ordered, pursuant to sections 1, 4(i), 157, 301, 303, 307, 308, 309, 310, 316, of the Communications Act of 1934, as amended, as well as the Commercial Spectrum Enhancement Act, Public Law 108–494, 118 Stat. 3986 (Dec. 23, 2004) as amended, and the MOBILE NOW Act, Public Law 115–141, 132 Stat. 1098, Div. P, Title VI, section 603 (Mar. 23, 2018), 47 U.S.C. 151, 154(i), 157, 301, 303, 307, 308, 309, 310, 316, 923(g), and 928 and 1502, and by the Beat China by Harnessing Important, National Airwaves for 5G Act of 2020, Public Law 116–260, Division FF, Title IX, Sec. 905 that the *Second Report and Order, Order on Reconsideration, and Order of Proposed Modification is adopted.*

It is further ordered that the rules and requirements as adopted herein *are adopted*, effective sixty (60) days after publication in the **Federal Register**; and that the *Order of Proposed Modification* is applicable as of the date of publication in the **Federal Register**; provided however, that compliance with §§ 2.106, 27.14, 27.1603, 27.1605, and 27.1607 of the Commission's rules, which contain new or modified information collection requirements that require review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, is not required until those information collections are approved by OMB and the Commission announces compliance with the sections in a document published in the **Federal Register**. The Commission delegates authority to the Wireless Telecommunications Bureau to issue such document and to cause §§ 2.106, 27.14, 27.1603, 27.1605, and 27.1607 to be revised accordingly.

It is further ordered that, pursuant to sections 309 and 316 of the Communications Act of 1934, as amended, 47 U.S.C. 309 and 316, in the *Order of Proposed Modification* the Commission proposes that the licenses and authorizations of all secondary, non-Federal radiolocation licenses in the 3.3–3.55 GHz band will be modified pursuant to the conditions specified in the *Second Report and Order* at paragraph 166. These modification conditions will be effective 60 days after publication of this *Second Report and Order, Order on Reconsideration, and Order of Proposed Modification* in the **Federal Register**, provided, however, that in the event any secondary, non-Federal radiolocation licensee who believes that its license or permit would be modified by this proposed action,

seeks to protest this proposed modification pursuant to the procedures above, the proposed license modifications specified in the *Second Report and Order, Order on Reconsideration, and Order of Proposed Modification* and contested by the licensee shall not be made final as to such licensee unless and until the Commission orders otherwise. Pursuant to section 316(a)(1) of the Communications Act of 1934, as amended, 47 U.S.C. 316(a)(1), publication of the *Second Report and Order* in the **Federal Register** shall constitute notification in writing of the Commission's Order proposing the modification of the secondary, non-Federal radiolocation licenses, and of the grounds and reasons therefore, and those licenses and any other party seeking to file a protest pursuant to section 316 shall have 30 days from the date of such publication to protest such Order.

It is further ordered that, pursuant to sections 309 and 316 of the Communications Act of 1934, as amended, 47 U.S.C. 309 and 316, that following the final modification of each secondary, non-Federal radiolocation license, the Wireless Telecommunications Bureau shall modify each such license as necessary in order to provide for its new frequency assignment.

It is further ordered that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, *shall send* a copy of the *Second Report and Order, Order on Reconsideration and Order of Proposed Modification* including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects in 47 CFR Parts 1, 2, and 27

Administrative practice and procedure, Common carriers, Communications common carriers, Radio, Table of frequency allocations, Telecommunications, Wireless communication services.

Federal Communications Commission.

Marlene Dortch,

Secretary.

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 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: 47 U.S.C. chs. 2, 5, 9, 13; 28 U.S.C. 2461, unless otherwise noted.

■ 2. Amend § 1.907 by revising the definition of ''Covered geographic licenses'' to read as follows:

§ 1.907 Definitions.

* * * * *

Covered geographic licenses. Covered geographic licenses consist of the following services: 1.4 GHz Service (part 27, subpart I, of this chapter); 1.6 GHz Service (part 27, subpart J); 24 GHz Service and Digital Electronic Message Services (part 101, subpart G, of this chapter); 218–219 MHz Service (part 95, subpart F, of this chapter); 220–222 MHz Service, excluding public safety licenses (part 90, subpart T, of this chapter); 600 MHz Service (part 27, subpart N); 700 MHz Commercial Services (part 27, subparts 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); 900 MHz Broadband Service (part 27, subpart P); 3.45 GHz Service (part 27, subpart Q); 3.7 GHz Service (part 27, subpart O); Advanced Wireless Services (part 27, subparts K and L); Air-Ground Radiotelephone Service (Commercial Aviation) (part 22, subpart G, of this chapter); Broadband Personal Communications Service (part 24, subpart E, of this chapter); Broadband Radio Service (part 27, subpart M); Cellular Radiotelephone Service (part 22, subpart H); Citizens Broadband Radio Service (part 96, subpart C, of this chapter); Dedicated Short Range Communications Service, excluding public safety licenses (part 90, subpart M); Educational Broadband Service (part 27, 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, of this chapter); Upper Microwave Flexible Use Service (part 30 of this chapter); and Wireless Communications Service (part 27, subpart D).

* * * * *

■ 3. Amend § 1.9005 by:

■ a. Removing the word ''and'' at the end of paragraph (ll);

■ b. Removing the period at the end of paragraph (mm) and adding a semicolon in its place;

■ c. Removing the period at the end of the paragraph (nn) and adding a semicolon in its place;

■ d. Removing the period at the end of paragraph (oo) and adding ''; and'' in its place; and

■ e. Adding paragraph (pp).

The addition reads as follows:

§ 1.9005 Included services.

* * * * *

(pp) The 3.45 GHz Service in the 3.45–3.55 GHz 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:

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

■ 5. Amend § 2.106, the Table of Frequency Allocations, by:

■ a. Revising pages 40 and 41; and

■ b. In the list of United States (US) Footnotes:

■ i. Add footnote US103 in numerical order;

■ ii. Revise footnote US108; and

■ iii. Add footnote US431B in numerical order.

The revisions and additions read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

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2670-2690 FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	2670-2690 FIXED 5.410 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.208B 5.415 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	2670-2690 FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	US205	US385	
2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422			2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246		
2700-2900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424			2700-2900 METEOROLOGICAL AIDS AERONAUTICAL RADIONAVIGATION 5.337 US18 Radiolocation G2 5.423 G15	2700-2900 5.423 US18	Aviation (87)
2900-3100 RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427			2900-3100 RADIOLOCATION 5.424A G56 MARITIME RADIONAVIGATION 5.427 US44 US316	2900-3100 MARITIME RADIONAVIGATION Radiolocation US44 5.427 US316	Maritime (80) Private Land Mobile (90)
3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428			3100-3300 RADIOLOCATION G59 Earth exploration-satellite (active) Space research (active) US342	3100-3300 Earth exploration-satellite (active) Space research (active) Radiolocation US342	Private Land Mobile (90)
3300-3400 RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430	3300-3400 RADIOLOCATION Amateur Fixed Mobile 5.149 5.429C 5.429D	3300-3400 RADIOLOCATION Amateur 5.149 5.429 5.429E 5.429F	3300-3500 RADIOLOCATION G2	3300-3450	
3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A Radiolocation 5.341	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.431A 5.431B Amateur Radiolocation 5.433 5.282	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432 5.432B Radiolocation 5.433 5.282 5.432A	US103 US108 US342 US431B	US103 US108 US342 3450-3600 FIXED MOBILE except aeronautical mobile US103 US105 US108 US433 US431B	Wireless Communications (27) Citizens Broadband (96)

Table of Frequency Allocations	3500-5460 MHz (SHF)				Page 41
International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
3400-3600 MHz: see previous page	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.431B Radiolocation 5.433	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3500-3550 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 US103 US108 US431B	3450-3600 MHz: see previous page	
			3550-3650 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 US105 US107 US245 US433	3600-3650 FIXED FIXED-SATELLITE (space-to-Earth) US107 US245 MOBILE except aeronautical mobile US105 US433	Satellite Communications (25) Citizens Broadband (96)
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.434 Radiolocation 5.433	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.435	3650-3700 US109 US349	3650-3700 FIXED FIXED-SATELLITE (space-to-Earth) NG169 NG185 MOBILE except aeronautical mobile US109 US349	
	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile		3700-4200	3700-4000 FIXED MOBILE except aeronautical mobile NG182 NG457A	Wireless Communications (27)
				4000-4200 FIXED FIXED-SATELLITE (space-to-Earth) NG457A NG182	Satellite Communications (25)
4200-4400 AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440			4200-4400 AERONAUTICAL RADIONAVIGATION 5.440 US261		Aviation (87)
4400-4500 FIXED MOBILE 5.440A			4400-4940 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A				4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.149 5.339 5.443			US113 US245 US342	4800-4940 US113 US342	
			4940-4990 5.339 US342 US385 G122	4940-4990 FIXED MOBILE except aeronautical mobile 5.339 US342 US385	Public Safety Land Mobile (90Y)
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149			4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		

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United States (US) Footnotes

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US103 In the band 3300–3550 MHz, non-Federal stations in the radiolocation service that were licensed (or licensed pursuant to applications accepted for filing) before February 22, 2019 may continue to operate on a secondary basis until 180 days after the issuance of the first flexible-use licenses in the 3.45 GHz Service. No new assignments shall be made. In the band 3300–3500 MHz, stations in the amateur service may continue to operate on a secondary basis until new flexible-use licenses are issued for operation in the band in which they operate. Amateur operations between 3450 MHz and 3500 MHz must cease within 90 days of the public notice announcing the close of the auction for the 3.45 GHz Service. Stations in the amateur service may continue to operate in the band 3300–3450 MHz on a secondary basis while the band's future uses are finalized, but stations in the amateur service may be required to cease operations in the band 3300–3450 MHz at any time if the amateur service causes harmful interference to flexible-use operations.

* * * * *

US108 In the band 10–10.5 GHz, survey operations, using transmitters with a peak power not to exceed five watts into the antenna, may be authorized for Federal and non-Federal use on a secondary basis to other Federal radiolocation operations.

* * * * *

US431B The band 3450–3550 MHz is allocated on a primary basis to the Federal radiolocation service and to the non-Federal fixed and mobile, except aeronautical mobile, services on a nationwide basis. Federal operations in the band 3450–3550 MHz shall not cause harmful interference to non-Federal operations, except under the following circumstances.

(a) *Cooperative Planning Areas.* Cooperative Planning Areas (CPAs) are geographic locations in which non-Federal operations shall coordinate with Federal systems in the band to deploy non-Federal operations in a manner that shall not cause harmful interference to Federal systems operating in the band. In addition, operators of non-Federal stations may be required to modify their operations (*e.g.,* reduce power, filtering, adjust antenna pointing angles, shielding, *etc.*) to protect Federal operations against harmful interference and to avoid, where possible, interference and potential damage to the non-Federal operators' systems. In these areas, non-Federal operations may not claim interference protection from Federal systems. Federal and non-Federal operators may reach mutually acceptable operator-to-operator agreements to permit more extensive non-Federal use by identifying and mutually agreeing upon a technical approach that mitigates the interference risk to Federal operations. To the extent possible, Federal use in CPAs will be chosen to minimize operational impact on non-Federal users. The table in paragraph (d) of this note identifies the locations of CPAs, including, for information, those with high powered Federal operations. CPAs may also be Periodic Use Areas as described in paragraph (b) of this note. Coordination between Federal users and non-Federal licensees in CPAs shall be consistent with rules and procedures established by the FCC and NTIA.

(b) *Periodic Use Areas.* Periodic Use Areas (PUAs) are geographic locations in which non-Federal operations in the band shall not cause harmful interference to Federal systems operating in the band for episodic periods. During these times and in these areas, Federal users will require interference protection from non-Federal operations. Operators of non-Federal stations may be required to temporarily modify their operations (*e.g.,* reduce power, filtering, adjust antenna pointing angles, shielding, *etc.*) to protect Federal operations from harmful interference, which may include restrictions on non-Federal stations' ability to radiate at certain locations during specific periods of time. During such episodic use, non-Federal users in PUAs must alter their operations to avoid harmful interference to Federal systems' temporary use of the band, and during such times, non-Federal operations may not claim interference protection from Federal systems. Federal and non-Federal operators may reach mutually acceptable operator-to-operator agreements such that a Federal operator may not need to activate a PUA if a mutually agreeable technical approach mitigates the interference risk to Federal operations. To the extent possible, Federal use in PUAs will be chosen to minimize operational impact on non-Federal users. Coordination between Federal users and non-Federal licensees in PUAs shall be consistent with rules and procedures established by the FCC and NTIA. While all PUAs are co-located with CPAs, the exact geographic area used during periodic use may differ from the co-located CPA. The geographic locations of PUAs are identified in the table in paragraph (d) of this note. Restrictions and authorizations for the CPAs remain in effect during periodic use unless specifically relieved in the coordination process.

(c) For the CPA at Little Rock, AR, after approximately 12 months from the close of the auction, non-Federal operations shall coordinate with Federal systems in only the 3450–3490 MHz band segment and the 3490–3550 MHz band segment will be available for non-Federal use without coordination. At Fort Bragg, NC, non-Federal operations shall coordinate with Federal systems in only the 3450–3490 MHz band segment.

(d) The following table identifies the coordinates for the location of each CPA and PUA. An area may be represented as either a polygon made up of several corresponding coordinates or a circle represented by a center point and a radius. If a CPA has a corresponding PUA, the PUA coordinates are provided. A location marked with an asterisk (*) indicates a high-power Federal radiolocation facility. If a location includes a Shipboard Electronic Systems Evaluation Facility (SESEF) attached to a homeport, it specifies the associated SESEF.

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Table: Department of Defense Cooperative Planning Areas and Periodic Use Areas

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
Little Rock	AR	Yes	-	37° 28' 34" 37° 42' 55" 36° 38' 29" 34° 57' 57" 32° 09' 36" 31° 51' 52" 32° 12' 11" 33° 42' 22" 35° 17' 35" 36° 12' 18"	94° 28' 24" 88° 54' 36" 87° 52' 34" 88° 09' 26" 92° 06' 54" 93° 10' 35" 94° 37' 07" 95° 49' 52" 96° 23' 06" 96° 08' 46"	N/A
Yuma Complex (includes Yuma Proving Grounds and MCAS Yuma)	AZ	Yes	Yes	33° 36' 44" 34° 03' 08" 34° 03' 56" 33° 26' 54" 32° 51' 17" 32° 16' 54" 32° 14' 39" 32° 20' 06" 32° 28' 30" 32° 53' 20"	115° 10' 44" 114° 41' 08" 114° 05' 56" 113° 03' 54" 113° 02' 17" 113° 45' 54" 114° 40' 39" 114° 55' 06" 115° 02' 30" 115° 09' 20"	N/A
Camp Pendleton	CA	Yes	-	33° 21' 46"	117° 25'25"	50
Edwards Air Force Base	CA	Yes	Yes	35° 19' 16" 35° 17' 54" 35° 11' 43" 35° 00' 52" 34° 44' 17" 34° 34' 16" 34° 26' 55" 34° 28' 59" 34° 41' 36" 35° 07' 32"	118° 03' 16" 117° 26' 54" 117° 15' 43" 117° 10' 52" 117° 10' 17" 117° 19' 16" 117° 47' 55" 118° 16' 59" 118° 28' 36" 118° 25' 32"	N/A
National Training Center	CA	Yes	Yes	36°0 3' 31" 36° 03' 09" 35° 41' 46" 35° 07' 24" 34° 42' 43" 34° 44' 22" 35° 02' 28" 35° 34' 49"	117° 00' 45" 116° 20' 43" 115° 44' 31" 115° 44' 09" 116° 17' 58" 117° 05' 19" 117° 35' 18" 117° 27' 37"	N/A
Naval Air Weapons Station, China Lake*	CA	Yes	Yes	36° 36' 42" 35° 54' 45" 35° 00' 01" 34° 54' 34" 35° 44' 22" 36° 30' 18"	117° 20' 42" 116° 31' 45" 116° 39' 01" 117° 26' 34" 118° 17' 22" 118° 07' 18"	N/A

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
Point Mugu	CA	Yes	Yes	34° 06' 44"	119° 06' 36"	38
San Diego* (includes Point Loma SESEF range)	CA	Yes	-	33° 4' 10" 32° 27' 19" 32° 33' 29" 32° 47' 16" 33° 1' 20" 33° 20' 36" 33° 24' 36" 32° 52' 54" 33° 04' 10"	117° 35' 40" 118° 0' 37" 116° 51' 8" 116° 28' 5" 116° 31' 5" 116° 47' 10" 117° 0' 51" 117° 9' 35" 117° 35' 40"	N/A
Twentynine Palms	CA	Yes	-	34° 06' 44"	116° 06' 36"	75
Eglin Air Force Base (includes Santa Rosa Island & Cape San Blas site)	FL	Yes	Yes	Eglin and Santa Rosa Island: 30° 29' 28.5" Cape San Blas: 29° 40' 37"	Eglin and Santa Rosa Island: 86° 45' 00" Cape San Blas: 85° 20' 50"	35
Mayport* (includes Mayport SESEF range)	FL	Yes	-	30° 23' 42"	81° 24' 41"	64
Pensacola*	FL	Yes	Yes	30° 20' 50	87° 18' 40"	93
Joint Readiness Training Center	LA	Yes	Yes	31° 54' 23" 31° 50' 54" 31° 18' 13" 30° 46' 33" 30° 29' 14" 30° 46' 22" 31° 25' 16"	93° 20' 53" 92° 52' 46" 92° 26' 31" 92° 28' 32" 93° 4' 1" 93° 41' 26" 94° 3' 19"	N/A
Chesapeake Beach*	MD	Yes	Yes	38° 39' 24"	76° 31' 41"	95
Naval Air Station, Patuxent River CPA	MD	Yes	Yes	38° 26' 22" 38° 51' 51" 38° 28' 11" 38° 03' 40" 37° 45' 33" 37° 34' 34" 37° 38' 10" 38° 09' 32" 38° 18' 46" 38° 26' 59"	76° 14' 12" 75° 48' 34" 75° 28' 53" 75° 30' 31" 75° 45' 50" 76° 20' 09" 76° 44' 37" 76° 29' 28" 76° 34' 36" 76° 26' 27"	N/A
PUA				38° 33' 38" 39° 11' 10" 38° 38' 51" 37° 52' 13" 37° 29' 44" 37° 10' 24" 37° 20' 05" 38° 01' 11" 38° 20' 54" 38° 35' 47"	76° 07' 29" 75° 29' 28" 75° 00' 40" 75° 03' 24" 75° 22' 25" 76° 16' 42" 77° 06' 52" 76° 36' 06" 76° 46' 41" 76° 30' 02"	
St. Inigoes*	MD	Yes	Yes	38° 08' 41"	76° 26' 03"	87

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
Bath*	ME	Yes	Yes	44° 02' 29" 43° 52' 27" 43° 48' 53" 43° 32' 50" 43° 27' 16" 43° 44' 26" 43° 54' 57" 44° 06' 56" 44° 17' 2" 44° 26' 54" 44° 36' 16" 44° 33' 45" 44° 57' 05" 44° 56' 27" 44° 32' 13" 44° 24' 08" 44° 02' 29"	70° 10' 41" 70° 10' 29" 70° 01' 6" 69° 57' 30" 69° 42' 52" 69° 13' 52" 69° 24' 50" 69° 25' 13" 69° 16' 56" 69° 45' 13" 69° 56' 50" 70° 04' 01" 70° 14' 55" 70° 19' 38" 70° 08' 17" 70° 36' 36" 70° 10' 41"	N/A
Pascagoula*	MS	Yes	Yes	30° 20' 42"	88° 34' 17"	80
Camp Lejeune	NC	Yes	-	34° 37’ 51”	77° 24’ 28”	54
Cherry Point	NC	Yes	-	34° 54’ 57”	76° 53’ 24”	38
Fort Bragg	NC	Yes	-	37° 35’ 01” 37° 45’ 56” 37° 22’ 33” 36° 38’ 56” 34° 43’ 13” 33° 29’ 44” 33° 24’ 04” 34° 01’ 05” 35° 27’ 24” 36° 27’ 46”	79° 31’ 19” 77° 14’ 14” 76° 18’ 30” 75° 51’ 26” 76° 15’ 37” 78° 29’ 53” 80° 29’ 07” 81° 23’ 49” 81° 37’ 00” 81° 22’ 49”	N/A

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
Portsmouth*	NH	Yes	Yes	42° 23' 06" 42° 25' 05" 42° 21' 36" 42° 18' 28" 42° 13' 01" 42° 06' 30" 42° 02' 54" 42° 08' 03" 42° 10' 25" 42° 15' 39" 42° 22' 44" 42° 34' 56" 42° 52' 26" 43° 13' 48" 43° 31' 21" 43° 45' 21" 43° 59' 20" 43° 36' 10" 43° 49' 27" 43° 27' 40" 43° 00' 57" 42° 44' 40" 42° 51' 47" 42° 33' 46" 42° 24' 24" 42° 23' 06"	71° 10' 23" 71° 05' 43" 71° 00' 54" 70° 54' 35" 70° 44' 53" 70° 41' 11" 70° 37' 44" 70° 33' 35" 70° 20' 54" 70° 02' 39" 69° 48' 42" 69° 36' 01" 69° 26' 24" 69° 28' 18" 69° 40' 13" 70° 01' 31" 70° 30' 21" 70° 52' 5" 71° 15' 22" 71° 24' 47" 71° 53' 01" 71° 56' 37" 71° 27' 07" 71° 27' 12" 71° 21' 10" 71° 10' 23"	N/A
Moorestown*	NJ	Yes	Yes	40° 27' 26" 40° 02' 54" 39° 48' 19" 39° 38' 27" 39° 24' 59" 39° 17' 18" 39° 22' 16" 39° 29' 35" 39° 54' 43" 40° 15' 03" 40° 23' 29" 40° 42' 46" 40° 50' 59" 40° 52' 49" 40° 47' 42" 40° 33' 25" 40° 27' 26"	75° 42' 60" 75° 55' 12" 75° 55' 55" 75° 51' 48" 75° 21' 41" 74° 54' 09" 74° 27' 56" 74° 12' 59" 74° 00' 05" 74° 06' 20" 74° 08' 28" 74° 21’ 54" 74° 31' 36" 74° 42' 53" 75° 03' 00" 75° 28' 15" 75° 42' 60"	N/A

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
White Sands Missile Range	NM	Yes	Yes	34° 35' 05" 34° 43' 50" 34° 43' 17" 34° 26' 28" 32° 36' 02" 31° 45' 47" 31° 18' 18" 31° 27' 23" 32° 38' 49" 33° 32' 40"	107° 06' 05" 106° 46' 50" 106° 03' 17" 105° 26' 28" 104° 55' 02" 105° 22' 47" 106° 06' 18" 106° 54' 23" 107° 25' 49" 107° 27' 40"	N/A
Nevada Test and Training Range	NV	Yes	Yes	35° 58' 48" 36° 38' 22" 36° 22' 37" 36° 54' 03" 37° 58' 01" 38° 59' 48" 38° 58' 35" 37° 52' 34" 36° 20' 30" 36° 21' 15"	115° 31' 55" 116° 23' 51" 117° 41' 35" 117° 59' 18" 118° 01' 17" 116° 46' 01" 114° 49' 25" 113° 35' 46" 113° 39' 51" 115° 14' 23"	N/A
Fort Sill	OK	Yes	Yes	35° 03' 39" 35° 10' 31" 34° 42' 54" 34° 13' 49" 34° 13' 46" 34° 38' 26"	99° 02' 38" 98° 05' 47" 97° 45' 20" 98° 05' 49" 98° 56' 09" 99° 16' 57"	N/A
Tobyhanna Army Depot	PA	Yes	-	41° 30' 25" 41° 38' 51" 41° 31' 41" 41° 11' 31" 40° 52' 07" 40° 44' 53" 40° 51' 43" 41° 07' 40"	75° 51' 60" 75° 26' 33" 75° 1' 39" 74° 50' 07" 75° 1' 2" 75° 23' 50" 75° 48' 52" 76° 00' 38"	N/A

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
Dahlgren*	VA	Yes	Yes	38° 23' 10" 38° 41' 25" 38° 46' 14" 38° 49' 37" 38° 50' 16" 38° 46' 30" 38° 49' 42" 38° 54' 42" 38° 55' 37" 38° 56' 05" 38° 44' 45" 38° 44' 22" 38° 35' 14" 38° 51' 04" 38° 26' 52" 38° 22' 59" 37° 59' 27" 37° 47' 08" 37° 54' 01" 38° 23' 10"	76° 23' 21" 76° 35' 56" 76° 44' 44" 76° 54' 57" 76° 58' 18" 77° 01' 57" 77° 04' 08" 77° 7' 35" 77° 12' 04" 77° 23' 5" 77° 25' 23" 77° 28' 48" 77° 36' 11" 78° 12' 06" 78° 29' 02" 77° 42' 19" 77° 28' 26" 76° 53' 47" 76° 06' 14" 76° 23' 21"	N/A
Newport News*	VA	Yes	Yes	36° 58' 24"	76° 26' 07"	93
Norfolk* (includes Fort Story SESEF range)	VA	Yes	-	36° 56’ 24”	76° 19’ 55”	74
Wallops Island*	VA	Yes	Yes	37° 51' 25"	75° 27' 59"	76
Bremerton*	WA	Yes	Yes	47° 28' 40" 47° 31' 16" 47° 31' 13" 47° 34' 12" 47° 45' 36" 47° 59' 07" 48° 12' 20" 47° 39' 46" 47° 39' 12" 47° 45' 23" 47° 44' 48" 47° 57' 40" 47° 31' 15" 47° 35' 53" 47° 27' 33" 47° 27' 07" 47° 24' 25" 47° 23' 07" 47° 28' 33" 46° 50' 25" 46° 53' 09" 47° 28' 40"	122° 31' 22" 122° 31' 26" 122° 32' 37" 122° 31' 52" 121° 32' 28" 121° 34' 09" 121° 44' 51" 122° 29' 60" 122° 34' 35" 122° 38' 09" 122° 45' 18" 122° 59' 06" 123° 16' 23" 122° 49' 28" 122° 55' 25" 122° 46' 16" 122° 42' 48" 122° 39' 18" 122° 33' 44" 121° 49' 24" 121° 44' 01" 122° 31' 22"	N/A

Location name	State	CPA	PUA	Latitude	Longitude	Radius (km)
Everett* (includes Ediz Hook SESEF range)	WA	Yes	-	47° 51' 11" 47° 25' 13" 47° 54' 45" 47° 36' 60" 47° 51' 57" 48° 35' 49" 48° 00' 8" 47° 51' 10"	122° 57' 47" 123° 18' 6" 122° 10' 13" 121° 37' 60" 121° 22' 57" 122° 08' 13" 123° 29' 33" 122° 57' 47"	N/A

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PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

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

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

■ 7. Amend § 27.1 by adding paragraph (b)(17) to read as follows:

§ 27.1 Basis and purpose.

* * * * *

(b) * * *

(17) 3450–3550 MHz.

* * * * *

■ 8. Amend § 27.4 by adding in alphabetical order the definition for ''3.45 GHz Service'' to read as follows:

§ 27.4 Terms and definitions.

3.45 GHz Service. A radiocommunication service licensed under this part for the frequency bands specified in § 27.5(o) (3450–3550 MHz band).

* * * * *

■ 9. Amend § 27.5 by adding paragraph (o) to read as follows:

§ 27.5 Frequencies.

* * * * *

(o) *3450–3550 MHz band.* The 3.45 GHz Service is licensed as ten individual 10 megahertz blocks available for assignment in the contiguous United States on a Partial Economic Area basis, *see* § 27.6(n).

■ 10. Amend § 27.6 by adding paragraph (n) to read as follows:

§ 27.6 Service areas.

* * * * *

(n) *3450–3550 MHz Band.* Service areas in the 3.45 GHz Service are based on Partial Economic Areas (PEAs) as defined by appendix A to this subpart.

■ 11. Amend § 27.11 by adding paragraph (m) to read as follows:

§ 27.11 Initial authorization.

* * * * *

(m) *3450–3550 MHz band.* Authorizations for licenses in the 3.45 GHz Service will be based on Partial Economic Areas (PEAs), as specified in § 27.6(n), and the frequency blocks specified in § 27.5(o).

■ 12. Amend § 27.13 by adding paragraph (o) to read as follows:

§ 27.13 License period.

* * * * *

(o) *3450–3550 MHz Band.* Authorizations for licenses in the 3.45 GHz Service in the 3450–3550 MHz band will have a term not to exceed fifteen (15) years from the date of issuance.

■ 13. Amend § 27.14 by revising the first sentences of paragraphs (a) and (k) and adding paragraph (w) 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, 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, Block D in the 2345–2350 MHz band, in the 3450–3550 MHz band, and in the 3700–3980 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), (v), and (w) 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. * * *

* * * * *

(w) The following provisions apply to any licensee holding an authorization in the 3450–3550 MHz band:

(1) *Performance requirements.* Licensees in the 3.45 GHz Service must meet the following benchmarks, based on the type of service they provide.

(i) *Mobile/point-to-multipoint service.* Licensees relying on mobile or point-to-multipoint service shall provide reliable signal coverage and offer service within four (4) 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 Performance Benchmark''). Licensees shall provide reliable signal coverage and offer service within eight (8) years from the date of the initial license to at least eighty (80) percent of the population in each of its license areas (''Second Performance Benchmark'').

(ii) *Point-to-point service.* Licensees relying on point-to-point service shall demonstrate within four (4) years of the license issue date that, if the population within the license area is equal to or less than 268,000, they have four links operating and either provide service to customers or for internal use. If the population is greater than 268,000, they shall demonstrate they have at least one link in operation and either provide service to customers or for internal use per every 67,000 persons within a license area (''First Performance Benchmark''). Licensees shall demonstrate within eight (8) years of the

license issue date that, if the population within license area is equal to or less than 268,000, they have eight links operating and either provide service to customers or for internal use. If the population within the license area is greater than 268,000, they shall demonstrate they have at least two links in operation and either provide service to customers or for internal use per every 67,000 persons within a license area (''Second Performance Benchmark'').

(iii) *Internet of Things service.* Licensees offering Internet of Things-type services shall provide geographic area coverage within four (4) years from the date of the initial license to thirty-five (35) percent of the license (''First Performance Benchmark''). Licensees shall provide geographic area coverage within eight (8) years from the date of the initial license to sixty-five (65) percent of the license (''Second Performance Benchmark'').

(2) *Failure to meet performance requirements.* If a licensee fails to establish that it meets the First Performance Benchmark for a particular license area in paragraph (w)(1) of this section, the licensee's Second Performance Benchmark deadline and license term in paragraph (w)(1) of this section will be reduced by one year. If a licensee fails to establish that it meets the Second Performance Benchmark for a particular license area, its authorization for each license area in which it fails to meet the Second Performance Benchmark 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.

(3) *Compliance procedures.* To demonstrate compliance with the performance requirements in paragraph (w)(1) of this section, licensees shall use the most recently available decennial U.S. Census Data at the time of measurement and shall base their measurements of population or geographic area served on areas no larger than the Census Tract level. The population or area 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 or geographic area within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license. If a licensee does not provide reliable signal coverage to an entire license area, the license must provide a map that accurately depicts the boundaries of the area or areas within each license area not being served. 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.

■ 14. Amend § 27.50 by adding paragraph (k) to read as follows:

§ 27.50 Power limits and duty cycle.

* * * * *

(k) The following power requirements apply to stations transmitting in the 3450–3550 MHz band:

(1) The power of each fixed or base station transmitting in the 3450–3550 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to an equivalent isotropically radiated power (EIRP) of 3280 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(2) The power of each fixed or base station transmitting in the 3450–3550 MHz band and situated in any geographic location other than that described in paragraph (k)(1) of this section is limited to an EIRP of 1640 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(4) Equipment employed must be authorized in accordance with the provisions of § 27.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (k)(5) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

(5) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, and any other relevant factors, so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

■ 15. Amend § 27.53 by redesignating paragraph (n) as paragraph (o) and adding new paragraph (n) to read as follows:

§ 27.53 Emission limits.

* * * * *

(n) *3.45 GHz Service.* The following emission limits apply to stations transmitting in the 3450–3550 MHz band:

(1) For base station operations in the 3450–3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with the provisions of this paragraph (n)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Notwithstanding the channel edge requirement of −13 dBm per megahertz, for base station operations in the 3450–3550 MHz band, the conducted power of any emission below 3440 MHz or above 3560 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3430 MHz or above 3570 MHz shall not exceed −40 dBm/MHz.

(2) For mobile operations in the 3450–3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency

block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

* * * * *

■ 16. Amend § 27.55 by adding paragraph (e) to read as follows:

§ 27.55 Power strength limits.

* * * * *

(e) *Power flux density for stations operating in the 3450–3550 MHz band.* For base and fixed stations operation in the 3450–3550 MHz band in accordance with the provisions of § 27.50(k), the power flux density (PFD) at any location on the geographical border of a licensee's service area shall not exceed −76 dBm/m^2/MHz. This power flux density will be measured at 1.5 meters above ground. Licensees in adjacent geographic areas may voluntarily agree to operate under a higher PFD at their common boundary.

■ 17. Amend § 27.57 by revising paragraph (c) to read as follows:

§ 27.57 International coordination.

* * * * *

(c) Operation in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, 2180–2200 MHz, 3450–3550 MHz, and 3700–3980 MHz bands is subject to international agreements with Mexico and Canada.

■ 18. Amend § 27.75 by adding paragraph (a)(4) to read as follows:

§ 27.75 Basic interoperability requirement.

(a) * * *

(4) Mobile and portable stations that operate on any portion of frequencies in the 3450–3550 MHz band must be capable of operating on all frequencies in the 3450–3550 MHz band using the same air interfaces that the equipment utilizes on any frequencies in the 3450–3550 MHz band.

* * * * *

■ 19. Add subpart Q, consisting of §§ 27.1600 through 27.1607, to read as follows:

Subpart Q—3.45 GHz Service (3450–3550 MHz)

Sec.

§ 27.1600 3450–3550 MHz band subject to competitive bidding.

Mutually exclusive initial applications for 3450–3550 MHz band licenses are subject to competitive bidding. The general competitive bidding procedures set forth in 47 CFR part 1, subpart Q, will apply unless otherwise provided in this subpart.

§ 27.1601 Designated entities in the 3450–3550 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 as provided in § 1.2110(c)(6) of this chapter, may use the bidding credit of 15 percent, as specified in § 1.2110(f)(2)(i)(C) of this chapter, subject to the cap specified in § 1.2110(f)(2)(ii) 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 as provided in § 1.2110(c)(6) of this chapter, may use the bidding credit of 25 percent, as specified in § 1.2110(f)(2)(i)(B) of this chapter, subject to the cap specified in § 1.2110(f)(2)(ii) 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, or a consortium of rural service providers as provided in § 1.2110(c)(6) of this chapter, may use the bidding credit of 15 percent specified in § 1.2110(f)(4) of this chapter.

§ 27.1602 Incumbent Federal operations.

Regarding incumbent Federal operations in the 3450–3550 MHz band, 3.45 GHz Service licensees must comply with footnote US431B of the Table of Frequency Allocations in 47 CFR 2.106.

§ 27.1603 Coordination procedures.

(a) *Coordination requirement.* Prior to operation of any 3.45 GHz Service license in a Cooperative Planning Area or Periodic Use Area, a 3.45 GHz Service licensee must successfully coordinate such operation with any Federal incumbents in the Cooperative Planning Area or Periodic Use Area. The coordination procedures contained in this section shall apply unless the 3.45 GHz Service licensee and the Federal incumbent(s) have reached a mutually acceptable operator-to-operator coordination agreement that provides otherwise.

(b) *Informal discussions.* Before a 3.45 GHz Service licensee submits a formal coordination request, it may share and discuss draft proposals with Federal incumbent coordination staff. These discussions are voluntary, informal, and non-binding and can begin at any time.

(c) *Formal coordination.* The 3.45 GHz Service licensee shall initiate coordination by formally requesting access to operate within a Cooperative Planning Area and/or Periodic Use Area directly through the Department of Defense's online portal.

(d) *Initiation, timing, and affirmative concurrence.* A 3.45 GHz Service licensee must initiate a formal coordination request through the online portal provided by the Department of Defense. Unless otherwise agreed between a 3.45 GHz Service licensee and the relevant Federal incumbent(s), no formal coordination requests may be submitted until nine (9) months after the date of the auction closing Public Notice. 3.45 GHz Service licensees may request informal discussions (through the point of contact identified in the applicable Transition Plan) during this nine-month time period. Unless otherwise agreed to in writing, the requirement to reach a coordination arrangement is satisfied only by obtaining the affirmative concurrence of the relevant Federal incumbent(s) via the portal. The requirement of this paragraph (d) is not satisfied by omission.

(e) *Submission information.* To submit a formal coordination request, the 3.45 GHz Service licensee must include information about the technical

characteristics for the 3.45 GHz Service base stations and associated mobile units relevant to operation within the Cooperative Planning Area and/or Periodic Use Area. This information should be provided in accordance with the instructions provided in the portal user's guide provided by the Department of Defense. 3.45 GHz Service licensees must prioritize their deployments in the Cooperative Planning Area for each Federal incumbent when submitting a formal coordination request. If a 3.45 GHz Service licensee is seeking to coordinate with multiple systems or multiple locations of operation controlled by one Federal incumbent, the licensee must specify the order in which it prefers the Federal incumbent process the request (*i.e.,* the order of systems or geographic locations).

(f) *Coordination analysis.* If a 3.45 GHz Service licensee has questions about the result of a coordination request, it may contact the Federal incumbent to propose network design modifications to help address issues raised by the Federal incumbent. Once the 3.45 GHz Service licensee has revised its network design, it must resubmit a formal coordination request, and the 3.45 GHz Service formal coordination process begins again.

(g) *Interference resolution process.* In instances of identified harmful interference occurring between a Federal and non-Federal operator not otherwise addressed by the coordination procedures or operator-to-operator agreements, the 3.45 GHz Service licensee shall first attempt to resolve the interference directly. If that effort is unsuccessful, the 3.45 GHz Service licensee, if adversely affected may escalate the matter to the Commission.

§ 27.1604 Reimbursement of relocation expenses of non-Federal radiolocation incumbents.

(a) *Relocation reimbursement contribution.* Each entity granted an initial license (not a renewal) in the 3.45 GHz Service (Licensee) must pay a *pro rata* portion to reimburse the costs incurred by authorized non-Federal, secondary radiolocation licensees for relocating from the 3.3–3.55 GHz band. These costs include the cost of a clearinghouse's administration of the reimbursement, which the radiolocation licensees will pay initially and include in their reimbursable costs.

(b) *Pro rata share.* A Licensee's *pro rata* share of relocation costs will be determined by dividing the total actual costs of such relocation, as approved by the clearinghouse selected pursuant to § 27.1605, by the total number of 3.45 GHz Service licenses granted, multiplied by the number of such licenses the Licensee will hold.

(c) *Timing of payment.* A Licensee's relocation reimbursement contribution share must be paid to the clearinghouse by the date(s) and subject to procedures specified by public notice.

§ 27.1605 Reimbursement clearinghouse.

(a) The clearinghouse ultimately selected shall determine the reimbursement obligations of each Licensee pursuant to § 27.1604.

(1) The clearinghouse must be a must be a neutral, independent entity with no conflicts of interest (as defined in § 27.1414(b), on the part of the organization or its officers, directors, employees, contractors, or significant subcontractors.

(2) The clearinghouse must be able to demonstrate that it has the requisite expertise to perform the duties required, which will include collecting and distributing reimbursement payments, auditing incoming and outgoing estimates, mitigating cost disputes among parties, and generally acting as a clearinghouse.

(3) The clearinghouse must comply with, on an ongoing basis, all applicable laws and Federal Government guidance on privacy and information security requirements such as relevant provisions in the Federal Information Security Management Act, National Institute of Standards and Technology publications, and Office of Management and Budget guidance.

(4) The clearinghouse must provide quarterly reports to the Wireless Telecommunications Bureau that detail the status of reimbursement funds available, the payments issued, the amounts collected from licensees, and any information filed by incumbents. The reports must account for all funds spent, including the clearinghouse's own expenses. The report shall include descriptions of any disputes and the manner in which they were resolved.

(b) Non-Federal secondary radiolocation licensees in the 3.3–3.55 GHz band that seek reimbursement of their expenses for relocating operations authorized under their licenses and existing as of February 22, 2019, must submit invoices or other appropriate documentation of such expenses to the clearinghouse no later than a date to be specified by public notice.

(c) Expenses must be reasonably related to the relocation from the 3.3–3.55 GHz band to the 2.9–3.0 GHz band, may be future expenses or expenses already incurred—including the clearinghouse's costs, and no expenses for other purposes will be subject to reimbursement. Ineligible expenses include, but are not limited to, those related to upgrades or improvements. The clearinghouse shall have the authority to determine whether particular expenses are eligible for reimbursement.

(d) The Wireless Telecommunications Bureau is responsible for resolving any disputes arising from decisions by the clearinghouse and shall specify by public notice when the clearinghouse's responsibilities have terminated.

§ 27.1606 Aggregation of 3450–3550 MHz band licenses.

(a) 3.45 GHz Service licensees may aggregate up to 40 megahertz of 3450–3550 MHz band licenses across both license categories in any service area at any given time for four years after the close of the auction. After four years post-auction, no such aggregation limit on 3450–3550 MHz licenses shall apply.

(b) The criteria in § 20.22(b) of this chapter will apply in order to attribute partial ownership and other interests for the purpose of applying the aggregation limit in paragraph (a) of this section.

§ 27.1607 Information sharing for time division duplex synchronization.

(a) 3.45 GHz Service licensees must provide information to requesting Citizens Broadband Radio Service (part 96 of this chapter) operators to enable time division duplex (TDD) synchronization. Negotiations over the information must be conducted in good faith, with the goal of enabling synchronization between the relevant systems.

(1) A Citizens Broadband Radio Service operator, whether a Priority Access Licensee or a General Authorized Access user (§ 96.1(b) of this chapter), may request information from a 3.45 GHz Service licensee to enable cross-service TDD synchronization if it provides service, or intends to provide service, in the same or adjacent geographic area as a 3.45 GHz Service licensee.

(2) Upon request by an eligible Citizens Broadband Radio Service operator, the 3.45 GHz Service licensee must provide sufficient technical information to allow the Citizens Broadband Radio Service operator to synchronize its system with the 3.45 GHz band system. The 3.45 GHz Service licensee must keep this information current if its network operations change.

(b) 3.45 GHz Service licensees are under no obligation to make any changes to their operations or proposed

operations to enable TDD synchronization.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R5–ES–2018–0050; FF09E21000 FXES11110900000 212]

RIN 1018–BD15

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Candy Darter

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the candy darter (*Etheostoma osburni*) under the Endangered Species Act (Act). In total, approximately 593 stream kilometers (368 stream miles) in Virginia and West Virginia fall within the boundaries of the critical habitat designation. The effect of this final rule is to designate critical habitat under the Act for the candy darter, an endangered species of fish.

DATES: This rule becomes effective on May 7, 2021.

ADDRESSES: This final rule is available on the internet at *http://www.regulations.gov* in Docket No. FWS–R5–ES–2018–0050 or at *https://www.fws.gov/northeast/candydarter* and at the West Virginia Ecological Services Field Office. Comments and materials we received, as well as some supporting documentation we used in preparing this rule, are available for public inspection in the docket at *http://www.regulations.gov.* All of the comments, materials, and documentation that we considered in this rulemaking are available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, West Virginia Ecological Services Field Office, 90 Vance Drive, Elkins, WV, 26241; telephone 304–636–6586.

The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at *http://www.regulations.gov* at Docket No. FWS–R5–ES–2018–0050, and at the West Virginia Ecological Services Field Office, *https://www.fws.gov/westvirginiafieldoffice/index.html* (see **FOR FURTHER INFORMATION CONTACT**). Any additional tools or supporting information that we developed for this critical habitat designation will also be available at the U.S. Fish and Wildlife Service website and field office set out above, and may also be included in the preamble and at *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Acting Field Supervisor, U.S. Fish and Wildlife Service, West Virginia Ecological Services Field Office, 90 Vance Drive, Elkins, WV 26241; telephone 304–636–6586. If you use a telecommunications device for the deaf (TDD), call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. This document is a final rule to designate critical habitat for the candy darter. Under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), any species that is determined to be an endangered or threatened species requires critical habitat to be designated, to the maximum extent prudent and determinable. Designations and revisions of critical habitat can be completed only by issuing a rule.

We listed the candy darter as an endangered species on November 21, 2018 (83 FR 58747). Also, on November 21, 2018, we published in the **Federal Register** a proposed critical habitat designation for candy darter (83 FR 59232). Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat.

What this document does. This document is a final rule that designates critical habitat necessary for the conservation of the candy darter. The critical habitat areas we are designating in this rule constitute our current best assessment of the areas that meet the definition of critical habitat for candy darter. We are designating a total of approximately 593 stream kilometers (368 stream miles) of rivers and streams in Virginia and West Virginia for the candy darter.

Peer review and public comment. Our designation is based on the best scientific data available in our peer-reviewed species status assessment (SSA) report. The SSA was used to inform the decisionmaking process of the proposed and final listing rules (82 FR 46197 and 83 FR 58747, respectively) and proposed and final critical habitat designations (83 FR 59232 and this rule, respectively). For further detail on the responses from peer reviewers, see the final rule listing the candy darter as an endangered species (83 FR 58747). We also considered all comments and information received from the public during the comment period for the proposed designation of critical habitat. Information we received from public comment is incorporated in this final designation of critical habitat, as appropriate, or addressed below in Summary of Comments and Recommendations.

Previous Federal Actions

We proposed the candy darter for listing on October 4, 2017 (82 FR 46197), and finalized the listing on November 21, 2018 (83 FR 58747). As such, the candy darter is included as an endangered species on the List of Endangered and Threatened Wildlife in title 50 of the Code of Federal Regulations at 50 CFR 17.11(h). We also proposed to designate critical habitat for the candy darter on November 21, 2018 (83 FR 59232). For information on any actions prior to these rules, refer to the proposed listing rule.

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the candy darter (83 FR 59232) during an open comment period that opened on November 21, 2018, and closed on January 22, 2019. We did not receive any requests for a public hearing. We also contacted appropriate Federal, State, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule and draft economic analysis during these comment periods.

During the comment period, we received 14 comment letters directly addressing the proposed critical habitat designation. All substantive information provided during the comment period has been grouped into general issues specifically relating to the proposed critical habitat designation for the candy darter and either incorporated directly into this final determination, as appropriate, or addressed below in the following summary.

In addition, some of the 14 substantive comments directly related to the critical habitat designation also contained suggestions that were applicable to general recovery issues for